

# C O N T E N T S

Notice of AGM	9
BHEL at a Glance	12
Five Year Summary	14
Directors' Report	15
- Management Discussion and Analysis	
- Auditors' Report & CAG Comments	
- Conservation of Energy etc.	
- Corporate Governance	
- Resume of Directors proposed for appointment/re-appointment as per Listing Agreement	
Audited Accounts	60
- Significant Accounting Policies	
- Balance Sheet	
- Profit & Loss Account	
- Schedules	
Cash Flow Statement	99
Product Profile	111



# Bharat Heavy Electricals Limited

Regd. Office: BHEL House, Siri Fort, New Delhi-110049

## NOTICE

Notice is hereby given that the 39th Annual General Meeting of the Members of BHARAT HEAVY ELECTRICALS LIMITED will be held on 'Tuesday' the 30th September 2003 at 10.00 A.M. at FICCI Auditorium, Barakhamba Road (Tansen Marg), New Delhi-110001, to transact the following business: -

### ORDINARY BUSINESS

1. To receive, consider and adopt the audited Balance Sheet of the Company as at 31st March, 2003 and the Profit & Loss Account for the financial year ended on that date together with the Reports of the Directors and Auditors thereon.
2. To declare dividend.
3. To appoint a Director in place of Shri A C Wadhawan, who retires by rotation and being eligible, offers himself for re-appointment.
4. To appoint a Director in place of Dr. Anand Patkar, who retires by rotation and being eligible, offers himself for re-appointment.
5. To appoint a Director in place of Shri G P Gupta, who retires by rotation and being eligible, offers himself for re-appointment.
6. To fix the remuneration of the Auditors.

### SPECIAL BUSINESS

7. To consider and, if thought fit, to pass with or without modification, the following resolution as an **Ordinary Resolution** :  
"RESOLVED THAT Shri Ishan Shankar, who was appointed as a Director pursuant to Article 67 of the Articles of Association of the Company read with Section 260 of the Companies Act, 1956 and who holds Office upto the date of this Annual General Meeting and in respect of whom, the Company has received a notice in writing, from the Director himself pursuant to the provisions of Section 257 of the Companies Act, 1956, be and is hereby appointed as a Director of the Company."

8. To consider and, if thought fit, to pass with or without modification, the following resolution as an **Ordinary Resolution**:

"RESOLVED THAT Shri A Didar Singh, who was appointed as a Director pursuant to Article 67 of the Articles of Association of the Company read with Section 260 of the Companies Act, 1956 and who holds Office upto the date of this Annual General Meeting and in respect of whom, the Company has received a notice in writing, from the Director himself, pursuant to the provisions of Section 257 of the Companies Act, 1956, be and is hereby appointed as a Director of the Company."

By Order of the Board of Directors

Sd/-  
(N K SINHA)  
COMPANY SECRETARY

New Delhi

Dated: 29th August, 2003

Registered Office:

"BHEL House", Siri Fort, New Delhi-110 049.

### Notes: -

1. A MEMBER ENTITLED TO ATTEND AND VOTE AT THE MEETING IS ENTITLED TO APPOINT A PROXY TO ATTEND AND VOTE INSTEAD OF HIMSELF AND THE PROXY NEED NOT BE A MEMBER OF THE COMPANY. PROXY FORM DULY COMPLETED SHOULD BE DEPOSITED AT THE REGISTERED OFFICE OF THE COMPANY NOT LESS THAN FORTY-EIGHT HOURS (48 HRS) BEFORE THE SCHEDULED TIME OF THE ANNUAL GENERAL MEETING. BLANK PROXY FORM IS ENCLOSED.

2. Relevant Explanatory Statement pursuant to Section 173(2) of the Companies Act, 1956, in respect of Special Business as set out above is annexed hereto.
  3. Brief resume of each of the Directors proposed for appointment and re-appointment is given as Annexure-5 to the Directors' Report.
  4. Shri A C Wadhawan, Dr. Anand Patkar and Shri G P Gupta, directors of the company retire by rotation and, being eligible, offer themselves for re-appointment. However, as per terms of their appointment, the tenure of Shri A C Wadhawan & Dr. Anand Patkar is upto 14.06.2004 and that of Shri G P Gupta upto 13.08.2004.
  5. The Register of Members and Share Transfer Books of the Company shall remain closed from 10th September, 2003 to 30th September, 2003 (both days inclusive) for the purpose of payment of dividend, if any, approved by the Members.
  6. Members are advised to submit their Electronic Clearing Service (ECS) mandates in the form (given elsewhere in the Annual Report) duly filled in and signed, to enable the Company to make remittance by means of ECS.
  7. The dividend on the Equity Shares as recommended by the Board of Directors for the year ended 31st March, 2003 when sanctioned at the Annual General Meeting of the Company will be payable within 30 days from the date of declaration of dividend by the members i.e. on or before 29th October, 2003, to those shareholders whose name appears on the Company's Register of Members or as the beneficial owner of shares in the records of the Depository as on Wednesday, the 10th September, 2003.
  8. Pursuant to Section 205A read with Section 205C of the Companies Act, 1956, the dividend amounts which remains unpaid/unclaimed for a period of 7 years, are required to be transferred to the Investor's Education & Protection Fund of the Central Government. After that there remains no claim of the members whatsoever on the said amount. Accordingly, the dividend for the Financial Year 1995-96 which remains unclaimed is due to be transferred to the said account after 29th September, 2003 and for the further years commencing from 1996-97 onwards on their respective due dates.
- The members who have not encashed their dividends for the financial year ended 31.03.1996 or any subsequent financial year(s) may approach the company for obtaining payments thereof before expiry of the stipulated 7 years period.
9. Members may avail facility of nomination in terms of Section 109A of the Companies Act, 1956 by nominating in the Form-2B (given elsewhere in the Annual Report) a person to whom their shares in the Company shall vest in the event of their death.
  10. Pursuant to Section 619(2), the Auditors of a Government Company shall be appointed or re-appointed by the Comptroller and Auditor General of India and in terms of Clause (aa) of sub-section (8) of Section 224, their remuneration has to be fixed by the Company in the Annual General Meeting. The appointment of Statutory Auditors of the Company for the year 2003-2004 is awaited from C&AG of India. The General Meeting may, authorise the Board to fix up an appropriate remuneration of Auditors for the year 2003-2004 after taking into consideration the increase in volume of work and prevailing inflation.
  11. A corporate member shall be deemed to be personally present only if it is represented in accordance with Section-187 of the Companies Act, 1956 i.e. only if the corporate member sends certified true copy of the board resolution / power of attorney authorising the representative to attend and vote at the Annual General Meeting.
  12. Members are requested to notify immediately any change of address:
    - a) to their Depository Participants (DPs) in respect of their electronic share accounts, and
    - b) to the Company at its Registered Office in respect of their physical shares, if any, quoting their folio number, Banker's name and account number to ensure prompt and safe receipt of dividend warrants.
  13. Members attending the meeting are requested to complete the enclosed Attendance Slip and deliver the same at the entrance of the meeting venue. However, entry to the Auditorium will be strictly on the basis of the entry slip available at the counters at the venue and to be exchanged with attendance slip.



14. Members desirous of getting any information about the accounts and operations of the Company are requested to address their queries to the Company at least a week prior to the date of the meeting, so that the information required can be made readily available at the meeting.

15. Members are requested:-

- i) to bring their copies of Annual Report, Notice and Attendance Slip at the time of the meeting.
- ii) to quote their Folio Nos. in all correspondence.
- iii) to note that no briefcase or bag will be allowed to be taken inside the auditorium for security reasons.
- iv) to note that no gift will be distributed in the AGM.

By Order of the Board of Directors

Sd/-  
(N K SINHA)  
COMPANY SECRETARY

#### **ANNEXURE TO THE NOTICE**

#### **EXPLANATORY STATEMENT PURSUANT TO SECTION 173(2) OF THE COMPANIES ACT, 1956**

The following explanatory statement sets out the material facts relating to the business mentioned in items No. 7 & 8 of the accompanying Notice dated 29th August, 2003.

#### **ITEM NO. 7**

Shri Ishan Shankar, aged 59 years, is a Mechanical Engineer. As per the direction of the Govt. of India, Shri Ishan Shankar was appointed as Director (Personnel) {now Director (HR)} of the company for a period of five years with effect from 10th October, 1997. He was thereafter granted extension on two occasions for a period of three months each beyond 9th October, 2002 and 9th January, 2003 respectively. The Govt. of India further extended his tenure upto 29th February, 2004 i.e. the date of his superannuation on attaining the age of 60 years. Having been so appointed, Shri Ishan Shankar holds office till the date of ensuing Annual General Meeting by virtue of Section 260 of the Companies Act, 1956 read with Article 67(iv) of the Articles of Association of the Company, and is eligible for re-appointment.

In terms of Section 257 of the Companies Act 1956, the Company has received a Notice in writing along with a deposit of Rs.500/- from the Director himself proposing his candidature for the Office of Director of the Company.

None of the Directors of the Company except Shri Ishan Shankar is in any way concerned or interested in the resolution.

The Board of Directors commends the resolution for approval of the shareholders.

#### **ITEM NO. 8**

Shri A. Didar Singh, aged 51 years, is the Joint Secretary to the Government of India, Ministry of Heavy Industries & Public Enterprises, Department of Heavy Industry. As per the direction of the Government of India, Shri Didar Singh was appointed as a Director of the Company with effect from 10.03.2003 vice Shri S V Bhawe. Having been so appointed, Shri Didar Singh holds office till the date of ensuing Annual General Meeting by virtue of Section 260 of the Companies Act, 1956 read with Article 67(iv) of the Articles of Association of the Company, and is eligible for re-appointment.

In terms of Section 257 of the Companies Act 1956, the Company has received a Notice in writing along with a deposit of Rs.500/- from the Director himself, proposing his candidature for the Office of Director of the Company.

None of the Directors of the Company except Shri A. Didar Singh is in any way concerned or interested in the resolution.

The Board of Directors commends the resolution for approval of the shareholders.

By Order of the Board of Directors

Sd/-  
(N K SINHA)  
COMPANY SECRETARY

New Delhi.

Dated: 29th August, 2003

Registered Office:

"BHEL House", Siri Fort, New Delhi-110 049.

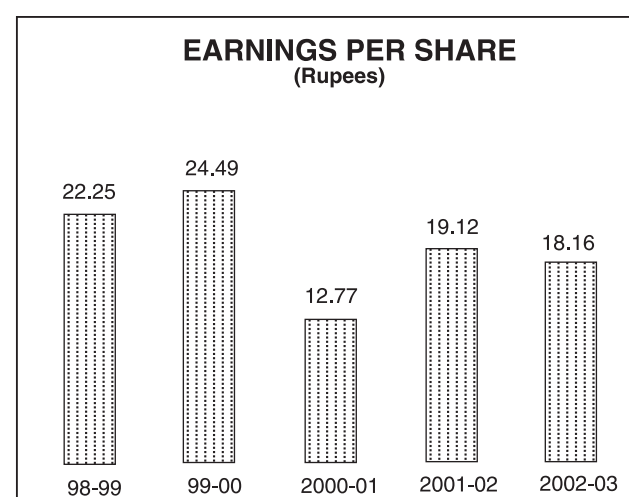
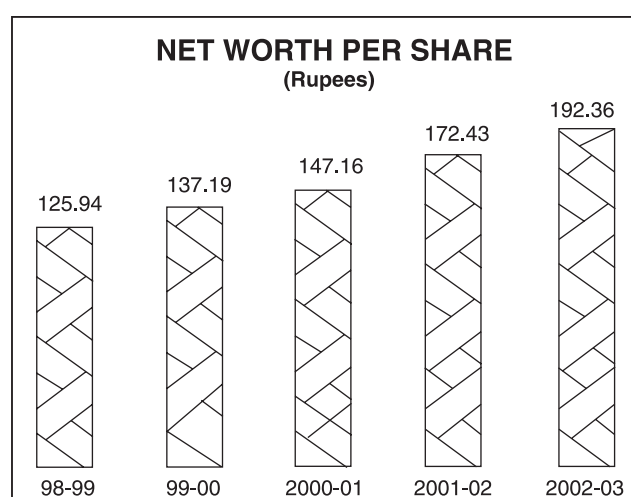
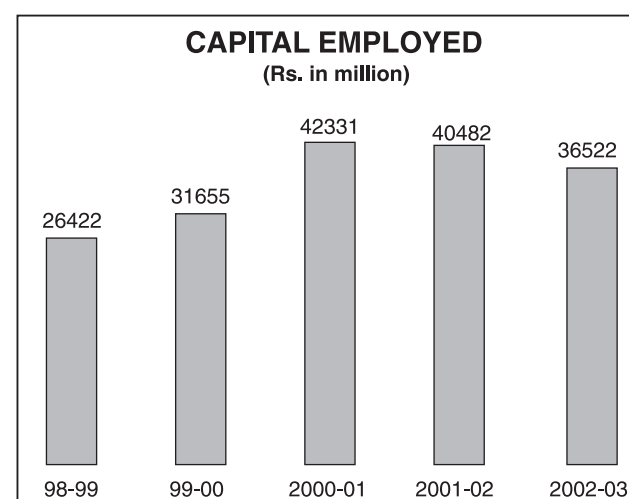
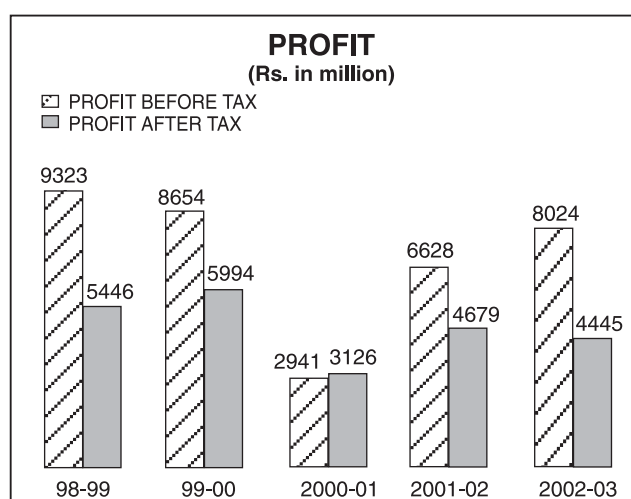
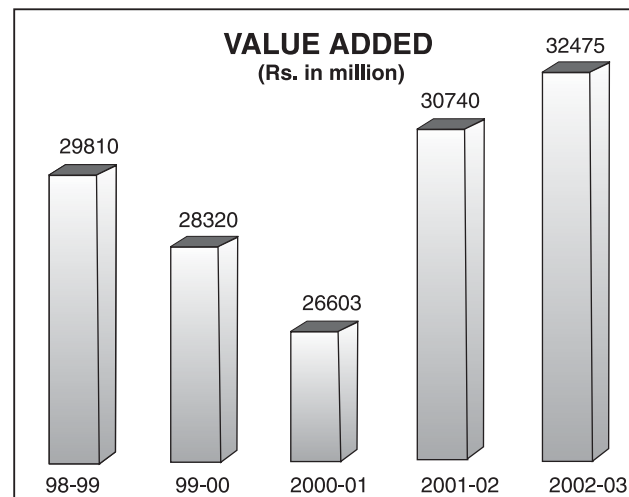
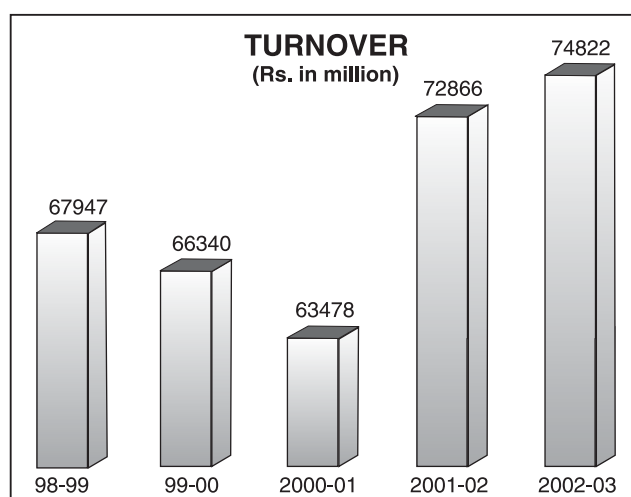
## BHEL AT A GLANCE

			(Rs. in million)
	2001-02	2002-03	CHANGE (%)
Turnover	72866	74822	2.68
Value Added	30740	32475	5.64
Employee (Nos.)	47516	46855	-1.39
Profit Before Tax	6628	8024	21.06
Profit After Tax	4679	4445	-5.00
Dividend	979	979	0.00
Dividend Tax	0	125	---
Retained Earnings	3700	3341	-9.70
Total Assets	92950	95879	3.15
Net Worth	42203	47082	11.56
Total Borrowings	6658	5310	-20.25
Debt : Equity	0.16	0.11	-31.25
Per Share (in Rupees) :			
- Net worth	172.43	192.36	11.56
- Earnings	19.12	18.16	-5.02
- Dividend	4.00	4.00	0.00
			(US \$ in million)
Turnover	1503	1581	5.19
Profit Before Tax	137	169	23.36
Profit After Tax	97	94	-3.09

### Conversion Rates (Rates as on 31st March) :

1 US \$ = Rs. 48.47 for 2001-02

1 US \$ = Rs. 47.34 for 2002-03



## FIVE YEAR SUMMARY

	(Rs.in million)				
	2002-03	2001-02	2000-01	1999-2000	1998-99
<b>I EARNINGS</b>					
Sale of products & services to customers	74822	72866	63478	66340	67947
Other Income	5087	4940	5054	4704	5433
Changes in stock	-453	-373	2507	-237	823
Total Earnings	79456	77433	71039	70807	74203
Materials	31604	33068	30496	28120	30495
Personnel Payments	15046	14446	21702*	11330	12416
Other mfg., admn. & selling expenses	22380	20629	13884**	20951	20204
Outgoings before interest & depr.	69030	68143	66082	60401	63115
Profit before depreciation, interest & tax	10426	9290	4957	10406	11088
Depreciation	1854	1692	1578	1535	1432
Gross Profit	8572	7598	3379	8871	9656
Interest	548	970	438	217	333
Profit before tax	8024	6628	2941	8654	9323
Provision for tax	3579	1949	-185	2660	3877
Profit after tax	4445	4679	3126	5994	5446
Dividend (incl.dividend tax)	1104	979	809	855	679
Retained Profit	3341	3700	2317	5139	4767
* Includes arrears of wage revision of Rs. 7078 million from 1.1.97 to 31.3.2000					
** After withdrawal of provision in respect of wage arrears Rs. 5140 million					
<b>II WHAT THE COMPANY OWNED</b>					
Gross Block	33493	31820	30040	28109	26573
Less accumulated depreciation & lease adj.	21788	20054	18614	17230	15948
Net Block	11705	11766	11426	10879	10625
Capital WIP	587	567	612	724	733
Investments	103	103	103	103	151
Current Assets, Loans & Advances	83484	80514	75762	70190	65385
Total assets	95879	92950	87903	81896	76894
<b>III WHAT THE COMPANY OWED</b>					
Borrowings (incl. Credits for assets taken on lease)	5310	6658	10256	2407	1701
Current liabilities & provisions	47561	47135	41630	45911	44368
Total liabilities	52871	53793	51886	48318	46069
<b>IV NET WORTH OF THE COMPANY</b>					
Share Capital	2448	2448	2448	2448	2448
Reserves & Surplus	45589@	42248	35856	33539	28400
Less : Deferred Revenue Expenditure	955	2493	2286	2409	23
Net Worth	47082	42203	36018	33578	30825
<b>V CAPITAL EMPLOYED</b>	36522	40482	42331	31655	26422
<b>VI VALUE ADDED</b>	32475	30740	26603	28320	29810
<b>VII RATIOS</b>					
PBDIT to assets (%) #	11.0%	10.3%	5.8%	13.1%	15.0%
Gross profit to capital employed (%)#	22.3%	18.3%	9.1%	30.5%	37.4%
Earnings per share (Rs.)	18.16	19.12	12.77	24.49	22.25
Net worth per share (Rs.)	192.36	172.43	147.16	137.19	125.94
Current Ratio	1.76	1.71	1.82	1.53	1.47
Total Debt / Equity	0.11	0.16	0.28	0.07	0.05

@ Includes Rs. 4074 million (prev. year Rs. 3046 million) towards deferred tax assets

# On the basis of average assets and capital employed





## DIRECTORS' REPORT

Your directors have pleasure in presenting their 39th Annual Report together with audited accounts of the Company for the year ended March 31, 2003.

### PERFORMANCE HIGHLIGHTS

Your company has completed another successful year in 2002-2003 and has registered a net profit of Rs. 4445 million. The Net worth of the company has gone up from Rs. 42203 million in 2001-2002 to Rs. 47082 million in 2002-2003, registering an increase of 11.56%. NAV per share has increased from Rs. 172.4 in 2001-2002 to Rs. 192.4 in 2002-2003.

Major highlights of performance during 2002-2003 are summarised below:

	(Rs. in million)		
	2002-2003	2001-2002	Increased/ Decreased by
Turnover	74822	72866	2.68%
Profit before tax	8024	6628	21.06%
Profit After Tax	4445	4679	-5.00%
NAV per share (Rs.)	192.4	172.4	11.56%
Orders booked	112270	98553	13.92%

The turnover was affected due to non shipment of equipment worth Rs. 1249 million on account of war in Iraq. Order inflow during 2002-2003 stood at Rs. 112,270 million. The year ended with an outstanding order book of around Rs. 158,000 million available for execution in 2003-2004 and beyond.

The details of appropriation of profit for the year are as follows:

	(Rs. in million)	
	2002-2003	2001-2002
Profit after tax	4445	4679
Add : - Balance of Profit b/f from last year	190	—
- Transfer from Foreign Project Reserve	68	49
	<u>4703</u>	<u>4728</u>
Appropriations:		
- Foreign Project Reserve	12	10
- Bond Redemption Reserve	1000	1000
- Dividend - Proposed	979	979
- Corporate Dividend Tax	125	—
- Transfer to General Reserve	2068	2549
- Carried to Balance Sheet	519	190
	<u>4703</u>	<u>4728</u>

A Dividend of 40%, amounting to Rs. 979 million, on the paid up capital of Rs. 2447.60 million, has been recommended for 2002-2003, which is at the same level as was declared for 2001-2002. In addition, a provision of Rs. 125 million has been made for Corporate Dividend Tax thereon.

## OPERATIONS OF THE YEAR VIS-À-VIS MOU TARGETS

Performance of BHEL for the year 2001-2002 has been rated as "Excellent" in terms of the Memorandum of Understanding signed with the Government of India. The rating for 2002-2003 is under evaluation.

### OFFICIAL LANGUAGE IMPLEMENTATION

Official Language Implementation Committees have been constituted in all the regional offices/units of BHEL. All the committees meet regularly and appropriate steps are taken to promote the use of Hindi. Manuals of the Company are available in bilingual form. Annual Report, MOU, Performance Budget, Revenue Budget, Press Releases, Advertisements, Promotion Orders, Calendars and Diaries are also published bilingually.

In the annual BHEL Hindi Coordinators' Meet, a special presentation was made to promote Hindi on computer and for maximum use of Information Technology in promotion of Hindi. Work oriented competitions were conducted to encourage the implementation of the Official Language. Under these competitions, the work done by the employees in Hindi was evaluated at the end of every quarter and winners were awarded. A number of Hindi Workshops were conducted to encourage employees to work in Hindi. In addition, a Kavi Sammelan was also organised.

In compliance with the directives of the Honourable Prime Minister, entries are being made in Confidential Reports of the employees for the "praise-worthy works done in Hindi".

### PARTICIPATION IN THE GLOBAL COMPACT OF THE UNITED NATIONS

The "Global Compact" is a partnership between the United Nations, the business community, international labour and NGOs. It provides a forum for them to work together and improve corporate practices through cooperation. BHEL has joined the "Global Compact" and is committed to support it and the set of core values enshrined in its nine principles. Following is a brief report of how the company has addressed each of the 9 principles during the year 2002-03.

#### Human Rights

- 1) *Business should support and respect the protection of internationally proclaimed human rights;*

The company's policies have been meticulously drafted keeping the principles of human rights, the Constitution of India, labour laws etc. in mind.

- 2) *make sure they are not complicit in human rights abuses.*

There has been no instance of the company having abused human rights in any manner.



## Labour Standards

- 3) *Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;*

The Government of India has enacted various laws to adequately protect the interest of the working class. These laws are strictly adhered to in BHEL. All Heads of Units are required to submit a report about compliance with different laws. This is done to ensure that the interests of labourers are protected. Apart from this, BHEL has various bipartite fora for workers where the issues/problems concerning the workers are discussed and settled. BHEL also has an apex level bipartite forum wherein representatives from all Units of BHEL, along with the Central Trade Union Organisations to which the Unions are affiliated, are represented from the workers' side and Management is represented by Chairman and Functional Directors along with the Heads of various Units.

- 4) *the elimination of all forms of forced and compulsory labour;*

The company does not employ forced and compulsory labour.

- 5) *the effective abolition of child labour;*

As per BHEL Recruitment Policy the minimum age for employment is 18 years. No person below this age can be employed in BHEL thereby ensuring that child labour is not employed in BHEL.

- 6) *eliminate discrimination in respect of employment and occupation.*

The company has a uniform set of rules (The Personnel Policy) that applies to all employees, irrespective of factors such as sex, caste, religion, race etc.

## Environment

- 7) *Businesses should support a precautionary approach to environment challenges;*

The company has a laid down policy towards the environment and has implemented the same through Management Systems aligned to international standard ISO 14001. M/s Det Norske Veritas (DNV) has certified all Units of the company to this standard after stringent audits.

- 8) *undertake initiatives to promote greater environmental responsibility;*

Some of the initiatives during the year were mass afforestation involving the employees and surrounding community, rain water harvesting, conservation of natural resources, generation of energy from waste, efficient water management etc.

- 9) *encourage the development and diffusion of environmentally friendly technologies*

The company has developed and offers products in the area of non-conventional and renewable sources of energy like wind electric generators, solar photovoltaic systems, solar heating systems, solar lanterns and battery-powered road vehicles. The company has taken up R&D efforts for development of fuel cells and multijunction amorphous silicon solar cells.

## VIGILANCE

The vigilance organisation of BHEL is presently headed by CVO. Each Unit / Region of BHEL has an independent vigilance set up headed by a senior vigilance executive functionally reporting to the CVO.

The thrust of BHEL during 2002-2003 was on Preventive Vigilance. Regular training programmes, seminars, debates and discourses on ethical values were organised in all BHEL Units / Regions. Systems studies were also carried out with a view to improve the existing systems and procedures. Interactive sessions were also held with the line executives representing different functional areas, in order to create vigilance awareness and enhance their knowledge about Company's rules, procedures and policies. BHEL Vigilance also brought out the second issue of its annual journal "DISHA" containing a number of articles on Vigilance, check-lists and other related areas.

It was felt that several of the Vigilance objectives could be achieved through implementation of Transparency Measures in various areas of Company operations. Therefore, BHEL Vigilance assumed the role of a catalyst for enhancement of transparency in Company operations especially in areas having interfaces with customers and suppliers. During the year, major units of the Company developed software packages which facilitated exchange of information with the customers and suppliers. Vigilance web pages were created at the Units.

During the period under report, BHEL Vigilance also took up cases for investigation. Wherever lapses / irregularities



directly attributable to Company officials were brought out by investigation, suitable disciplinary proceedings were recommended, resulting in imposition of penalties. Due importance was also given to surprise / routine inspections which resulted in detection of some serious lapses which were taken up for investigation.

Extensive use of Information Technology was made by BHEL Vigilance during the year 2002-2003. Vigilance Home Page was created for information sharing, display of rules, policies and circulars etc., for the benefit of employees. A web-based Vigilance Management Information System was also developed during the year for on-line storage and processing of information relating to all vigilance cases.

### **SECURITY**

The company has a well defined security mechanism. The physical security of most of the major plants of the company is being managed by the CISF. In some of the smaller plants, the company has its own security, while in other plants, Corporate Office and Regional Offices, the security is managed by security personnel taken on deputation from the Central Police Organisations. At the project sites, private security is engaged as per requirement. Recently, one of the small Units, i.e. Rudrapur, has switched over to private security company (UP Ex. Servicemen Welfare Nigam Ltd.) managed by Ex-service Personnel.

Security audit of major plants is being done by the Intelligence Bureau periodically and the additional safeguards, wherever pointed out by them, are immediately complied with by the concerned units. Since security audits by IB are carried out at substantial time gaps, internal security reviews of Hyderabad, Hardwar, Bhopal, Trichy, Corporate Research & Development, Hyderabad and Electronics Division, Bangalore plants were also undertaken. In these reviews, additional security threats which had emerged since the last review and also the required response to such new threats were discussed in detail and several decisions were taken for strengthening the existing security system.

The management, security staff and the employees of the company are fully sensitised to the security needs of the company.

## **ANNEXURES TO DIRECTORS' REPORT**

### **MANAGEMENT DISCUSSION AND ANALYSIS**

A report on Management Discussion and Analysis is placed at Annexure – 1.

### **AUDITORS' REPORT**

The replies to the points referred to in the Auditors' Report and the Annexure thereto as also the Comments and "Review of Accounts by the Comptroller and Auditor General of India" are given at Annexure 2.

### **OTHER DISCLOSURES**

Information in accordance with the provisions of Section 217(1)(e) of the Companies Act, 1956 read with Companies (Disclosure of Particulars in the Report of the Board of Directors) Rules, 1998 regarding conservation of energy, technology absorption and foreign exchange earnings and outgo is given at Annexure 3.

Information in accordance with the provisions of Clause 49 of the Listing Agreement prescribed by SEBI on Corporate Governance is given at Annexure 4.

None of the employees of the Company is drawing remuneration in excess of the limits prescribed under section 217(2A) of the Companies Act, 1956 read with Companies (Particulars of employees) Rules, 1975.

### **BOARD OF DIRECTORS**

The following changes took place in the constitution of the Board of Directors of the Company since last report.

#### **Appointment**

Shri Ishan Shankar was appointed as Director (Personnel) {now Director (HR)} of the company for a period of five years with effect from 10th October, 1997. He was thereafter granted extension on two occasions for a period of three months each beyond 9th October, 2002 and 9th January, 2003 respectively. The Govt. of India further extended his tenure upto 29th February, 2004 i.e. the date of his superannuation on attaining the age of 60 years.

Shri A.Didar Singh, Joint Secretary to the Govt. of India, Ministry of Heavy Industries & Public Enterprises, Deptt. of Heavy Industry, has been appointed as a Part-time Official Director of the Company w.e.f. 10th March, 2003 vice Shri S.V.Bhave.

In accordance with Article 67(iv) of the Articles of Association of the Company, Shri Ishan Shankar and Shri A.Didar Singh shall hold office as Directors upto the date of the ensuing Annual General Meeting of the Company and are eligible for re-appointment.

#### **Cessation**

Shri S.V.Bhave, Joint Secretary to the Govt. of India, Ministry of Heavy Industries & Public Enterprises, Deptt. of Heavy Industry, ceased to be director of the company w.e.f. 10th March, 2003

Shri V.K.Malhotra, ceased to be director w.e.f. 12th June, 2003 on relinquishment of charge of the post of Additional Secretary & Financial Adviser to the Govt. of India, Ministry of Commerce and Industry, Deptt. of Industrial Policy and Promotion.

The Board places on record its deep appreciation of the valuable services and contribution made by Shri S.V.Bhave and Shri V.K.Malhotra, respectively.

In accordance with Article 67(i) of the Articles of Association of the Company, Shri A.C.Wadhawan, Dr. Anand Patkar and Shri G.P.Gupta retire by rotation at the ensuing Annual General Meeting and, being eligible, offer themselves for reappointment.

In compliance of Clause 49 VI (A) of the Listing Agreement, a brief resume of the Directors proposed for appointment and re-appointment, nature of their expertise in specific functional areas and names of Companies in which they are Directors is given in Annexure-5 forming part of the Directors' Report.

#### **DIRECTORS' RESPONSIBILITY STATEMENT**

Pursuant to Section 217(2AA) of the Companies Act, 1956, it is hereby confirmed:

- (i) that in the preparation of the annual accounts for the financial year ended March 31, 2003, the applicable Accounting Standards have been followed along with proper explanation relating to material departures;
- (ii) that the directors have selected such accounting policies and applied them consistently and made judgments and estimates that were reasonable and prudent so as to give a true and fair view of the state of affairs of the Company at the end of the financial year 2002-2003 and of the profit or loss of the company for that period;
- (iii) that the directors have taken proper and sufficient care for the maintenance of adequate accounting records in accordance with the provisions of the Companies Act, 1956 for safeguarding the assets of the Company and

for preventing and detecting fraud and other irregularities;

- (iv) that the directors have prepared the annual accounts for the financial year ended March 31, 2003 on a 'going concern' basis.

#### **AUDITORS**

Pursuant to Section 619(2), as amended by the Companies (Amendment) Act of 2000, the Auditor of a Government company, as defined in section 617 of the Companies Act, 1956, shall be appointed or reappointed by the Comptroller and Auditor General of India. In terms of clause (aa) inserted in sub-section (8) of section 224 by the Amendment Act 2000, the remuneration of the auditor of the Government Company has to be fixed by the company in the Annual General Meeting. The General Meeting may, instead of fixing the remuneration of Auditors, authorise the Board of Directors in this behalf.

#### **ACKNOWLEDGEMENTS**

The Board places on record its deep-felt appreciation towards the Company's valued customers in India and abroad for the support and confidence reposed by them in the organisation and looks forward to the continuance of this mutually supportive relationship in future.

The Board also gratefully acknowledges the support and guidance received from various ministries of the Government of India, particularly the Department of Heavy Industry, in Company's operations and developmental plans. The Directors express their grateful thanks also to the Comptroller and Auditor General of India, Chairman and Members of Audit Board, Statutory auditor and branch auditors. The Company also wishes to place on record its appreciation of the continued co-operation received from all the technical collaborators and suppliers and support provided by the Financial Institutions and bankers. The Board wishes to record its deep gratitude to all members of the BHEL family whose enthusiasm, dedication and co-operation has made the achievement of a satisfying performance possible.

**For and on behalf of the Board of Directors of  
BHARAT HEAVY ELECTRICALS LTD.**

**Sd/-**

**K.G. RAMACHANDRAN  
CHAIRMAN & MANAGING DIRECTOR**

**Place : New Delhi**

**Dated : 22nd August, 2003**



## ANNEXURE-1 TO THE DIRECTORS' REPORT

### MANAGEMENT DISCUSSION AND ANALYSIS FINANCIAL OPERATIONS

Turnover in 2002-2003 touched an all time high of Rs. 74822 million against Rs. 72866 million in 2001-2002, an increase of 2.68%. On the Order Book front, Power Sector booked orders worth Rs. 68800 million in 2002-2003 as against Rs. 70903 million in 2001-2002, a marginal decrease of 2.97%. Industry Sector procured orders worth Rs. 28920 million during the year as compared to Rs. 19650 million in 2001-2002, an increase of 47.18%. Export Orders worth Rs. 14550 million were booked during 2002-2003 as compared to Rs. 8000 million in 2001-2002, an increase of 81.88%.

Value addition for the year 2002-2003 stood at Rs. 32475 million as against Rs. 30740 million for the year 2001-2002, registering an increase of 5.64%.

Profit before tax for the year stood at Rs. 8024 million and is higher by 21.06% compared to profit before tax of Rs. 6628 million in 2001-2002. Gross margin as a percentage of value of production (net of excise duty) increased to 15.21% as against 13.77% in 2001-2002. Profit before tax as a percentage of value of production increased from 9.82% in 2001-2002 to 11.70% in 2002-2003.

Profit after tax at Rs. 4445 million has decreased by 5% over the previous year's Profit after tax of Rs. 4679 million, due to additional provision of income tax relating to earlier years.

Due to efficient management of Working Capital, net working capital (other than cash and bank balances) decreased by Rs. 5899 million during the year. The factors contributing to the decrease are:

- Decrease in Sundry debtors by Rs. 5083 million over previous year.
- Decrease in other current assets, loans and advances by Rs. 459 million.
- Increase in Other current liabilities and Provisions by Rs. 1769 million.

However, increase in inventory (by Rs. 69 million), decrease in Advances from customers (by Rs. 938 million) and decrease in Creditors (by Rs. 405 million) have marginally offset the decrease in working capital.

In terms of number of sales days, Sundry debtors declined from 230 days in 2001-2002 to 199 days in 2002-2003. Inventory in number of days of turnover declined from 100 days in 2001-2002 to 98 days in 2002-2003.

Total borrowings declined from Rs. 6658 million in 2001-2002 to Rs. 5310 million in 2002-2003, a decrease of Rs. 1348 million resulting in decline in Debt-equity ratio from 0.16 in 2001-2002 to 0.11 in 2002-2003. Equity remained at Rs. 2448 million. Net worth increased by Rs. 4879 million to Rs. 47082 million. Cash and bank balances at the year-end stood at Rs. 13209 million as against Rs. 4766 million at the end of last year.

### POWER SECTOR

□ During the year, Power Sector secured orders worth Rs. 68800 million for supply and installation of total 3521 MW Generating Equipment, Plant Performance Improvement Business, Services and Spares. Orders for supply and installation of 1564 MW Hydro equipment received during the year were the highest ever.

Significant orders received including those against International Competitive Bidding (ICB) were:

#### ● Thermal (1920 MW):

- Parichha (2x210 MW) - Turnkey order from Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd. (UPRVUNL) on negotiated basis for supply, erection and commissioning of complete Power Plant Equipment and complete Civil Works.
- Birsinghpur (1x500 MW) - Turnkey order from Madhya Pradesh State Electricity Board (MPSEB) on negotiated basis for supply, erection and commissioning of Boiler and TG packages, C&I besides complete civil and structural works.
- Vindhyachal (2x500 MW) - The single largest value order ever from National Thermal Power Corporation (NTPC) for Boiler and TG packages, BOPs, C&I etc. on negotiated basis.

#### ● Gas CCP (37 MW):

- Valantharavai CCP (55 MW) - Order from M/s Arkay Energy for supply of Fr 6B GT (37 MW) on negotiated basis.

#### ● Hydro (1564 MW):

- Parbati HEP (4x200 MW) - The first Mega Power Project order was bagged by BHEL from National Hydro Power Corporation (NHPC) on International Competitive Bidding (ICB) for design, manufacture, supply, installation and commissioning of complete electro mechanical works for the project.



- Turial HEP (2x30 MW) - Order for Japanese Bank for International Cooperation (JBIC) funded project from North Eastern Electric Power Corporation (NEEPCO) on ICB basis, for supply, installation and commissioning of Francis Hydro Turbines with matching Generators, Generator Transformers and Balance of Plant.
  - Maneribhali ST II HEP (4x76 MW) - First order received from Uttaranchal Jal Vidyut Nigam Ltd. (UJVNL) on negotiated basis for supply, erection and commissioning of Francis Hydro Turbines with matching Generators and associated equipment.
  - Koteswar HEP (4x100 MW) - Order from Tehri Hydro Development Corporation on ICB basis for supply, erection and commissioning of Francis Hydro Turbines with matching Generators and associated equipment.
  - **Plant Performance Improvement Business (PPIB)**
    - Order received from Gujarat Electricity Board (GEB) for carrying out Residual Life Assessment (RLA), Condition Assessment (CA), Life Extension Study (LES) and Performance Evaluation Testing (PET) of Ukai TPS 2x210 MW.
    - Order received from Assam State Electricity Board (ASEB) for conducting RLA study of all the 4 units of 60 MW each at Bongaigaon TPS.
  - **Spares/Renovation & Modernisation (R&M)**
    - Total orders worth Rs. 6220 million for Operation & Maintenance/R&M spares were booked during the year, which was the highest in any year.
  - **O&M Business**
    - In line with market requirements, BHEL has made a foray into the area of Operation and Maintenance (O&M) of Power Plants by securing the first O&M contract for 120 MW unit at Chandrapura TPS of Damodar Valley Corporation (DVC).
- During the year, BHEL added 20 utility sets totalling 1960 MW to the country's installed electric power generating capacity. With this, BHEL built sets now account for 69130 MW, which is nearly 65% of Country's total installed capacity. Thermal sets commissioned during the year were Simhadri - (1x500 MW) in Andhra Pradesh, Raichur (1x210 MW) in Karnataka and Talcher (1x500 MW) in Orissa. In addition, gas based sets of 225.8 MW at Pragati in Delhi, 75.3 MW at Ramgarh in Rajasthan, 21 MW each at Baramura and Rokhia in Tripura and 94 MW at Perungulam in Tamil Nadu were commissioned.
- In addition to the above, 8 industrial sets of 249 MW were commissioned in the country.
- 1 hydro set of 15 MW at Kurichu in Bhutan was also commissioned during the year.
- BHEL created new benchmarks by :
- Synchronising 500 MW unit at Talcher-III in 38 months from the award of main equipment, against earlier record period of 39 months at Simhadri-I.
  - Synchronising, including coal firing, of 210 MW Thermal set at Raichur unit 6 in 25.8 months, against earlier best of 28.9 months of Raichur unit 5.
  - Completing 1000 MW Mega Greenfield Thermal project on turnkey basis at Simhadri in 45 months from zero date.
- The overall performance of BHEL thermal sets was better than the national average. BHEL supplied units operated at an all time high performance during the year.
- BHEL thermal sets achieved **highest ever Plant Load Factor (PLF) of 74.1%**, which is 1.9% higher than national average. (72.2%)
  - The combined PLF of BHEL 500 / 250 / 200 / 210 MW thermal sets which form the backbone of country's electric power generating capacity registered the **highest ever PLF of 79.6%**. Operating Availability (O.A.) of these sets, at 88.1%, **was also the highest.**
  - 200 / 210 MW, 250 MW and 500 MW BHEL Thermal sets recorded the **highest ever PLF of 78.1%, 90.5% and 82.3% respectively**, during the year.
  - 147 BHEL supplied thermal sets achieved PLF of over 70%. Of these, 39 sets registered PLF of over 90% and 67 sets achieved PLF between 80 - 90%.
  - 107 BHEL thermal sets clocked uninterrupted operation of more than 90 days, out of which 12 sets ran continuously for more than 200 days during the year.
  - Forced outages of BHEL Thermal sets attributable to failures of BHEL equipment has reduced drastically over the years. It was 12.5% in 1986-87, 8% in 1989-90, 5% in 2000-01, 4.8% in 2001-02 and 4% during 2002-03.
  - Unit availability of BHEL hydro sets during the year was 97.92%.



- ❑ BHEL continued its endeavour to render efficient customer service aimed at facilitating uninterrupted power supply and keeping power plants in good running condition. During the year, BHEL overhauled 101 thermal utility and industrial sets including 14 non-BHEL sets covering various products like boilers, TGs and auxiliaries.
- ❑ BHEL overhauled Siemens make (non-BHEL) TG at Bhusawal to restore it to its designed capacity of 62.5 MW, earning appreciation from the customer — Maharashtra State Electricity Board (MSEB). The Unit was generating maximum of 40 MW prior to overhauling.
- ❑ BHEL revamped 120 MW Polish make TG of MSEB / Koradi TPS resulting in the set achieving its full rated capacity as against restricted loading of 90-95 MW for last many years.
- ❑ Kothagudam Unit 6 which was running at derated capacity of 105 MW from its original capacity 110 MW was refurbished during the year and uprated to 120 MW.
- ❑ Rehabilitation work of 110 MW at Panipat was completed and machine synchronised successfully during the year after job had been abandoned mid-course by another party.

## INDUSTRY SECTOR

Industry Sector booked orders for Rs. 28920 million during the year 2002-03 as against Rs. 19650 million achieved last year. Overall success rate of over 60% has been achieved during the year. BHEL has made inroads in the new areas of business and booked sizable orders worth Rs. 3500 million for new products.

### Major business highlights are as under:

- IOC continued to repose trust in BHEL, with major orders for Fr5 GTG based captive power plant for their operations at Mathura. Orders for 31.4 MW and 5.6 MW STG based cogeneration plant from Hindustan Aluminium Company (HINDALCO) and 275 TPH PF Boiler from Bharat Aluminium Company (BALCO) have been secured. Orders for STGs and boilers have been secured from Reliance, Rourkela Steel Plant and ITC Bhadrachalam, as well as projects from Sugar industry.
- Prestigious orders were received for 3 natural gas compressors from GAIL India for their Dahej-Vijaipur Pipeline Project. Other compressor orders include Hydrogen Recycle Gas Compressor from BPCL, Mumbai, Wet Gas Compressor from Chennai Petro Chemicals Ltd. (CPCL), Chennai and two Recycle Gas Compressors from

- Indian Oil Corporation Ltd. (IOCL), Panipat Refinery Expansion Project. BHEL has retained its market share of over 90% for wellheads and X-mas tree valves.
- BHEL and ONGC entered into an MOU for Supply, Refurbishment and Upgradation of various Oil Field Equipment required by ONGC. For the current year, a significant order from ONGC for refurbishment of 12 oil rigs has been secured.
- BHEL maintained its market share at over 70% for industrial machines and alternators - major orders include 16 vertical motors of 2800 kW, 1500 rpm, 6.6 kV for coolant water pumps from Nuclear Power Corporation India Ltd.
- Shortage of resources with Indian Railways continued the crunch on rolling stock demand. Thus, the order booking for transportation sector has been severely affected. Major orders include, 20 sets of electric traction equipment for 25 kV BG AC EMU from Rail Coach Factory (RCF), Kapurthala.
- Single largest order for transmission project was received from Tamil Nadu Electricity Board (TNEB), Almaty for 400/220/110 kV Switchyard with 400 kV transmission line. Other major transmission project orders include 400/220/132 kV Substation at Baripada from Powergrid, 400 kV Switchyard at Kaiga from Nuclear Power Corporation, 400/220 kV substation at Jodhpur from Rajasthan Rajya Vidyut Nigam Limited and 220/132 kV substation at Roorkee from Uttaranchal Power Corporation Limited. Order for Fixed Series Capacitor for 400 kV substation Jeypore-Gazuwaka D/C Line, Rengali-Indravati S/C Line and Meramundali-Jeypore S/C Line have been secured. In the area of transmission products, major orders include 10 Auto Transformers of 100 MVA, 220 kV and 374585 Disc Insulators of 90 kN from GEB Baroda, 3 Auto Transformers of 315 MVA from MPSEB, Jabalpur and 8 Auto Transformers of 100 MVA from Rajasthan Rajya Vidyut Utpadan Nigam Limited.
- Orders for 3 SRGMs have been secured from Ministry of Defence.
- BHEL made an entry in the area of Coal Handling Plant by securing an order from NTPC for Engineering, Supply, Erection, Testing and Commissioning of Coal Handling Plant for Rihand Super Thermal Power Plant-Stage II (2x500MW) on turnkey basis. This is a major breakthrough for BHEL's ISG unit in executing complete Coal Handling system on turnkey basis. Orders for desalination

plant from Airport Authority of India Limited, Chennai and Ash-Water Re-circulation system from NTPC, Rihand have been secured.

## INTERNATIONAL BUSINESS

- Highest-ever physical export order booking of Rs. 14550 million was achieved during the year 2002-2003. This achievement reflects the continuation of momentum achieved during last five years as a result of company-wide thrust being given to overseas business.
- During the year, BHEL secured orders for following prestigious project orders in diverse product areas, thus further expanding its export basket:
  - ❖ **Order for setting up of a 4x156.1 MW Gas based power station in Libya on turnkey basis.** This order, comprising four V94.2 Gas Turbine Generating equipment, is the single largest overseas order ever received by BHEL.
  - ❖ **First ever overseas order for Advanced Class Gas Turbines- 2xFrame 6 FA Gas Turbine based 140 MW (ISO Rating) turnkey power project on EPC basis.** This order was received from Petroleum Development Oman (PDO), on the basis of Online Internet Bidding. The success in such a large project through On-line Internet Bidding is expected to give further impetus to e-commerce initiatives in the Company.
  - ❖ **Supply and supervision of 20 MW Steam Turbine based Co-Generation Project at Indonesia** - This is the first order for Steam Cycle based Thermal Power Project in South East Asia, having earlier set up Hydro and Gas Turbine based power plants in that region. The scope of Project also involves maiden export orders for "Fluidised Bed Combustion Boilers", "Electrostatic Precipitators" and "new generation maxDNA Distributed Controls system".
  - ❖ **Supply and Supervision of 1x68 MVA Hydro Turbine Generator and Auxiliaries including Plant C & I for Bihai Hydro Electric Plant, from Taiwan Power Company, Taiwan.** With this order, BHEL has further expanded its presence in the Hydro Power Area, having earlier supplied Hydro Power Plant Equipment to New Zealand, Thailand, Malaysia, Azerbaijan, Nepal and Bhutan.
- Other notable export orders received during the year included:
  - Transformers from Malaysia, Bangladesh, Greece and Kazakhstan;
  - Valves and Soot Blowers from Kuwait, Iran, Ghana and Indonesia;
  - Solar Cells from Italy and Australia;
  - Insulators from USA, Oman, Ireland and Australia;
  - Motors from Bangladesh.
- Continued focus on After Sales Services led to orders for Spares & Services from Oman, Azerbaijan, Kazakhstan, Thailand, Libya, Bangladesh, China, Malta, Malaysia, Greece, Sri Lanka and Saudi Arabia.
- As a part of its efforts to become a sourcing centre for OEMs/MNCs, orders were received for supply of control equipment from ABB and Siemens and for Insulators from Alstom.
- With a view to further enhance its overseas business prospects, the following Memoranda of Understanding (MOU) were signed by BHEL during the year 2002-2003:
  - MOU with EM-Rail, Malaysia for joint participation in business opportunities for "*Rehabilitation of Traction electrics and Diesel Electric Locos in Malaysia*".
  - MOU with M/s SKODAEXPORT, Czech Republic for joint participation in "*Power generation, Transmission and Transportation projects outside India*".
- Major overseas orders executed during the year include:
  - Commissioning of first 159 MW (ISO rating) Gas Turbine Generator set at Baiji, Iraq, against an order for four such units, covered under the United Nations' Oil for Food Programme. Supplies for all the units have been completed.
  - Commissioning of 123 MW (ISO rating) Gas Turbine Generator set at Shenzhen Nanshan Power Station in China, under BHEL supervision, in a record time of just 35 days.
  - Commissioning of 123 MW (ISO rating) Gas Turbine Generator set at Kelanitissa CCPP of AES in Sri Lanka, and supplies for 57 MW Steam Turbine.
  - Despatch from works of 2 x 123 MW (ISO rating) Gas Turbine Generator sets for Rumaila Open Cycle Power Plant in Iraq, to SITEA International, Switzerland.
  - Despatch from works of first-ever 70 MW (ISO rating) Advanced Class Gas Turbine Generator set under EPC Contract for Qarn Alam Power Project, Petroleum Development Oman.

*Each one of the above projects signifies a major step towards further consolidation in International Business.*





## CAPITAL INVESTMENT

In our continued efforts to upgrade the manufacturing technology and facilities, capital investment of Rs. 1617 million was made on plan capital programmes during the year 2002-03. The thrust of investment was on completion of the ongoing product modernisation schemes and also on replacement and up-gradation of ageing facilities. To meet the increasing intensity of competition, the investment planned for the year 2003-04 is directed towards completing the on-going modernisation schemes and adopting need based upgradation of facilities for select products to improve product quality, reduce cycle time and cost, and for development and introduction of new manufacturing technologies.

Highlights of the major schemes are as follows:

### At Electronics Division/ Bangalore:

- Manufacturing capability for offering latest C&I technology (maxDNA) for power station controls/ automation established (Rs. 139 million). Orders worth about Rs. 4000 million obtained based on this new technology.

### At HEEP & CFFP/ Haridwar Units:

- A modern, air-conditioned 'State-of-the-Art' Blade Shop was established for manufacturing advanced design steam turbine blades for 210/250/500 MW sets with higher turbine efficiency and lower heat rate (Rs. 727 million).
- Modernisation of Steam Turbine Manufacturing facilities (Rs. 565 million) for introduction of new series of two cylinder steam turbines and super-critical parameter steam turbines of 660MW and above rating, under execution.
- Modernisation of Generator Manufacturing facilities (Rs. 710 million) in progress to equip with latest facilities for manufacture and supply of TG sets, including 660 MW rating.
- Fume Extraction and Dust Collection system at CFFP/ Haridwar (Rs. 61 million) in progress - for a cleaner work environment and to meet statutory emission norms.

### At Trichy Unit:

- 6.2 MW Integrated Gasification Combined Cycle plant being refurbished (Rs. 40 million) for undertaking certain Tests and long duration Operation. This is a preparatory step towards taking up a national R&D project viz. 100 MW IGCC Demonstration Plant at one of the NTPC's Power Station sites.

### At HPEP/ Hyderabad unit:

- Test bed and assembly space for Large size Gas Turbines (Rs. 72 million) being established to reduce cycle time for assembly and testing of different models.
- Facilities being established to enable in-house manufacture of Gas Turbine Nozzle Segments and Buckets (Rs. 324 million).

### At PS-ER, Kolkata office:

- BHEL owned office complex was constructed at Salt Lake, having an office area of 3200 sq.meters.

These schemes will enable the company to modernise the facilities and upgrade its manufacturing technology to contemporary levels.

With these modernisation schemes, BHEL installed 14 CNC machines during the year, leading to a total of 311 CNC machines. These constitute about one third of total gross block of Plant & Machinery.

## Science & Technology:

In our drive to develop new technologies for the existing and new products/ systems, in the year 2002-03 Company has spent about Rs. 53 million on capital Science & Technology schemes such as Virtual Prototyping/ Virtual Reality system & Residual life analysis of Transformers.

Further, setting up of Centre of Excellence for Computational Fluid Dynamics (CFD) - Rs. 84 million, Centre of Excellence for Simulators for Power plants & Industries (Rs. 38 million) and Development of 100KW High Energy High Velocity Plasma Spray (HEHVPS) facility (Rs. 14 million) are under implementation.

## 10th Plan Period Capital Investment:

BHEL has plans to invest Rs. 7000 million during the 10th Five Year Plan period. Rs. 1617 million were spent in first year of the plan. Investment of Rs. 1803 million is planned in the year 2003-04, which includes modernisation of facilities in the following major product areas:

- Modernisation of Hydro Product manufacturing facilities at Bhopal (being implemented at an estimated cost of Rs. 406 million)
- Augmentation of facilities for advanced class and large size gas turbines, Modernisation of Pumps, Compressors, Steam Turbines and Generators at Hyderabad
- Up-gradation of Solar Photovoltaic manufacturing technology at EDn, Bangalore
- Facilities for manufacture of Composite Insulators at CBU, Bangalore

### **Reconditioning & Retrofitting Efforts:**

Thrust is also continuing towards enhancing the life of existing facilities by way of re-conditioning, renovation, up-gradation and retrofitting. In the year 2002-03, about Rs. 286 million was spent on such activities and Rs. 380 million is planned for the year 2003-04.

### **JOINT VENTURES**

The two Joint Venture Companies promoted by BHEL viz. "BHEL-GE Gas Turbine Services Ltd." (BGGTS) with GE, USA for repair & servicing of GE designed Gas Turbines and "Powerplant Performance Improvement Ltd." (PPIL) with Siemens AG, Germany for plant performance improvement of old fossil fuel power plants, have now completed five full financial years of operation.

BGGTS achieved a sales turnover of Rs. 2100 million during the year 2002-03 with a Profit After Tax of Rs. 227 million. Orders of Rs. 2000 million were booked by BGGTS during the year. The Repair Facility of BGGTS at Hyderabad has been duly certified as "GE Authorised Repair Facility" after having demonstrated its ability to meet GE's specification for Gas Turbine components repair. BGGTS has paid a final dividend of 235% for the year 2001-02 and an interim dividend of 350% for 2002-03.

During the year 2002-03, PPIL recorded a sales turnover of Rs. 204.5 million with order booking of Rs. 24.3 million. As against a profit after tax of Rs. 3.2 million last year, PPIL recorded a profit after tax of Rs. 0.05 million during the year. PPIL operates in a highly competitive market. The non-availability of resources with SEBs to undertake Renovation and Modernisation of their power plants has been a major constraint in securing new orders. Even where resources could be tied up, SEBs are not in a position to shut down plants due to tenuous demand-supply position, thus deferring new orders. The sluggish growth in the market has affected PPIL's performance.

### **R&D AND TECHNOLOGICAL ACHIEVEMENTS IN 2002-2003**

During the year, a turnover of Rs. 5275 million was achieved by commercialising products and systems developed through in-house Research and Development (R&D).

An amount of Rs. 732 million was spent on R&D programmes, focusing on new product and system development and improvements in existing products for cost effectiveness and higher reliability, efficiency, availability, quality, etc. In addition, an expenditure of Rs. 85 million has been incurred for purchase of capital assets for R&D programmes.

Some significant developments during the year are as follows:-

- BHEL has developed a new Series Compensation scheme, involving thyristor controlled reactors, popularly known as Flexible AC Transmission System (FACTS), for enhancing the power transfer capability of transmission lines and reducing transmission losses. Phase I of this Project, fixed series compensation, has been completed at Power Grid's Ballabgarh substation for the Kanpur-Ballabgarh 400 kV transmission line. BHEL is now executing Phase II of the Project (variable compensation) to establish the technology developed in-house. This project, scheduled to be commissioned shortly, will be the sixth such project in the world. With the success of this project by BHEL, India will have the honour of joining the select group of countries that have FACTS technology.
- To reduce O&M costs during varying operating conditions, BHEL has developed a software package for Performance Analysis, Diagnostics and Optimisation (PADO) of Power Plants. This development has opened a new line of business for BHEL.
- A Blast Furnace Gas (BFG) firing system has been developed for a 65 tonnes per hour boiler at Konark Metcoke Ltd., Orissa. Blast Furnace Gas is a by-product of the steel production process, which normally goes waste. Its use for steam generation improves the overall efficiency of the steel plant.
- BHEL has successfully manufactured and handed over Space Grade Solar Photovoltaic Panels to the Indian Space Research Organisation (ISRO) for use in its space missions. The recently launched satellites, INSAT 3A and GSAT 2, are equipped with one solar panel each from BHEL. The company has also entered into an MOU with ISRO for assembly and testing of Space Quality Batteries.
- BHEL has developed an aerofoil bladed radial fan for 210 MW or 250 MW thermal sets, which is more efficient than conventional straight bladed fans.
- An Intellicom protocol converter has been developed which enables centralised operation of electrostatic precipitators (pollution control devices) in a thermal power station, thereby reducing the manpower required for their operation. Intellicom converters have been installed at ITC Bhadrachalam, Bannari Amman Sugars and Aditya Cements.



- A New Generation Digital Voltage Regulator for excitation control of generators has been developed which provides better response, reliability and self-diagnostics, compared to the earlier design. 12 sets have been supplied to Uttaranchal Jal Vidyut Nigam Ltd. for renovation and modernisation of hydroelectric power plants. A prototype had earlier successfully undergone field trials for two years at Bhadra HEP (6 MW)
- For the first time in India, BHEL has developed 20 kV HVDC capacitors. These capacitors are used in filter banks to reduce harmonics in HVDC systems.
- BHEL has established the technology for manufacturing stator-winding bars with continuous VPI (Vacuum Pressure Impregnated) insulation for hydro-generators. The VPI system for hydro-generator windings is a monolithic void free continuous (end to end) insulation. The advantages are: reduction in insulation thickness, improved heat transfer, possibility of reduction in over hang length, improved moisture resistance and overall improvement in quality and reliability. Two hydro generators based on this technology have been manufactured, tested and supplied for 2X42 MW Larji HEP.
- An upgraded boiler feed pump (200 KHI) suitable for 110 and 210 MW thermal power stations, based on the design of M/s Sulzer, has successfully completed field trials. This resulted in an order for eight numbers of upgraded BFPs from APGENCO and opens up a potential business for upgrading about 250 existing old Czech design BFPs. The upgraded pumps, with cartridge design for easier maintainability, increased reliability etc., have an efficiency of 80%, compared to existing 72% (Czech design).

## **HUMAN RESOURCE MANAGEMENT**

### **1. Industrial Relations**

The Industrial Relations at various Units and service Divisions of the Company were harmonious and cordial during the year under report. Thrust to develop and nurture the participative culture in the Company continued during the current year also. The elections of the Unions through secret ballot at various Manufacturing and Service Divisions for representation at the apex level Joint Committee were held in July, 2002. Accordingly, Joint Committee for BHEL was reconstituted. Subsequently, a seminar for the orientation of new members of the reconstituted Joint Committee and familiarisation with the issues related to the Company was held at Hyderabad for 2 days in October, 2002.

A two days' workshop was also conducted in November, 2002 for Supervisors and Executives on Enhancing Organisational Effectiveness. The objective of the workshop was to bring about better understanding and appreciation of the issues being faced both by the Company and the employees.

The apex level bipartite forum viz. Joint Committee for BHEL held 3 meetings while the Plant and Shop Councils held 51 and 236 meetings respectively during the year at various Units of the Company.

### **2. BHEL Excel Awards 2001-02**

Inspired by the ideal of 'Yoga Karmasu Kaushalam', the Board of Directors of BHEL in its 320th meeting held on 30th October, 2000, took a historic step by approving BHEL Excel Awards Scheme to institutionalise the culture of Excellence in BHEL. The first such awards were presented for 2000-01 on 13th January, 2002. The objective of the scheme is to recognise, reward and place on record any direct or indirect outstanding and exemplary contribution by the employee towards growth and profitability of the company. The scheme stipulates the following nine categories of awards, each valuing up to Rs. 50,000 in case of an individual, and up to Rs. 5 lakh in the event of a group/team winning the award.

1. BHEL Utkrishthta Puraskar
2. BHEL Gunvatta Puraskar
3. BHEL Tatparta Puraskar
4. BHEL Utpadakta Puraskar
5. BHEL Utkrishtha Takniki Lekh Puraskar
6. BHEL Anusandhan Puraskar
7. BHEL Srijanatmakta Puraskar
8. BHEL Grahak Santushti Puraskar
9. BHEL Paryavaran/Samaj Seva/Sanskriti/Khel Puraskar

While the first eight awards are for the company employees only, the ninth award covers spouses and dependent children of the employees also.

The Scheme also stipulates Swasth Karamchari Samman which are given to employees in appreciation of good health. The Samman is at the unit level for employees who do not claim any medical reimbursement for self and also do not avail any leave on account of sickness in the previous financial year.

The 106 nominations, received from various units/divisions for the year 2001-02 were scrutinised and short listed by a Screening Committee. The short listed entries were evaluated by the Jury constituted by CMD. The awards have been announced in 8 categories to a total of 50 employees/family members and 2 token awards in

recognition of individual skills. Their outstanding contribution is hailed as a significant milestone in BHEL's journey towards excellence. A word of appreciation to all those who participated and shown the zeal to excel. The journey of excellence will go on unabated with ever increasing vigour.

### **3. Awards won by BHEL Units and Employees during 2002-03**

#### **SCOPE Award for Excellence and Outstanding Contribution to the Public Sector Management - Individual Category.**

Shri K.G.Ramachandran, Chairman and Managing Director, has won the coveted SCOPE Award for Excellence and Outstanding Contribution to the Public Sector Management, for the year 2001-02, in his individual capacity for his outstanding contribution to Public Sector management. The award carries a cash amount of Rupees One Lakh and a Golden Plaque.

#### **"Achiever of the Year Award" by CHEMTECH Foundation**

Shri K.G.Ramachandran, Chairman and Managing Director, has been awarded the "Achiever of the Year Award" by CHEMTECH Foundation, in recognition of his contribution to industry, under the category of Power Plant and Machinery Industry. He was unanimously selected by the awards committee, comprising some of the most prominent industrialists of the country.

#### **Prime Minister's Shram Awards**

Prestigious "Prime Minister's Shram Awards" instituted by Ministry of Labour namely Shram Bhushan, Shram Vir and Shram Shri have been won by four BHEL employees for the year 2002. This is the highest number of awards won by BHEL since the inception of the awards in 1985.

#### **Vishwakarma Rashtriya Puraskars**

Six Vishwakarma Rashtriya Puraskars, for the year 2000 were won by 19 employees of BHEL. The award is instituted by Ministry of Labour.

#### **National Safety Awards**

Four BHEL Units, i.e. Tiruchy, Hyderabad, Electronics Division - Bangalore and Electroporcelains Division - Bangalore, won National Safety Awards for the year 2000. The award is instituted by Ministry of Labour.

#### **"Excellence in Energy Management"- CII Awards**

HEEP-Haridwar Unit has been awarded a certificate in the category of an "Energy Efficient Unit", along with other companies, in the competition held in December, 2002 at Chennai by CII.

### **INSSAN Awards**

Hyderabad Unit has won the first prize for Excellence in Suggestion Scheme, Best Suggestor Award and two Best Slogan Awards in the INSSAN National Convention for the year 2002. These awards are instituted by the Indian National Suggestion Scheme Association (INSSAN). The details of the awards won by Hyderabad Unit are:

- a) Excellence in Suggestion Scheme (Group III) — 1st
- b) Best Suggestor Award
- c) Best Slogan Award (Hindi)
- d) Best Slogan Award (English)

### **4. Human Resource Development**

During 2002-03, 40466 participants were exposed to different training programs in our various training Centers at Units as well as at apex level in NOIDA. Besides, 3700 Act Apprentices and 1300 Technician Apprentices were also provided with training at our Units, as part of fulfillment of our social obligation towards the society. Also, towards our ongoing efforts for higher customer satisfaction, around 1100 customers' personnel were provided training inputs on our products at Training Centers in the Units.

### **5. Activities of the company for welfare and advancement of Scheduled Castes (SCs) and Scheduled Tribes (STs)**

The company has been following the Presidential Directives and guidelines issued by the Government of India from time to time regarding reservation for SCs and STs in letter and spirit. During the year, the various Community Development activities focused on Socio-Economic development of SCs and STs have been carried out by BHEL in the 56 villages adopted by it.

#### **Representation of SC/ST employees**

The representation of SC/ST employees in total manpower was 18.13% and 3.73% for SCs and STs respectively as on 1/1/2003.

The group - wise strength of SC/ST employees is given at Annexure - A.

#### **Recruitment of SCs and STs during 2002**

The group wise recruitment data is given at Annexure - B.

#### **Promotion of SC/ST employees during 2002**

The group wise promotion data is given at Annexure - C.

### **6. Manpower strength of Physically Challenged employees as on 1st January, 2003**

The group wise manpower strength of Physically Challenged employees in the Company as on 1st January, 2003 is given at Annexure - D.



#### ANNEXURE-A

##### STATEMENT SHOWING THE TOTAL NUMBER OF EMPLOYEES AND THE NUMBER OF SCHEDULED CASTES AND SCHEDULED TRIBES AMONGST THEM AS ON 01/01/2003

Group/Class	Total No. of Employees	Scheduled Castes	Percentage to Total Employees	Scheduled Tribes	Percentage to Total Employees
Group A	11851	1429	12.06	432	3.65
Group B	10672	1324	12.41	287	2.69
Group C	21233	4743	22.34	941	4.43
Group D	3179	1011	31.80	89	2.80
<b>Total</b>	<b>46935</b>	<b>8507</b>	<b>18.13</b>	<b>1749</b>	<b>3.73</b>

#### ANNEXURE-B

##### STATEMENT SHOWING THE NUMBER OF RESERVED VACANCIES IN DIRECT RECRUITMENT FILLED BY MEMBERS OF SCHEDULED CASTES AND SCHEDULED TRIBES DURING THE YEAR 2002

Class of Post	No. of Vacancies filled	No. of Vacancies Reserved		No. of Vacancies Filled		No. of Vacancies exchanged	
		SC	ST	SC	ST	SC	ST
A	267	39	18	41	19	0	0
B	0	0	0	0	0	0	0
C	56	10	3	14	0	0	0
D	1	0	0	0	0	0	0
<b>TOTAL</b>	<b>324</b>	<b>49</b>	<b>21</b>	<b>55</b>	<b>19</b>	<b>0</b>	<b>0</b>

#### ANNEXURE-C

##### STATEMENT SHOWING THE TOTAL NUMBER OF VACANCIES FILLED BY PROMOTIONS BY MEMBERS OF SCHEDULED CASTES AND SCHEDULED TRIBES IN BHEL DURING THE YEAR 2002

Group	Total No. promoted	Scheduled Castes	Percentage	Scheduled Tribes	Percentage
Group A	1939	248	12.79	66	3.40
Group B	1996	303	15.18	46	2.30
Group C	3295	758	23.00	133	4.04
Group D	297	116	39.06	4	1.35
<b>Total</b>	<b>7527</b>	<b>1425</b>	<b>18.93</b>	<b>249</b>	<b>3.31</b>

#### ANNEXURE - D

##### GROUP WISE STATUS OF PHYSICALLY CHALLENGED IN THE TOTAL MANPOWER AS ON 1 JAN., 2003

Group	Total No. of employees	No. of Physically Challenged
A	11851	61
B	10672	64
C	21233	261
D	3179	34



## **INTERNAL CONTROL SYSTEM**

The company has an adequate internal control procedure prescribed in various codes and manuals issued by the Management covering all important areas of activities viz. Budget, Purchase, Material, Stores, Works, Accounts, Personnel etc. These codes and manuals are updated from time to time. The Company has full fledged Internal Audit Cells located at manufacturing units and regional offices of the company which carry out audit as per annual audit programme approved by Director (Finance)/Board Level Audit Committee and monitored by Corporate Internal Audit. The prime objective of such audit is to check the adequacy and effectiveness of Internal Control System laid down in the prescribed codes and manuals of the company. Functioning of Internal Audit and adequacy of Internal Control System is reviewed by Unit Level Audit Committees and Board Level Audit Committee.

## **OPPORTUNITIES & THREATS**

### **World**

International investments in the electricity sector have slowed down in the recent years in both foreign electricity ventures and as foreign direct investment in the developing world. This is in part due to the sluggish state of the global economy and also because of unsatisfactory financial performance of many acquisitions in the electric power sector. The overall environment has led to a cautious approach by developers and new projects are taking longer to get off the ground. The move towards electricity market restructuring and reforms experiments is changing and some countries have delayed or modified their plans. The total worldwide order booking has been much below the manufacturing capacity leading to aggressive marketing by major global power plant equipment manufacturing players, who have been undergoing a phase of consolidation.

While there has been a drop in overall orders in the recent past, many developing nations are planning to expand their electricity infrastructure over the coming years. There is a promising market for new power equipment in a number of South-East Asian countries, Middle-East and Gulf Cooperation Council (GCC) countries. Moreover, there are global opportunities in servicing of generating machinery as well as distributed generation in the developing countries.

### **India**

#### **Power Sector**

The Ministry of Power has set a target for providing "Power for all by 2012", which will entail electrification of all villages

by 2007 and for all households by 2012. In this regard, a feasible power generating capacity addition of 41,110 MW is set during the 10th Plan period, as per Planning Commission, keeping in view the financial status of the Indian power sector and preparedness of projects. This will call for investment of about Rs. 2,000 billion on generation and on transmission, distribution & rural electrification of about Rs. 1,600 billion. In this context, the government has enhanced public funding for the sector in the 10th Plan outlay. Moreover, a sum of Rs. 400 billion has been earmarked as financial assistance to State Electricity Boards (SEBs) in the ongoing plan period.

While this scenario presents attractive opportunities for power plant equipment manufacturers, a major portion of the incremental capacity addition target can materialize only during the later years of the 10th plan. Private sector development has been slow in spite of good enthusiasm and incentives in this area.

The Central Government is also financially supporting distribution reforms through the Accelerated Power Development & Reforms Programme (APDRP) and for the 10th Five year Plan period, has approved extension of Accelerated Generation & Supply Programme (AG&SP). Furthermore, many States have signed tri-partite agreements with the Central Government and the Reserve Bank of India (RBI) towards settlement of dues owed by SEBs to the central utilities which would drive the reforms process and have a long-term beneficial impact on the power sector.

While coal as a fuel will continue to be the main stay of power in the medium and long term, government is working on suitable policy measures to improve hydro-thermal mix and developing hydropower at a faster pace. Hydro-electric initiative of the government outlines various proposals in this regard like higher budgetary support and speedier clearances. The new Renewable Energy Policy aims to provide electricity to remote villages through renewable stand-alone systems & local electricity grids. Life extensions, higher capacity factors, and capacity up-rating programmes are expected to offset some of the capacity losses in the electric power sector.

Enactment of the Electricity Bill 2003 will alter the way business is conducted in the Indian Power Sector as it will encourage competition in electric power distribution and give customer choices, which in turn will trigger an increased momentum and opportunities in the power transmission & distribution (T&D) segments as well as investments in power generation. The Act would provide a fillip to private players in generation as open access at the transmission level and direct sale to consumers would facilitate early financial closure of



Independent Power Producers (IPPs). This would also lead to a situation wherein liberalisation of captive power capacity is expected to initiate investments.

### Industry Sector

Domestic industrial production has showed an upward trend throughout 2002-03 and the manufacturing sector is showing signs of an upturn. In addition, the performance of the infrastructure industries has also been encouraging. The Index of Industrial Production (IIP) is showing a rising trend with the acceleration in the capital goods the sharpest from -3.4% in 2001-02 to 10.4% in 2002-03.

In 2003-04, the industrial climate is turning favourable as shown by various Industrial Outlook surveys which indicate improvement in the assessment of demand growth and capacity utilisation. However, many capital goods market segments have been affected by demand contraction, and various industrial projects in sectors such as Steel, Petrochemicals, Fertilizers etc. have not taken off. The refinery projects are getting delayed/ deferred while the investments in other industries are dependent upon infrastructure growth and utilisation of existing capacities already built up.

With the recent gas findings in the private & public sector, it is likely that newer power plants will be based on gas as fuel. Moreover, this will also trigger requirements for exploration & production equipment in the oil & gas sector - in particular, refurbishment of old rigs, requirement for new rigs as well as for pipelines, compressors etc.

### POSITIONING FOR THE FUTURE

BHEL has finalised a new Corporate Plan entitled 'Strategic Plan 2007', and steps are being taken to implement the initiatives outlined therein. The company has also revisited the Vision, Mission and Values statements which have been suitably modified and readjusted to reflect its current aspirations. In line with the corporate statements, the company is aiming for accelerated growth with suitable strategies and focus areas. In this context, a number of growth avenues having linkages with the company's core strengths have been identified by the company, such as:-

- Strengthening & extending core business of power generation, power transmission, transportation and industrial systems & products
- Leveraging existing strengths to enlarge its presence in certain areas like NCES, oil sector, desalination etc., and diversify into related areas like EPC, power plant O&M and After Market Services as value chain extensions

- Enter into new areas like Water Management, Pollution Control & Waste Management, Port Handling Systems, Simulators (Power and Process), Energy Conservation Systems, LNG terminals, etc.
- Leveraging the domain knowledge in power sector and process knowledge in certain industries and enter into IT software services for power sector and engineering applications as well as Industrial IT/ Automation
- Enter into continuous revenue stream businesses like power generation and transmission & distribution
- Increase in value addition from overseas businesses by focusing on after sales, R&M, O&M services, enhancing contribution from spares and positioning as a regular EPC contractor as part of globalisation/ export initiatives

### RISKS AND CONCERNS

In the global market environment, a major concern over whether developing countries can meet their goals in the electricity sector is how readily capital will become available to fund the needed investments.

The domestic power sector has not kept pace with the growth in demand with the result the country has faced energy and peaking shortages. In fact, only 19,015 MW power generating capacity addition against a target of 40,245 MW was achieved during the 9th Plan and main plant equipment for a substantial part of the capacity addition targeted for the 10th Plan is yet to be ordered.

Due to the inherent issues of the Indian power sector, the reforms initiated by the government may take some time before they gain momentum and organisations engaged in the business would face new set of uncertainties and complexities. Though the Electricity Act 2003 is strong on intent, State level preparedness to embrace reforms may still hold the key. The success of the same will depend on individual States and their Regulatory Commissions. Moreover, the Electricity Act 2003 may take some time to come into its own after amendments are incorporated into it. In addition, choices of fuel and power purchase agreements are issues of concern in the power sector.

The domestic industrial group of "machinery & equipment other than transport equipment" has continued to record subdued growth showing that despite industrial recovery, investments are yet to pick up.

Collaborators are increasingly restricting export territories under license agreements in order to protect their market share in territories outside India particularly where BHEL has built up references and strengths.



## **AUDITORS' REPORT**

To  
The Members of  
Bharat Heavy Electricals Limited  
New Delhi.

We have audited the attached Balance Sheet of Bharat Heavy Electricals Limited as at 31st March, 2003 and also the Profit and Loss Account and the cash flow statement for the year ended on that date annexed thereto. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with the Auditing Standards generally accepted in India. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatements. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

- I. The aforesaid Balance Sheet and Profit and Loss Account incorporate the accounts of the Corporate Office, Advance Research Project, Power Sector - Project Engineering Management & Marketing Group and Power Sector - Head Quarter at New Delhi, audited by us and the other Units, branches and offices/divisions, including foreign branches, not visited by us and audited by Branch Auditors appointed by the Comptroller and Auditor General of India.
- II. The reports on the accounts of the foreign branches, Regional and other offices have been considered by the Branch Auditors of the units/divisions in which the accounts of these foreign branches and Regional and other offices have been incorporated. The reports of the Branch Auditors have been furnished to us and have been considered by us for the purpose of framing our opinion on the said Balance Sheet and Profit and Loss Account of the Company.
- III. As required by the Manufacturing and Other Companies (Auditors' Report) Order, 1988, issued by the Company Law Board in terms of Section 227 (4A) of the Companies Act, 1956, we enclose in the Annexure a statement on the matters specified in paragraphs 4 & 5 of the said Order.

## **ANNEXURE-2 TO THE DIRECTORS' REPORT**

### **MANAGEMENT'S REPLY**



IV. Further to our comments in the Annexure referred to in paragraph III above, we report that :

(1) Excess depreciation of Rs. 288.56 lakhs has been provided, due to charging off "Fixed Assets" costing upto Rs. 10,000/- and those whose written down value is Rs. 10,000/- or less at the beginning of the year, on account of Accounting Policy No.9(iii). (Refer Note No. 4 of Schedule 19

(2) *The balances of Sundry Debtors, Creditors, Contractors, Advances, Deposits and stocks/materials lying with sub-contractors/fabricators are subject to confirmation and reconciliation. The consequential impact thereof, if any, on the accounts remains unascertained (Refer Note No. 25 of Schedule 19).*

(3) Attention is drawn to:

(i) Note No. 9(a) in Schedule 19 regarding disputed Income Tax demand relating to Assessment Year 1992-93 amounting to Rs. 24,974.61 lakhs.

(ii) Note No.15(a) & 15(b) of Schedule 19 regarding modification of accounting policy relating to liquidated damages and travel benefit of employees on retirement resulting in decrease in profit for the year by Rs.2,675.87 lakhs.

(4) We further report that, without considering the effect of paragraph 2 above and impact of earlier years on depreciation as mentioned in 1 above, the effect of which could not be determined, had the observation made by us in paragraph 1 above been considered, the Profit before tax for the year would have been Rs. 80,532.02 lakhs (as against the reported figure of Rs. 80,243.46 lakhs), Reserve & Surplus would have been Rs. 4,56,179.57 lakhs (as against the reported figure of Rs. 4,55,891.01 lakhs), and total Net Block of fixed assets would have been Rs. 1,17,338.72 lakhs (as against the reported figure of Rs. 1,17,050.16 lakhs).

Subject to the foregoing and consequential effect thereof:

(a) We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit.

(b) In our opinion, proper books of account as required by Law have been kept by the Company so far as appears from our examination of those books.

(c) The Balance Sheet and Profit and Loss Account and cash flow statement dealt with by this report are in agreement with the books of account and with the audited returns received from the branches.

(1) The policy referred by Auditors is followed by the company consistently for several years along with necessary disclosures in the accounts.

(2) Requests for confirmations are sent and reconciliation with the parties are carried out as an ongoing process and the management does not envisage any significant impact on the accounts due to this.

(i) The case is sub-judice.

(ii) The modifications have been done in line with the assurances given to Government Audit during the audit of accounts for the year 2001-02.

- (d) In our opinion, the Balance Sheet and Profit and Loss Account and cash flow statement dealt with by this reply comply with the Accounting Standards referred to in sub Section (3C) of Section 211 of the Companies Act, 1956.
- (e) On the basis of the written representations received from the directors, and taken on record by the Board of Directors, we report that none of the directors is disqualified as on 31st March, 2003 from being appointed as a director in terms of clause (g) of sub-section (1) of Section 274 of the Companies Act, 1956. However in terms of letter dated 22nd March 2002 from the Department of Company Affairs, Government of India, the provisions of Section 274(1)(g) are not applicable to the directors nominated by the Government of India.
- (f) In our opinion and to the best of our information and according to the explanations given to us, the said accounts read together with the Accounting Policies and Explanatory Notes in Schedule-19, give the information required by the Companies Act, 1956, in the manner so required and give a true and fair view in conformity with the accounting principles generally accepted in India:
  - (i) In the case of the Balance Sheet, of the state of affairs of the Company as at March 31, 2002; and
  - (ii) In case of Profit & Loss Account of the profit for the year ended on that date; and
  - (iii) In the case of cash flow statements of the cash flows for the year ended on that date.

**For J.C. BHALLA & CO.  
CHARTERED ACCOUNTANTS**

**Sd/-  
(SUDHIR MALLICK)  
PARTNER**

**Place: New Delhi**

**Dated: 13th June, 2003**



## ANNEXURE TO THE AUDITORS' REPORT

(Referred to in Para III of our report of even date)

1. The Company has generally maintained proper records showing full particulars including quantitative details and situation of its fixed assets. Except in respect of assets given on lease, the management has generally carried out the physical verification of a portion of the fixed assets in accordance with their phased programme of physical verification, which is considered reasonable having regard to the size of the Company and nature of its business and no material discrepancies were noticed on such verification to the extent verification was made during the year.
2. None of the fixed assets have been revalued during the year.
3. The stock of stores, spare parts, components and raw materials lying at the units, in case of manufacturing divisions, have been verified under perpetual inventory system.

Physical verification of stores and spares acquired for trading and lying in the stocks at the units has been conducted by the management at reasonable intervals and no material discrepancies were noticed on such verification.

As regards the service divisions, the stores, spare parts etc., are purchased for immediate consumption and unused stocks have been physically verified at the year end.

The materials purchased for research and development projects are directly charged off to Profit & Loss Account.

The stock of finished goods and work in progress is verified at the year end with reference to the inspection reports and production reports of Planning Department of the Divisions.

In regard to stocks lying with contractors/fabricators and other parties, confirmations were received in a few cases only.

Subject to the above, in our opinion the frequency of verification is reasonable.

4. The procedures of physical verification of aforesaid stock, followed by the management are generally

## MANAGEMENT'S REPLY

BHEL has supplied 53 AC/DC locomotives of Type WCAM-3 and 12 AC/DC locomotives of Type WCAG-1 to Indian Railways on lease. As per terms of Lease Agreement with the Indian Railways, a certificate confirming physical possession of these locomotives has been obtained from Indian Railways like in the past.

Requests for confirmations are sent and reconciliation with the parties are carried out as an ongoing process and the management does not envisage any significant impact on the accounts due to this.

reasonable and adequate in relation to the size of the Company and the nature of its business.

5. The discrepancies noticed on physical verification of stocks as compared to book records having regard to the size and nature of operations of the company were not material and have been properly dealt with in the books of account of the Company.
6. In our opinion, valuation of above mentioned stock read with Accounting Policy No. 7 is fair and proper and is in accordance with the normally accepted accounting principles and is on the same basis as in the preceding year.
7. As per information given and explanations provided, the Company has not taken any loans, secured or unsecured, from companies, firms or other parties to be listed in the registers required to be maintained under section 301 and 370(1B) of the Companies Act, 1956.
8. As per information given and explanations provided, the Company has not granted any loans, secured or unsecured, to companies, firms or other parties to be listed in the registers required to be maintained under section 301 and 370(1B) of the Companies Act, 1956.
9. In respect of loans and advances in the nature of loans given by the Company to the parties and employees, the recovery of principal amount and interest, wherever applicable, has generally been made as stipulated.
10. In our opinion and according to information and explanations given to us, there are adequate internal control procedures commensurate with the size of the Company and the nature of its business for the purchase of stores, raw materials including components, plant and machinery, equipment and other assets and for sale of goods.
11. As per information given and explanations provided, the Company has not made any purchase of goods and materials and sale of goods, materials and services in pursuance of contract or agreement of Rs. 50,000/- or more, during the year in respect of each party listed in the register required to be maintained under Section 301 of the Companies Act, 1956.
12. As explained to us, the Company has a reasonable system for determination of unserviceable or damaged



stores, raw materials and finished goods. Adequate provision has been made in the accounts for loss arising in respect of items so determined in accordance with the Company's policy.

13. The company has not accepted any deposits from the public during the year.
14. In our opinion, reasonable records have been maintained by the company for the sale and the disposal of significant realisable scrap. We are informed that company's operations do not generate any realisable by-products.
15. In our opinion, the Internal Audit System of the Company is largely commensurate with the size and nature of its business. However, in some of the units keeping in view their size, internal audit system need to be strengthened.
16. Prima facie, the Company has maintained cost accounts and records prescribed for the manufacture of Electric Motors, Seamless Steel Tubes, Electric Generator, Power Transformers, Power Driven Pumps, Power generation through windmills, Control Instrumentation and Automation Equipment, pursuant to the rules made by the Central Government under Section 209(1)(d) of the Companies Act, 1956. No detailed examination of the records was, however, made with a view to determine whether they are accurate or complete. To the best of our knowledge and according to the information given to us the Central Government has not prescribed the maintenance of the cost records under Section 209(1)(d) of the Companies Act 1956 for other products of the Company.
17. According to the records of the Company, the Provident Fund and Employees State Insurance (ESI) dues wherever applicable have generally been deposited during the year with appropriate authorities except ESI dues amounting to Rs. 547.97 lakhs in case of few units which are being contested before the higher authorities.
18. According to the information and explanations given to us, there are no undisputed and outstanding amounts in respect of income tax, wealth tax, sales tax, customs duty, and excise duty which have remained outstanding as at 31st March, 2003 for a period exceeding six months from the date these became payable.

Steps are being taken to strengthen internal audit, wherever necessary.

The cases are sub-judice.

19. According to the information and explanations given and on examination of the books of account carried out in accordance with generally accepted auditing practices, no personal expenses have been charged off to the profit and loss account except those arising out of contractual obligations or in accordance with generally accepted business practice.
20. The Company is not a sick company under the provisions of Section 3 (1) (O) of Sick Industrial Companies (Special Provisions) Act, 1985.
21. In respect of service activities:
  - a) The Company has reasonable system of recording receipts, issues, consumption of materials and stores and allocating material consumed to the relative jobs commensurate with its size and nature of its business.
  - b) The Company generally has a reasonable system of allocating man-hours utilised to the relative jobs commensurate with its size and the nature of its business.
  - c) There is generally a reasonable system of authorisation at proper levels with adequate system of internal control commensurate with the size of the Company and the nature of its business on the issue of stores and allocation of stores and labour to the jobs.

**FOR J.C. BHALLA & CO.  
CHARTERED ACCOUNTANTS**

**Sd/-  
SUDHIR MALLICK  
PARTNER**

**Place: New Delhi  
Dated: 13th June, 2003**





**COMMENTS OF THE COMPTROLLERS AND AUDITOR GENERAL OF INDIA UNDER SECTION 619 (4)  
OF COMPANIES ACT, 1956 ON THE ACCOUNTS OF BHARAT HEAVY ELECTRICALS LIMITED,  
NEW DELHI FOR THE PERIOD ENDED 31 MARCH 2003.**

***Comments of C&AG***

***Management's Reply***

**A. Profit & Loss Account**

**(Rs. In Lakh)**

Profit of the Company amounting to Rs.44451.27 lakh was overstated by Rs.2544.66 lakh on account of following:

(i) Non provision of liquidated damages towards delay in completion of trial run and shortfall in availability of Gas Turbines (Faridabad Project of NTPC).	2500.00	In line with the assurance given to MAB during the audit of accounts for 2001-02, opinion from an internationally reputed chartered accountant firm was obtained and the policy on LD along with the guidelines were revised and approved by the Board to make it more transparent. As per the revised policy and guidelines, creation of provision for LD against this project during this financial year is not necessary.
(ii) Non provision of bad and doubtful debts remaining unrecovered for more than three years.	33.14	Based on the assessment of the management, no provision is considered necessary in these cases during this year.
(iii) Accountal of goods-in-transit as Turnover	11.52	Noted.

**B. General**

(i) The Company has been recognising revenue at 100 per cent instead of 97.5 per cent of realisable value in respect of export sales as well as in some cases of supply and erection contracts before completion of the contracts. This is not in accordance with its accounting policy No. 5(ii) and (iii).	a) Export sales has been recognised as in earlier years at 100% with a corresponding 2.5% warranty provision, with no impact on the results. b) Supply of BHEL manufactured items have been correctly accounted at 97.5% as in earlier years. c) Erection income has been correctly accounted as in the earlier years as per Accounting policy no. 5 (iii).
(ii) Contingent liabilities (Schedule 19) do not include a claim relating to liquidated damages amounting to Rs. 226.56 lakh in respect of Suratgarh unit.	Customer has agreed in writing to consider waiver of LD. Hence, it was not considered necessary to include this in the Contingent Liability.

**Sd/-  
(Revathi Bedi)  
Principal Director of Commercial Audit and  
Ex-Officio Member Audit Board - III,  
New Delhi**

**Place : New Delhi**

**Dated : 21 August 2003**

**REVIEW OF ACCOUNTS OF BHARAT HEAVY ELECTRICALS LIMITED, NEW DELHI  
FOR THE YEAR ENDED 31ST MARCH 2003 BY THE COMPTROLLER AND AUDITOR  
GENERAL OF INDIA.**

Note : The Review of Accounts has been prepared without taking into account comments under section 619 (4) of the Companies Act 1956 and qualification contained in the Statutory Auditor's Report.

**1. FINANCIAL POSITION**

The table below summarises the financial position of the Company under broad headings for the last three years.

	(Rs. in crore)		
	<u>2000-2001</u>	<u>2001-2002</u>	<u>2002-2003</u>
<b>LIABILITIES</b>			
(a) Paid-up Capital			
(i) Government (Including share application money pending allotment)	165.76	165.76	165.76
(ii) Others	79.00	79.00	79.00
(b) (i) Free reserves and surplus	3582.83	4222.08	4556.14
(ii) Capital reserves	2.77	2.77	2.77
(c) Borrowings			
(i) From Financial Institution	120.29	15.61	4.69
(ii) Cash Credit	590.34	0.28	0.00
(iii) Others	312.64	626.28	500.00
(iv) Interest accrued and due	2.33	2.33	2.33
(d) (i) Current liabilities & provision	4162.96	4715.86	4756.06
(ii) Credits for assets taken on lease	0.00	21.29	24.07
<b>TOTAL</b>	<b>9018.92</b>	<b>9851.26</b>	<b>10090.82</b>
<b>ASSETS</b>			
(e) Gross block	3004.05	3182.00	3349.31
(f) Less: Depreciation	1902.81	2057.68	2230.28
Add : Lease Adjustment A/c	41.37	52.26	51.47
(g) Net block	1142.61	1176.58	1170.50
(h) Capital work-in-progress	61.18	56.67	58.70
(i) Investments	10.34	10.34	10.33
(j) Current assets, loans and advances	7576.20	8053.77	8348.40
(k) Deferred tax assets	-	304.62	407.39
(l) Miscellaneous expenditure not written off	228.59	249.28	95.50
<b>TOTAL</b>	<b>9018.92</b>	<b>9851.26</b>	<b>10090.82</b>
(m) Working Capital (j-d(i)-c(iv))	3410.91	3335.58	3590.01
(n) Capital employed (g+m)	4553.52	4512.16	4760.51
(o) Net worth (a+b(i)-l)	3599.00	4217.56	4705.40
(p) Net worth per rupee of capital	14.70	17.23	19.22



## 2. SOURCES AND UTILISATION OF FUNDS

Funds amounting to Rs. 770.90 crore from internal and external sources were realised and utilised during the year as detailed below:

(Rs. in crore)

### Sources of Funds

(a) Funds from operations :		
Profit after tax	444.51	
Add : Depreciation	172.60	617.11
(b) Decrease in Miscellaneous Expenditure not written off		153.78
(c) Decrease in Investments		0.01
<b>TOTAL</b>		<b>770.90</b>

### Utilisation of Funds

(a) Increase in Fixed Assets		166.52
(b) Dividend paid (incl. Dividend Tax)		97.90
(c) Decrease in borrowed funds		134.70
(d) Increase in Deferred Tax Assets		102.77
(e) Increase in Working Capital (excluding proposed dividend & tax thereon)		266.98
(f) Increase in CWIP		2.03
<b>TOTAL</b>		<b>770.90</b>

## 3. WORKING RESULTS

The working results of the Company for the last three years ending 31st March are given below:

(Rs. in crore)

	<u>2000-2001</u>	<u>2001-2002</u>	<u>2002-2003</u>
(i) Sales	6377.36	7297.28	7482.22
(ii) Less : Excise Duty	633.65	691.54	551.92
(iii) Net Sales	5743.71	6605.74	6930.30
(iv) Other or Misc. Income	505.42	493.92	508.72
(v) Profit before tax and prior period adjustments	294.53	657.35	812.24
(vi) Prior period adjustments	0.44	5.48	9.81
(vii) Profit before tax*	294.09	662.83	802.43
(viii) Tax provisions	(-) 18.52	194.89	357.92
(ix) Profit after tax	312.61	467.95	444.51
(x) Proposed Dividend	80.92	97.90	110.45

\*Unit-wise working results are given in annexure.

## 4. RATIO ANALYSIS

Some important financial ratios on the financial health of the company at the end of last three years ending 31st March:

(Rs. in crore)

	<u>2000-2001</u>	<u>2001-2002</u>	<u>2002-2003</u>
A. Liquidity ratio:			
Current ratio [j/d(i)+c(iv)]	1.82	1.71	1.75

B. Debt Equity Ratio			
Long term debt/Equity [c(i) to (iii) excl. short term loans/o]	0.13	0.15	0.11
C. Profitability ratios:			(in Percentage)
(a) Profit before tax to			
(i) Capital employed	6.46	14.69	16.86
(ii) Net Worth	8.17	15.72	17.05
(iii) Sales	4.61	9.08	10.72
(b) Profit after tax to Equity	127.72	191.19	181.61
(c) Earnings per share (in Rupees)	12.77	19.12	18.16

## 5. INVENTORY LEVELS

The inventory levels at the close of the last three years ending 31st March are as under:

	(Rs. in crore)		
	2000-2001	2001-2002	2002-2003
(a) Raw materials	660.35	655.60	719.66
(b) Store, spares and loose tools	98.83	90.26	80.86
(c) Work-in-progress and semi-finished goods	1081.44	1074.13	938.43
(d) Finished goods	208.98	185.62	274.81
(e) Scrap	12.07	12.11	13.30
<b>TOTAL</b>	<b>2061.67</b>	<b>2017.72</b>	<b>2027.06</b>

The stock of finished goods represented 0.39, 0.31 & 0.44 month's sales in 2000-01, 2001-02 & 2002-03 respectively.

## 6. SUNDRY DEBTORS

The sundry debtors and sales in the last three years ending 31st March are as follows:

As on 31st March	(Rs. in crore)			Sales (including excise duty)	%age of Sundry debtors to sales
	Considered Good	Considered Doubtful	Total		
2001	4174.30	608.81	4783.11	6377.36	75.00
2002	4584.19	638.30	5222.49	7297.28	71.57
2003	4075.78	677.56	4753.34	7482.22	63.53

Agewise analysis of sundry debtors as on 31.03.2003 is as follows:

	(Rs. in crore)
(i) Less than 6 months	2543.43
(ii) 6 months to 1 year	368.86
(iii) 1 year to 3 years	919.92
(iv) More than 3 years	921.33
<b>TOTAL</b>	<b>4753.54</b>

New Delhi  
Date : 21.08.03

Sd/-  
(REVATHI BEDI)  
PRINCIPAL DIRECTOR OF COMMERCIAL AUDIT  
AND EX-OFFICIO MEMBER, AUDIT BOARD-III, NEW DELHI



## WORKING RESULTS OF BHEL UNITS

### ANNEXURE

(Rs. in crore)

	<u>2000-2001</u>	<u>2001-2002</u>	<u>2002-2003</u>
Heavy Electricals Equipment Plant, Hardwar	26.16	65.72	117.05
Heavy Power Equipment Plant, Hyderabad	54.55	104.46	136.80
High Pressure Boiler Plant, Trichy	150.52	148.40	131.21
Heavy Electricals Plant, Bhopal	-70.10	16.40	56.13
Central Foundry Forge Plant, Hardwar	-30.84	-21.62	-9.65
Transformer Plant, Jhansi	-117.29	-20.90	1.44
Electronics Division, Bangalore	16.66	47.21	78.61
Industrial Valves Plant, Goindwal	2.23	1.18	1.79
Industrial Systems Group, Bangalore	-2.70	-10.99	-9.81
Boiler Auxiliary Plant, Ranipet	13.31	28.23	20.41
Electro Porcelains Division, Bangalore	1.34	11.75	1.45
Insulator Plant, Jagdishpur	-16.64	-9.00	-6.90
Power Group (Four Regions and PEM)	182.68	224.60	220.72
International Operations Division, New Delhi	0.12	-0.01	0.06
Overseas Project Co-ordination, New Delhi	2.21	3.25	13.38
Centre of Technology Transfer, Hyderabad	1.22	1.77	2.50
Industry Sector, New Delhi	-0.38	0.15	-0.10
Component Fabrication Plant, Rudrapur	-2.02	-1.53	-1.32
Regional Operations Division	-4.28	-0.12	0.68
Heavy Equipment Repair Plant, Varanasi	5.33	5.57	1.67
Advance Research Project, New Delhi	0.45	0.19	0.28
Transmission Projects Group, Bhopal	21.79	18.13	2.40
EMRP & OSB, Mumbai	-	-	0.12
Corporate Adjustments	59.77	49.99	43.51
<b>TOTAL</b>	<b>294.09</b>	<b>662.83</b>	<b>802.43</b>

## **ANNEXURE - 3 TO THE DIRECTORS' REPORT**

### **CONSERVATION OF ENERGY**

The steps taken to reduce the cost of energy during the year 2002-2003 are as follows:

1. Reduction in Maximum Demand of Power by proper load planning.
2. Installation of Variable Speed Drive Motors.
3. Reduction in Water consumption resulting in reduction of Power consumption.
4. Use of Sunlight for illumination by providing Transparent Sheets at roof tops of various Production Blocks.
5. Optimum utilisation of Furnaces.
6. Reduction in consumption of Fuel by providing Ceramic Lining in Furnaces.
7. Use of Producer gas instead of LPG.
8. Use of AC/DC drives in place of existing MG Sets.
9. Modification of Lighting system using Energy Efficient Lamps etc.
10. Arresting leakages in Compressed Air Piping and Steam Piping.
11. Adoption of Automatic switching off of Lights.

As a result of the above steps, energy cost as a percentage of turnover, net of excise, has declined to 2.86% as against about 3% in the previous years, despite increase in fuel cost and power tariff during 2002-03.

### **TECHNOLOGY ABSORPTION AND RESEARCH & DEVELOPMENT**

#### **Research & Development**

- |   |   |                                |
|---|---|--------------------------------|
| 1. Specific areas in which R&D carried out by the Company | } | Given in the Directors' Report |
| 2. Benefits derived as a result of the above R&D          | } | under "R&D and Technology"     |
| 3. Future plan of action:                                 |   |                                |

The following are the major thrust areas for R&D and technology:

- Advanced control and instrumentation platform for thermal power plants and industries
- Performance Analysis, Diagnostics and Optimisation (PADO) systems for thermal power plants
- Integrated Gasification Combined Cycle (IGCC) power plants
- More efficient conventional thermal power plants using supercritical parameters
- Atmospheric and Circulating Fluidized Bed Combustion (CFBC) boilers
- Reduction of emissions from boilers
- Hydro power plants with higher efficiency and longer life
- High efficiency boiler feed pumps and compressors
- Pulverisers
- 8 MW industrial steam turbines
- Efficient, reliable and cost effective transportation systems like three-phase AC drive system for diesel electric locos



- Flexible AC Transmission systems, including devices such as Thyristor Controlled Series Compensation, phase shifting transformer, static synchronised compensator (STATCOM), controlled shunt reactor, etc.
- 765 kV Transmission equipment
- HVDC transmission systems
- Gas Insulated Switchgear
- Residual life assessment studies
- Cycle time and cost reduction
- Vibration and noise reduction
- Specialised engineering software applications
- Specialised soft ware for Utilities
- Simulators
- Non-conventional energy systems
- Welding technologies
- Surface coatings

#### 4. Expenditure on R&D

a) Capital	....	Rs. 85 million
b) Recurring	....	Rs. 732 million
c) Total	....	Rs. 817 million
Expenditure as a percentage of total turnover	....	1.09%

#### TECHNOLOGY ABSORPTION AND ADOPTION

Details of technology imported during the last 5 years:

Technology	Year of import	Absorption status
Once-through boilers	1999	Technology absorption in progress.
Fabric filters	1999	Technology absorption in progress. Orders under execution.
New generation C&I automation platform	2000	Technology absorption in progress. Orders executed.
Axial Fans	2002	Technology absorption in progress.

#### Foreign Exchange earnings and outgoings

- a) Activities relating to export information given in Directors' Report under "International Business".
- b) Total foreign exchange used and earned:

	(Rupees in million)	
	<u>2002-2003</u>	<u>2001-2002</u>
i Foreign exchange used	13090	14085
ii Foreign exchange earned	19231	21680



## CORPORATE GOVERNANCE

### 01 Company's philosophy on code of Corporate Governance

The concept of Corporate Governance, which has received unprecedented attention worldwide, refers inter-alia to a system of checks and balances to ensure timely and transparent financial as well as managerial disclosure to the shareholders. Corporate Governance is not only about following rules and regulations but it is about the true spirit, ethics and eagerness of a corporate body to act with a fair conscience. Good Board practices, transparent disclosure and accountability beyond the regulatory stipulation lie at the heart of good Corporate Governance.

BHEL believes in and practices good Corporate Governance in all its operations and reiterates its commitment to achieve the highest standards of Governance. BHEL focuses on enhancement of stakeholder value through adopting proactive measures that brings transparency among the company and its investors, lenders, vendors and customers. It has always been BHEL's endeavor to adopt any new dimension in the field of Corporate Governance.

### 02 Board of Directors

Pursuant to Section 617 of the Companies Act, 1956, BHEL is a 'Government Company'. Presently 67.72% of the total paid-up share capital of the Company is held by the President of India.

As on 31st March 2003, BHEL's Board structure comprised 12 (Twelve) Directors viz. CMD, five whole time executive Directors (Functional Directors), two Govt. nominees representing the Ministry of Heavy Industries and Public Enterprises, Govt. of India and four non-executive Directors. The appointment of four more non-executive Directors is under active consideration of Government of India.

#### ➤ Responsibilities :

The Board's mandate is to oversee the company's strategic direction, review and monitor corporate performance, ensure regulatory compliance and safeguard the interests of shareholders.

#### ➤ Role of Independent Directors:

The independent Directors play an important role in deliberations at the Board meetings and bring to the company their expertise in the fields of engineering, finance, management, law and public policy.

The Board has established various committees such as the audit committee, shareholders grievance committee and share transfer committee. In terms of Clause 49 of the Listing Agreement, the audit committee and shareholders grievance committee are chaired by an independent Director and the said committees' function within the defined terms of reference. The minutes of the committee meetings are circulated and discussed in the Board meeting.

#### ➤ Board Meetings :

The meetings of the Board are normally held at the company's registered office in New Delhi and are scheduled well in advance. The Company Secretary in consultation with Chairman and Managing Director sends notice of each Board meeting in writing to each Director. The Board agenda are circulated to the Directors in advance. The members of the Board have access to all information of the company and are free to recommend inclusion of any matter in agenda for discussion. In case of need, the senior management is invited to attend the Board meetings to provide additional inputs relating to the items being discussed and/or giving presentation to the Board.

During the year under review, the Board met thirteen times on the following dates:

(i) April 03, 2002	(ii) April 29, 2002	(iii) May 16, 2002
(iv) June 14, 2002	(v) July 30, 2002	(vi) August 16, 2002
(vii) August 26, 2002	(viii) October 09, 2002	(ix) October 28, 2002
(x) October 29, 2002	(xi) January 09, 2003	(xii) January 29, 2003
(xiii) March 10, 2003.		

The maximum time gap between any two meetings was not more than three calendar months.



- Details of composition and category of Directors, attendance of each Director at the Board Meetings and the last AGM, directorship and membership in other companies for each Director of the Company are given below (As on 31st March, 2003):

Name S/Shri	Attendance Particulars		Number of other directorships and Committee Membership/Chairmanship	
	Board Meetings (from 01/04/02 to 31/03/03)	Last AGM (held on 30/09/02)	Details of Directorships in other Public Ltd. Companies	Details of Committee Memberships and Committee Chairmanships
<b>a) Whole Time Functional (Executive) Directors</b>				
K G Ramachandran (CMD)	12	Present	Nil	Nil
Ishan Shankar	13	Present	Nil	Nil
H W Bhatnagar	13	Present	Nil	Nil
R C Aggarwal	12	Present	Nil	Nil
C Srinivasan	13	Present	Nil	Nil
Virendra Kumar	13	Present	Nil	Nil
<b>b) Part Time official (Non-Executive/ Promoter) Directors</b>				
K K Jaswal (upto 02.07.2002)	3	N.A.	1) Maruti Udyog Ltd. 2) Hindustan Paper Corp. Ltd 3) Andrew Yule & Co. Ltd. 4) Bharat Bhari Udyog Nigam Ltd. 5) Heavy Engg. Corp. Ltd. 6) HMT Ltd. 7) HMT Watches Ltd. 8) HMT Machines Tools Ltd.	Nil
V K Malhotra (from 30.07.2002)	4	Present	1) Andrew Yule & Co. Ltd. 2) HMT Ltd. 3) Maruti Udyog Ltd.	Nil
S V Bhawe (upto 10.03.2003)	9	Absent	1) Bharat Bhari Udyog Nigam Ltd. 2) Engineering Projects (I) Ltd. 3) Mining & Allied Machinery Corp. Ltd. 4) Electrical Construction Co. Ltd.	<b>Member :</b> <i>Audit Committee</i> 1) Bharat Bhari Udyog Nigam Ltd.
A Didar Singh (from 10.03.2003)	1	N.A.	1) Bharat Yantra Nigam Ltd. 2) Triveni Structurals Ltd. 3) Hindustan Paper Corp. Ltd	Nil
<b>c) Part Time Non- Official (Non-Executive/ Independent) Directors</b>				
A C Wadhawan	10	Present	1) Tata Refractories Ltd. 2) Tata Metaliks Ltd. 3) Transweigh (India) Ltd. 4) Reliance Cellulose Products Ltd. 5) Jindal Polyester Ltd. 6) Hindustan Zinc Ltd.	<b>Member :</b> <i>Audit Committee</i> 1) Tata Refractories Ltd. 2) Jindal Polyester Ltd. 3) Tata Metaliks Ltd. <i>Remuneration Committee</i> 1) Tata Metaliks Ltd. <b>Chairman :</b> <i>Remuneration Committee</i> 1) Tata Refractories Ltd.

Anand Patkar	11	Present	1) Primetime-IP Media Services Ltd. 2) ITM Infotech India Ltd. 3) SWIL Ltd.	<b>Member :</b> <i>Remuneration Committee</i> 1) SWIL Ltd.
G P Gupta	9	Present	1) Jammu & Kashmir Bank Ltd. 2) Swaraj Engines Ltd. 3) National Aluminium Co. Ltd. 4) Hindustan Aeronautics Ltd. 5) M P Power Generating Co. Ltd.	<b>Member :</b> <i>Audit Committee</i> 1) Swaraj Engines Ltd. 2) National Aluminium Co. Ltd. 3) Hindustan Aeronautics Ltd.
Sharad Upasani	9	Present	1) United Western Bank Ltd. 2) Andrew Yule & Co. Ltd.	<b>Member :</b> <i>Audit Committee</i> 1) Andrew Yule & Co. Ltd.

No Director of the company is a member in more than ten (10) committees or is a Chairman of more than five (5) committees across all companies in which he is a Director.

➤ **Information placed before the Board of Directors :**

The information under the following heads, are usually presented to the Board of Directors of BHEL either as part of the agenda papers or are tabled/presented during the course of Board meeting :

- ✓ Annual operating plans and budgets and any updates.
- ✓ Capital budgets and any updates.
- ✓ Quarterly results for the company and its operating divisions or business segments.
- ✓ Minutes of meetings of audit committee and other committees of the Board.
- ✓ The information on recruitment and remuneration of senior officers just below the Board level.
- ✓ Details of any joint venture or R&D project or technical collaboration agreement requiring approval of Board of Directors.
- ✓ Significant labour problems and their proposed solutions. Any significant development in Human Resources/ Industrial Relations front like signing of wage agreement, implementation of Voluntary Retirement Scheme etc.
- ✓ Sale of material nature, of investments, subsidiaries, assets, which is not in normal course of business.
- ✓ Action Taken Report on all pending matters.
- ✓ Disclosure of Interest by Directors about directorships and committee positions occupied by them in other companies.
- ✓ Quarterly report on Compliance of various laws.
- ✓ Information relating to major legal disputes.
- ✓ Short term Investment of surplus funds.
- ✓ Any contract(s) in which Director(s) are deemed to be interested.
- ✓ Status of shareholder's grievances on quarterly basis
- ✓ Information/status in respect of Power & Industry Sectors and International Operations division on quarterly basis.
- ✓ Significant Capital Investment proposals.
- ✓ Detailed presentation on performance of various units/functions.

**03 Audit Committee**

The Audit Committee presently comprises solely non-executive independent Directors. The members of the Audit Committee are Shri A C Wadhawan, Shri G P Gupta and Dr. Anand Patkar. Shri Wadhawan is Chairman of the Audit Committee.



The audit committee is constituted in accordance with the provisions of the Listing Agreement and the Companies Act, 1956. All the members of the committee are qualified and experienced in the fields of finance, accounts and company law. The quorum of the audit committee is two members. The company secretary is the secretary to the committee.

➤ **Brief description of terms of reference:**

The terms of reference of the audit committee specified by the Board are in conformity with the requirements of Clause 49 of the Listing Agreement as well as Section 292A of the Companies Act, 1956. They are as follows:

1. Overseeing of the company's financial reporting process and the disclosure of its financial information to ensure that the financial statement is correct, sufficient and credible.
2. Fixation of audit fee of the external auditors and also approval for payment for any other services.
3. Periodically reviewing with the Management, external and internal auditors the adequacy of internal control systems, the scope of audit including the observations of the auditors and ensure compliance of internal control system.
4. Reviewing with management the half-yearly and the annual financial statements before submission to the Board, focusing primarily on:
  - Any Changes in accounting policies and practices.
  - Major accounting entries based on exercise of judgement by Management.
  - Qualifications in draft audit report.
  - Significant adjustments arising out of audit.
  - The going concern assumption.
  - Compliance with accounting standards.
  - Compliance with stock exchange regulations and legal requirements concerning financial statements.
  - Any related party transactions i.e. transactions of the company of material nature, with promoters or the management, their subsidiaries or relatives etc. that may have potential conflict with the interests of company at large.
5. Reviewing the adequacy of internal audit function, including the structure of the internal audit department, staffing and seniority of the official heading the department, reporting structure, coverage and frequency of internal audit.
6. Discussing with internal auditors any significant findings and follow up there on.
7. Reviewing the findings of any internal investigations by the internal auditors into matters where there is suspected fraud or irregularity or a failure of internal control systems of a material nature and reporting the matter to the Board.
8. Discussion with external auditors, before the audit commences, on nature and scope of audit as well as to have post-audit discussion to ascertain any area of concern.
9. Reviewing the company's financial and risk management policies.
10. To look into the reasons for substantial defaults in the payment to the depositors, debenture holders, shareholders (in case of non-payment of declared dividends) and creditors.
11. The Audit Committee shall have authority to investigate into any matter in relation to the items specified in Section 292A of the Companies Act or referred to it by the Board and for this purpose shall have full access to information contained in the records of the Company and external professional advice, if necessary.
12. The Audit Committee shall comply with the requirements of the Companies Act and the Listing Agreement with Stock Exchanges in force and as amended from time to time.

➤ **Composition of Committee and attendance of members:**

The committee met eight times during the year under review. The details of composition, names of members, their tenure and the Chairperson and attendance of members are as under:

Tenure →	From	Shri A.C. Wadhawan (Chairman)	Shri G PGupta (Member)	Dr.Anand Patkar (Member)
	To	Contd.	Contd.	Contd.
Meetings/ Attendance ↓	29.04.2002	Present	Present	Present
	14.06.2002	Present	Present	Present
	30.07.2002	Present	Present	Present
	16.08.2002	Present	Present	Present
	26.08.2002	Present	Present	Present
	29.10.2002	Present	Absent	Present
	16.12.2002	Present	Present	Present
	29.01.2003	Present	Present	Present

Shri C Srinivasan, Director (Finance) and Shri R Saraswathan, General Manager (Internal Audit & Taxation) were also present in all meetings of the audit committee held during the year as invitees as per the requirement of Listing Agreement.

#### 04 Remuneration Committee

BHEL being a Public Sector Undertaking, the appointment, tenure and remuneration of Directors are decided by the President of India. Hence, the Board does not decide the remuneration of Directors. Independent Directors are paid only sitting fees for attending the Board Meetings as well as Committee Meetings. However, as required by Clause 49(III)(B), necessary disclosure with regard to remuneration of Directors is as follows:-

➤ Details of remuneration of functional Directors of the Company:

Sl. No.	Name of the Director	Salary	Benefits	Bonus/ Commission	Performance Linked Incentives	Total	Stock Options	Service Contract/ Notice Period/ Severance Fee
	S/Shri	(Rs.)	(Rs.)	(Rs.)	(Rs.)	(Rs)	(Rs.)	
1	K G Ramachandran	527557	253132	Nil	13525	794214	Nil	Not liable to retire by Rotation
2	Ishan Shankar	481381	222294	Nil	13525	717200	Nil	Retirement by Rotation
3	H W Bhatnagar	477069	261979	Nil	13525	752573	Nil	Retirement by Rotation
4	R C Aggarwal	481409	239799	Nil	13525	734733	Nil	Retirement by Rotation
5	C Srinivasan	439601	208426	Nil	13525	661552	Nil	Retirement by Rotation
6	Virendra Kumar	506869	231450	Nil	13525	751844	Nil	Retirement by Rotation

➤ Details of payments made to Non- Executive Directors during the year 2002-03 are given below: -  
(In Rupees)

Name of the Non-Executive Directors	Sitting Fees		Total
	Board Meeting	Committee Meeting	
Shri A.C Wadhawan	50, 000/-	70, 000/-	1,20, 000/-
Shri G.P.Gupta	45, 000/-	45, 000/-	90, 000/-
Dr. Anand Patkar	55, 000/-	50, 000/-	1,05, 000/-
Shri Sharad Upasani	45, 000/-	5,000/-	50, 000/-



## 05 Shareholders Committees

### i. Share Transfer Committee

The Board constituted a Share Transfer Committee long ago, which comprises the Chairman & Managing Director, Director (Power) and Director (Finance) of the Company. The Share Transfer Committee considers and approves all share-related issues, transfer/transmission of shares, issue of duplicate share certificate etc. in physical mode besides taking note of beneficiary position under demat mode. During the year 2002-2003, the Transfer Committee met twenty one times and transacted business relating to share related issues. The work relating to Share Transfer etc. is looked after by M/s. Karvy Consultants Ltd., New Delhi. The minutes of the Share Transfer Committee meetings are periodically placed before the Board of Directors.

Since 99% shares of the disinvested portion of 32.28% of the total paid-up share capital is in dematerialised form, transfer of shares in the physical segment was significantly lower during the year and the meetings of the Share Transfer Committee were held as per requirement of the transfer.

### ii. Shareholders/Investors' Grievance Committee

The Company constituted a Shareholders'/Investors' Grievance Committee on 26th July 2001. The committee met four times during the year under review. The details of composition, name of members and the Chairperson and attendance of members are as under: -

S. NO.	NAME OF DIRECTOR & POSITION	MEETINGS/ ATTENDANCE			
		07.05.2002	26.08.2002	16.12.2002	22.03.2003
	S/SHRI				
1	A.C.Wadhawan (Chairman)	Present	Present	Present	Present
2	Ishan Shankar (Member)	Present	Present	Present	Present
3	C.Srinivasan (Member)	Present	Present	Present	Present

Prior to constitution of the Shareholders'/Investors' Grievance Committee, the shareholders' grievance were redressed by Company's RTA, Karvy Consultants Ltd. and reported to the Board and, thus, the matter was overseen by the full Board instead of a committee.

#### ➤ Name and Designation of Compliance Officer :

Shri N.K. Sinha, Company Secretary is the Compliance Officer in terms of Clause 47 of the Listing Agreement.

#### ➤ Number of shareholders' complaints received so far:

As reported by Karvy Consultants Ltd. (RTA) to SEBI; 2329 shareholders' grievances were received during the year all of which were redressed up to 31st March 2003.

#### ➤ Number not solved to the satisfaction of shareholders:

Nil

#### ➤ Number of pending share transfers:

As on 31st March 2003, no share transfer was pending. Share Transfers have been effected during the year well within the time prescribed by the Stock Exchanges and a certificate to this effect duly signed by a Practicing Company Secretary has been furnished to the Stock Exchanges.

## 06 General Meetings

### ➤ Location and time, where last three AGMs were held:

Particulars	FY 1999-00 (36th AGM)	FY 2000-01 (37th AGM)	FY 2001-02 (38th AGM)
Date & Time	29th September 2000 10.00 a.m.	28th September 2001 10.00 a.m.	30th September, 2002 10.00 a.m.
Venue	FICCI Auditorium, Barakhamba Road (Tansen Marg) New Delhi-110001	FICCI Auditorium, Barakhamba Road (Tansen Marg) New Delhi-110001	FICCI Auditorium, Barakhamba Road (Tansen Marg) New Delhi-110001

- **Whether special resolutions were put through postal ballot last year, details of voting pattern:**

No special resolutions were put through postal ballot last year.

- **Person who conducted the postal ballot exercise:**

Not Applicable.

- **Whether special resolutions are proposed to be conducted through postal ballot:**

No Special Resolutions are proposed through Postal Ballot.

#### **07 Disclosures**

- **Disclosures on materially significant related party transactions i.e. transactions of the Company of material nature, with its promoters, Directors or the management, their subsidiaries or relative that may have potential conflict with the interests of Company at large:**

The Company does not have any related party transactions, which may have potential conflict with its interest at large.

- **Details of non-compliance by the Company, penalties, strictures imposed on the Company by Stock Exchanges or SEBI or any Statutory Authority, on any matter related to capital markets, during the last three years.**

The Company has complied with all the requirements of the Listing Agreement with Stock Exchanges as well as Regulations and Guidelines prescribed by SEBI. There were no penalties or strictures imposed on the Company by any statutory authorities for non-compliance on any matter related to capital markets, during the last three years.

#### **08 Means of Communication**

- The means of communication between the Company and the shareholders are transparent and investor friendly.
- The achievements and important events taking place in the Company like receipt of major orders are announced through press and electronic media and posted on Company's website.
- **Half-yearly report to each household of shareholders:**

No Separate half-yearly report has been sent to each household of shareholders. However, the Financial Results for the Half-year ended September 30, 2002 were published in "The Indian Express", New Delhi dt. 30.10.2002 in English and "Jansatta", New Delhi dt. 30.10.2002 in Hindi and also put up on the website.

- **Quarterly Results:**

The Unaudited Quarterly Results along with the Notes were published in the Newspapers as under:

<b>Newspapers</b>	<b>Date of publication of results for the quarter ended</b>				
	<b>31.03.2002</b>	<b>30.06.2002</b>	<b>30.09.2002</b>	<b>31.12.2002</b>	<b>31.03.2003</b>
The Indian Express, New Delhi (English)	01.05.2002	31.07.2002	30.10.2002	31.01.2003	02.05.2003
Jansatta, New Delhi (Hindi)	01.05.2002	31.07.2002	30.10.2002	31.01.2003	02.05.2003

- **Website where displayed:**

In Company's website <http://www.bhel.com>.

- **Whether it also displays official news releases, the presentations made to Institutional Investors or to the Analysts:**

Yes. The Company's official news releases, other press coverage and corporate presentations made to Institutional Investors and Analysts are also available on the website.

- **Whether the Management Discussions and Analysis Report is a part of Annual Report or not:**

Yes, Management Discussion and Analysis Report is at Annexure-1 to the Directors' Report.

#### **09 General Shareholder Information**

- **AGM (Date, Time and Venue)-**

30th September, 2003 at 10.00 A.M.  
FICCI Auditorium, Barakhamba Road  
(Tansen Marg), New Delhi-110 001.





➤ **Financial Calendar for FY 2003-04 -**

Particulars	Date
Accounting Period	1st April 2003 to 31st March 2004
First Quarter Results	On or before July 31, 2003
Second Quarter Results	On or before October 31, 2003
Third Quarter Results	On or before January 31, 2004
Fourth Quarter Results	On or before April 30, 2004
AGM (Next Year)	September 2004 (Tentative)

- **Date of Book Closure** - 10th September, 2003 to  
30th September, 2003  
(Both days inclusive)
- **Dividend payment date** - On or before 29th October 2003.

➤ **Dividend History :**

BHEL has been following "**Stability cum Growth**" policy with regard to dividend payment. The dividend paid by BHEL during the last ten years is summarised as under :

Year	Rate of Dividend	No. of Shares	Total Amount of Dividend Paid (Rs.)	Date of AGM in which Dividend was declared	Date of Payment
1992-1993	15%	244760000	367140000	30.09.1993	05.11.1993
1993-1994	15%	244760000	367140000	30.09.1994	10.11.1994
1994-1995	15%	244760000	367140000	28.09.1995	08.11.1995
1995-1996	20%	244760000	489520000	30.09.1996	11.11.1996
1996-1997	20%	244760000	489520000	29.09.1997	10.11.1998
1997-1998	25%	244760000	611900000	30.09.1998	11.11.1998
1998-1999	25%	244760000	611900000	30.09.1999	11.11.1999
1999-2000 (Interim)	15%	244760000	367140000	19.05.2000	31.05.2000
1999-2000 (Final)	15%	244760000	367140000	29.09.2000	10.11.2000
2000-2001	30%	244760000	734280000	28.09.2001	03.10.2001
2001-2002	40%	244760000	979040000	30.09.2002	07.10.2002

- **Listing on Stock Exchanges** - BHEL shares are Listed on DSE, BSE, ASE, CSE & Madras Stock Exchange. BHEL shares are also traded on NSE under "Permitted to trade" category. Listing with NSE is under process.

**Name & Address of Stock Exchange**

**Stock Code**

- The Delhi Stock Exch. Assocn. Ltd.  
DSE House, 3/1 Asaf Ali Road,  
New Delhi - 110002.
- The Stock Exchange, Mumbai  
1st Floor, Phiroz Jeejeebhoy Towers,  
Dalal Street, Mumbai- 400001.

6334

N.A.

3. The Stock Exchange, Ahmedabad  
Kamdheni Complex,  
Opp. Sahajanand College,  
Panjara Pole, Ahmedabad - 380015.

08580/BHARATHEAVY

4. The Calcutta Stock Exchange Assoc. Ltd.  
7, Lyons Range, Calcutta - 700001.

N.A.

5. The Madras Stock Exchange Limited  
Exchange Building, Post Box No. 183,  
11, Second Line Beach,  
Chennai - 600001.

N.A.

➤ **International Securities Identification Number (ISIN)**

INE 257 A01018

➤ **Payment of Listing Fees -**

Listing Fee has been paid to all the above Stock Exchanges up to the year 2003-2004.

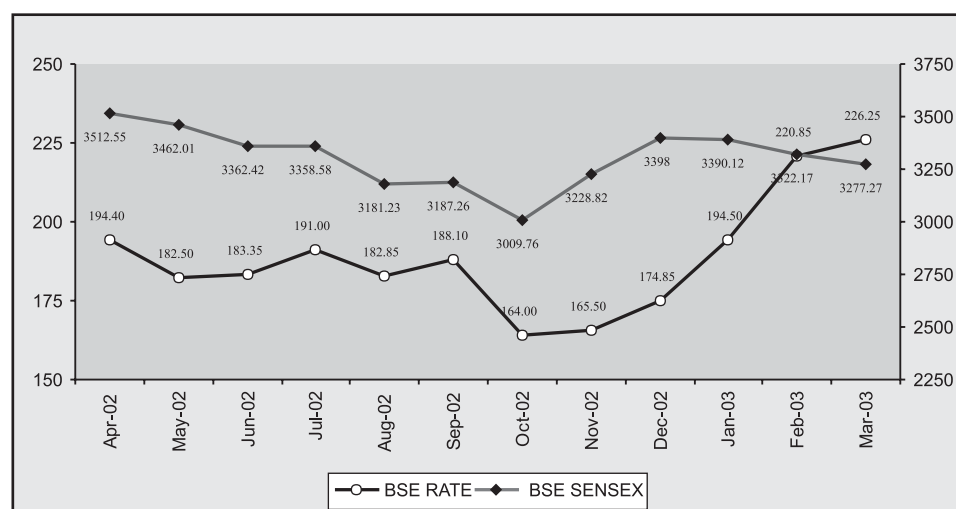
➤ **Market Price Data**

Monthly high and low quotations of BHEL shares traded on the Stock Exchange, Mumbai, BSE Sensex, No. of shares traded, No. of Trades and Net Turnover is summarised as under :

Months	BHEL Share Price (Rs.)		BSE Sensex (Rs.)				
	High	Low	High	Low	*No. of Shares traded	*No. of Trades	*Net Turnover (Rs. in thousands)
April, 2002	194.40	161.00	3512.55	3301.21	11425485	88801	2,064,354.866
May, 2002	182.50	150.05	3462.01	3114.05	7985380	65547	1,333,312.833
June, 2002	183.35	154.45	3362.42	3161.09	5400691	42727	920,939.963
July, 2002	191.00	167.20	3358.58	2990.91	5633361	49460	1,003,419.047
August, 2002	182.85	169.00	3181.23	2950.09	4035437	36777	711,894.964
September, 2002	188.10	158.15	3187.26	2991.36	3472381	25503	576,976.183
October, 2002	164.00	148.10	3009.76	2834.41	3527967	26154	559,857.856
November, 2002	165.50	144.00	3228.82	2948.04	4740603	37558	728,341.875
December, 2002	174.85	161.55	3398.00	3207.36	2675766	25668	450,006.733
January, 2003	194.50	164.70	3390.12	3219.88	6239364	44609	1,139,358.502
February, 2003	220.85	176.60	3322.17	3223.41	9656798	82662	1,985,993.577
March, 2003	226.25	196.25	3277.27	3048.72	7139530	66298	1,522,574.237

\* Source : [www.bseindia.com](http://www.bseindia.com)

**Performance of BHEL Share Price (High) vs BSE Sensex (High)**





➤ **Registrar & Share Transfer Agent (RTA)**

- M/s Karvy Consultants Ltd.  
UNIT : BHEL  
105-108, Arunachal Building,  
19, Barakhamba Road,  
New Delhi 110001,  
Tel.: 23324401, 23324409, 23324417,  
23324435, 23324613. Fax : 011-23730743

RTA's performance in servicing shareholders has been satisfactory. All the investor grievances have been promptly attended to.

➤ **Share Transfer System -**

Entire Share Transfer activities under physical segment are being carried out by Karvy Consultants Ltd. (RTA). The share transfer system consists of activities like receipt of shares along with transfer deed from transferees, its verification, preparation of Memorandum of Transfers, its approval by the Share Transfer Committee and despatch of transferred certificates to the respective transferees within the prescribed time as per the Listing Agreement.

**Distribution of shareholding -**

**(i) Shareholding Pattern**

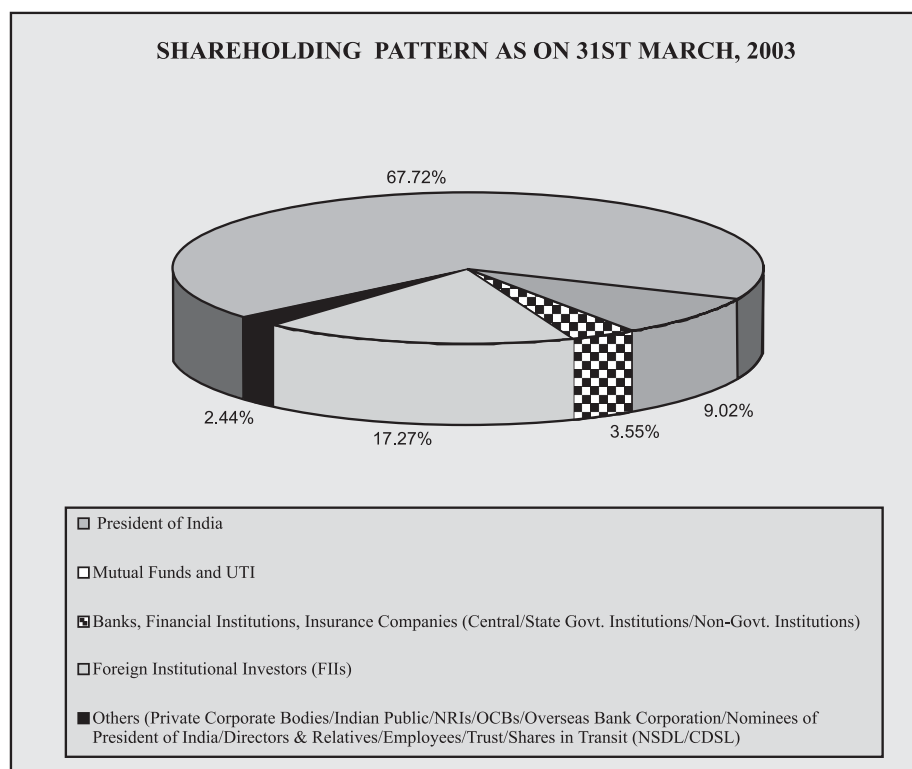
BHEL has over 28373 shareholders. The shareholding pattern of the equity share capital of BHEL as on 31st March, 2003 was as follows:-

Sl. No.	Category	No. of Shares Held	%age of Share-holding
<b>A.</b>	<b>PROMOTER'S HOLDING</b>		
<b>1</b>	<b>Promoters</b>		
	<b>-Indian Promoters</b>		
	* (i) President of India	165755000	67.72
	(ii) Nominees of POI	200	0.00
	<b>-Foreign Promoters</b>	0	0.00
<b>2</b>	<b>Persons acting in concert</b>		
	(i) Directors and Relatives	650	0.00
	<b>Sub Total</b>	<b>165755850</b>	<b>67.72</b>
<b>B.</b>	<b>NON-PROMOTERS HOLDING</b>		
<b>3</b>	<b>Institutional Investors</b>		
<b>a.</b>	<b>Mutual Funds and UTI</b>	22067427	9.02
	* UTI - SUS 1999 3332270 (1.36%)		
<b>b.</b>	<b>Banks, Financial Institutions, Insurance Companies (Central/State Govt. Institutions/Non-Govt. Institutions)</b>	8684024	3.55
	* LIC 4305723 (1.76%)		
<b>c.</b>	<b>Foreign Institutional Investors (FIIs)</b>	42271360	17.27
	<b>Sub Total</b>	<b>73022811</b>	<b>29.83</b>
<b>4</b>	<b>OTHERS</b>		
<b>a.</b>	<b>Private Corporate Bodies</b>	1268637	0.52
<b>b.</b>	<b>Indian Public</b>	3164167	1.29
<b>c.</b>	<b>NRIs/OCBs/Overseas Bank Corpn.</b>	61272	0.03
<b>d.</b>	<b>Any Other</b>		
	(i) Employees	773570	0.32
	(ii) Trust	279	0.00
	(iii) Shares in Transit (NSDL/CDSL)	713414	0.29
	<b>Sub Total</b>	<b>5981339</b>	<b>2.44</b>
	<b>GRAND TOTAL</b>	<b>244760000</b>	<b>100.00</b>

**NOTES: -**

- \* Name, Number of shares held and %age shareholding of entities/persons holding more than 1 (One) % of the shares of the company have been given under each head.

2.	Total Foreign Shareholding	No. of Shares	% Share-holding
	Foreign Institutional Investors	42271360	17.27
	NRIs	57172	0.02
	Overseas Corporate Bodies	4100	0.00
	Overseas Banking Corporation	0	0.00
	ADR & GDR Holding	0	0.00
	<b>Total</b>	<b>42332632</b>	<b>17.29</b>



**(ii) Top Five Shareholders**

The 'Top Five Shareholders' of BHEL as on 31st March, 2003 were: -

Name	No. of Shares	% to Capital
President of India	165755000	67.72
Life Insurance Corporation of India	4305723	1.76
Unit Trust of India - SUS 1999	3332270	1.36
The India Fund	2373445	0.97
Abu Dhabi Investment Authority	2206569	0.90
<b>Total</b>	<b>177973007</b>	<b>72.71</b>

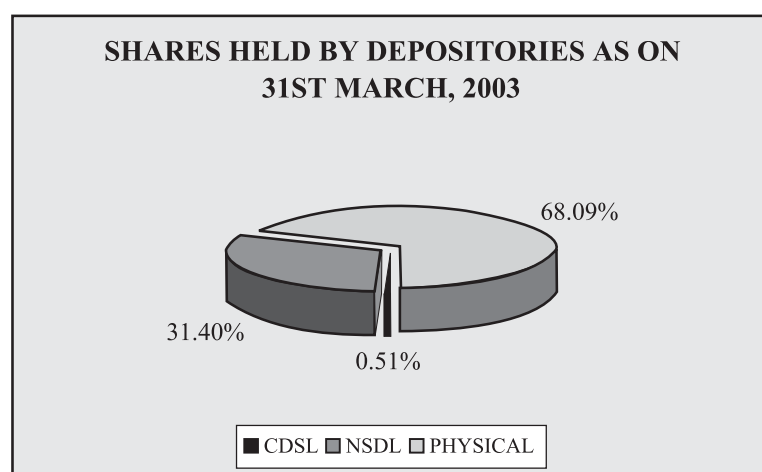


➤ **Dematerialisation of shares and liquidity -**

In accordance with the directions of the Securities & Exchange Board of India (SEBI) trading in BHEL shares by all categories of Investors in demat form has been made compulsory w.e.f. 5th April, 1999. BHEL has executed agreement with both the depositories of the country i.e. National Securities Depository Ltd. (NSDL) and Central Depository Services (India) Ltd. (CDSL) for admission of its securities under demat mode. As on 31st March, 2003, 31.91% of the total equity share capital of BHEL has been dematerialised by the shareholders and held in the name of the NSDL/CDSL. The names and addresses of the depositories are as under:-

1. National Securities Depository Limited  
Trade World, 4th Floor,  
Kamala Mills Compound  
Senapathi Bapat Marg,  
Lower Parel, Mumbai-400013

2. Central Depository Services (India) Ltd.  
Phiroze Jeejeebhoy Towers,  
28th Floor, Dalal Street,  
Mumbai-400 023.



➤ **Outstanding GDRs/ADRs/Warrants or any convertible instruments, conversion date and likely impact on equity:**

- Nil

➤ **Plant locations**

- Heavy Electricals Equipment Plant, Hardwar  
Central Foundry Forge Plant, Hardwar  
Heavy Power Equipment Plant, Hyderabad  
High Pressure Boiler Plant, Trichy  
Heavy Electricals Plant, Bhopal  
Transformer Plant, Jhansi  
Electronics Division, Bangalore  
Industrial Systems Group, Bangalore  
Boiler Auxiliary Plant, Ranipet  
Industrial Valves Plant, Goindwal  
Electro Porcelains Division, Bangalore  
Insulator Plant, Jagdishpur  
Component Fabrication Plant, Rudrapur  
Heavy Equipment Repair Plant, Varanasi

➤ **For Investor correspondence :**

Shareholders can send their queries regarding Transfer/Dematerialisation of shares, Non-receipt of dividend, Revalidation of Dividend Warrants and any other correspondence relating to the shares of the Company either to:

**N K Sinha**  
**Company Secretary,**  
**BHARAT HEAVY ELECTRICALS LTD.**  
**Regd. Office: BHEL House, Siri Fort,**  
**New Delhi-110 049.**

Phone : 91 11 26001046  
Fax : 91 11 26001102  
e-mail : csynks@asiad.bhel.co.in

**OR**

**KARVY CONSULTANTS LTD.**  
**UNIT: BHEL**  
**105-108, Arunachal Building,**  
**19, Barakhamba Road,**  
**New Delhi-110001.**

Phone : 91 11 23324401, 23324409,  
23324417, 23324435, 23324613.  
Fax : 91 11 23730743  
e-mail : michaelg@karvy.com  
madhusudhan@karvy.com

**Note :** Shareholders holding shares in electronic mode should address all correspondence to their respective depository participants.





## Auditors' Certificate on Corporate Governance

The Members

**Bharat Heavy Electricals Limited**

BHEL House, Siri Fort,

New Delhi

We have examined the compliance of conditions of corporate governance by Bharat Heavy Electricals Limited, for the year ended on March 31, 2003 as stipulated in clause 49 of the Listing Agreement of the said company with stock exchanges.

The compliance of conditions of corporate governance is the responsibility of the management. Our examination was limited to procedures and implementation thereof, adopted by the company for ensuring the compliance of the conditions of the Corporate Governance. It is neither an audit nor an expression of opinion on the financial statements of the company.

In our opinion and to the best of our information and according to the explanations given to us, subject to the following:

Clause 49 (1) (A) of the listing agreement requires that not less than fifty percent of the Board of Directors of the company should comprise of non-executive directors being independent. However, during the year, the company did not have an optimum combination of executive and non-executive directors being independent on its Board of Directors.

We certify that the company has complied with the condition of Corporate Governance as stipulated in the above mentioned Listing Agreement.

We state that no shareholder/investor grievance is pending for a period exceeding one month against the company as per the information furnished by the Registrar and Share Transfer Agent (RTA) of the company and reported to the shareholders/investors grievance committee.

We further state that such compliance is neither an assurance as to the future viability of the company nor the efficiency or effectiveness with which the management has conducted the affairs of the company.

Place : New Delhi

Date : 22.08.2003

For and on behalf of  
**J.C. Bhalla & Company**  
Chartered Accountants

Sd/-  
**(Sudhir Mallick)**  
Partner

## **ANNEXURE - 5 TO THE DIRECTORS' REPORT**

### **Brief Resume of Directors proposed for appointment and re-appointment as per Listing Agreement [Clause 49 (VI) A]**

#### **WHOLE TIME FUNCTIONAL DIRECTOR**

**Shri Ishan Shankar**, aged 59 years, is a Mechanical Engineer. He has 35 years of rich experience of working in various capacities in BHEL and as CMD of N.I.D.C., a Public Sector Undertaking, (December 1994 to October 1997) before joining BHEL Board. Shri Shankar joined BHEL in February 1969 at the Haridwar Plant. He was thereafter posted in Corporate Office, CFFP & ROD Headquarters. He also headed Regional Office, Lucknow for a period of 5 years. He was posted in Corporate Planning & Development in 1981 and worked here for a period of twelve years. In August 1993, he was posted as Head of the Jagdishpur Unit. During his tenure there the plant exceeded the budget targets and also received ISO-9001 certification.

As Director (Personnel) (Now Director (HR)), he has been on the Board of BHEL since October, 1997. He has guided the efforts of the Company in setting and meeting the objectives of HRM Functional Plan as a part of perspective-2002 (Corporate Plan of the Company) and Strategic Plan-2007. He is also heading the International Operations Division, which has recorded a substantial growth in Order flow during his tenure.

#### **PART TIME OFFICIAL DIRECTOR**

**Shri A. Didar Singh**, aged 51 years, is an IAS officer of 1976 batch from Punjab cadre. Before joining as Joint Secretary in the Ministry of Heavy Industries & Public Enterprises, Govt. of India (in Jan 2003), he was a Secretary in the State Govt. where he has held several positions as Head of Department in the departments of Industry, Tourism, Finance, Health etc. He also has hands-on experience in management of PSEs having held charge as Managing Director of 5 State level Public Enterprises in the areas of Electronics, Textiles, Cement and Tourism. He was earlier a Joint Secretary in the Ministry of Commerce, Govt. of India and was prior to that posted as a First Secretary in the Indian Consulate in New York, USA.

Shri Didar Singh has a Masters Degree in Development Administration from the University of Birmingham, UK and is presently doing a PhD. in Electronic Commerce from Punjab University. Shri Didar Singh is an international expert in E-Commerce and International Trade and has done research studies for several international agencies including International Trade Center, UNCTAD, WHO, and ILO, Geneva, as well as the Commonwealth Secretariat, London. Shri Didar Singh has several publications to his credit including a book on E-Commerce.

Presently, Shri A. Didar Singh is a govt. nominee on the Board of Bharat Yantra Nigam Ltd., Triveni Structurals Ltd. and Hindustan Paper Corporation Ltd.

#### **PART TIME NON-OFFICIAL DIRECTORS**

**Shri Avinash Chandra Wadhawan**, aged 65 years, has done his B.Sc and B.Tech. in Metallurgical Engineering. He also obtained a diploma from Association Pour L' Organisation des stages en France (ASTEF), "Steel Making and Processing of Alloy Steels" in France.

After a short stint with the Burn and Company Limited (Martin Burn Group), he joined Heavy Engineering Corporation Limited, Ranchi, and served there for a period of about two years. Subsequently, he joined Mahindra Ugine Steel Company Limited after his stint in France, and continued there till 1973 before joining Hindustan Zinc Ltd. (HZL). Shri Wadhawan held the position of Chairman and Managing Director of HZL from November 1985 until his retirement on January 31, 1996. Thereafter, Govt. of India appointed him a Member of Public Enterprises Selection Board (PESB) in July, 1996; Subsequently he took over as Chairman of PESB and continued till July, 1999.

Shri Wadhawan has been associated with a number of important national and international institutes dealing with scientific, technological, industrial and related professional bodies. He was the Vice-Chairman of International Zinc Association, Asia Pacific Region, in 1995-96. He was a Member of the Advisory Panel of International Lead Zinc Study Group, London for over a decade besides representing India on this world body since 1985. He was also on the Boards of Public Sector Enterprises like Hindustan Copper Limited, Indian Rare Earths Limited, MECON, Rajasthan State Mines and Minerals Limited. He was associated with SCOPE, the apex body for the public sector enterprises in India for a decade, first as a Member of the Executive Board, then its Vice Chairman and finally the Chairman of this body in 1995-96. He was a member of the Research Councils of the National Metallurgical Laboratory, Regional Research Laboratory, Bhopal and CECRI all CSIR laboratories for many years.



Shri Wadhawan was the President of Indian Institute of Metals, the professional body of Metallurgists in the country in 1992, besides being the founder of Udaipur and Chittorgarh chapters of this Institute. He has also been elected a Fellow of the Indian National Academy for Engineering and a Member of International Association for Energy Economics, USA.

At present Shri Wadhawan is associated with various companies/organisations/ institutes as Chairman/Director/Member of their top bodies. He is the Chairman of Research Advisory Council of Jawaharlal Nehru Aluminium Research Development and Design Centre, under Ministry of Mines, Government of India. He is also on the Governing Council of NFTDC under Ministry of Defence. He is associated with other bodies like Vidya Bhawan Society, CLPM etc. as either Chairman/President or Member of their Councils.

Shri Wadhawan is also on the Boards of Tata Metaliks Ltd., Transweigh (India) Ltd., Hindustan Zinc Ltd., Jindal Polyester Ltd. and Reliance Cellulose Products Ltd. He is also on the Guest Faculty of Top Management Schools like Indian Institute of Management, Lucknow; Management Development Institute, Gurgaon; National Institute of Financial Management, Faridabad etc.

Shri Wadhawan is an adviser to Pricewaterhouse Coopers Ltd., the International Consultancy Company, and to Council of Scientific and Industrial Research (RRL-Bhopal), Government of India.

Shri Wadhawan has been honoured with many national awards. These include Platinum Medal of Indian Institute of Metals (IIM), the highest award given by IIM to professional metallurgists, the Tata Gold Medal and the Bralco Gold for making outstanding significant contributions to Metallurgical Industry. He was also awarded Rajiv Gandhi Excellence Award for his contribution to Public Sector and Silver Award for enhancing the new concept of marketing and materials in non-ferrous sector.

He is Chairman of the Remuneration Committee of Tata Metaliks Ltd. He is also Chairman of the Audit Committee of Jindal Polyesters Ltd. and Bharat Heavy Electricals Ltd. and member of the Audit Committee of Tata Metaliks Ltd. He is Chairman of Shareholders' Grievance Committee of BHEL.

**Dr. Anand Prabhakar Patkar**, aged 50 years, is a Management Consultant having specialisation in Corporate Strategy, finance and control systems. He is a science graduate and has done his Masters in Management Studies and Ph.D. in Management Finance. Dr. Patkar has vast experience in Corporate Planning, Budgetary Control Systems, Human Resources and other departments and has worked in esteemed organisations like NELCO Ltd., Associated Capsules Group and Greaves Ltd. Since 1995 he has been working as an Independent Management Consultant.

Presently, Dr. Patkar is on the Board of SWIL Ltd. and Primetime- IP Media Services Ltd. He is also the sole proprietor of Dr. A Patkar Associates, Management Consultants.

He is a member of Remuneration Committee of SWIL Ltd. and a member of Audit Committee of BHEL.

**Shri Gian Prakash Gupta**, aged 62 years, is a post-graduate in Commerce. He has 41 years of rich and varied experience in various fields. He started his career as a Lecturer of Commerce in Shri Ram College of Commerce, Delhi. Subsequently, he joined IDBI in 1966 and rose to the position of Executive Director in 1992. Shri Gupta was appointed as the Chairman of UTI in January 1997 and later on the Chairman and Managing Director of IDBI in July 1998. He retired from that position in January 2001 on reaching the age of superannuation.

Presently, Shri Gupta is on the Board of Hindustan Aeronautics Ltd., J&K Bank Ltd., Swaraj Engines Ltd., National Aluminium Company Ltd., M P Power Generating Co. Ltd. and Birla Sun Life Insurance Co. Ltd.

He is Chairman of the Audit Committees of National Aluminium Co. Ltd. and Hindustan Aeronautics Ltd. and member of the Audit Committees of J&K Bank Ltd., Swaraj Engines Ltd. and BHEL.

Induction of the above-named non-official Directors has been considered essential by the Government of India in order to make the Board more professional. These persons have been drawn from amongst prominent technocrats, management experts and consultants and professional managers in industry and trade with a high degree of proven ability and would play an important and complementary role in providing professional and managerial advice to the Board. Besides, their appointment is essential for the Company to comply with the provisions of Clause 49 of the Listing Agreement with the Stock Exchanges relating to the Composition of the Board.

## SIGNIFICANT ACCOUNTING POLICIES

1. The financial statements have been prepared as of a going concern on historical cost convention and on accrual method of accounting in accordance with the generally accepted accounting principles and the provisions of the Companies Act, 1956 as adopted consistently by the Company.

2. **Fixed Assets**

Fixed assets (other than land acquired free from State Government) are carried at the cost of acquisition or construction or book value less accumulated depreciation.

Cost includes value of internal transfers for capital works, taken at actual / estimated factory cost or market price, whichever is lower. Effect of extraordinary events such as devaluation / revaluation in respect of long term liabilities / loans utilised for acquisition of fixed assets is added to / reduced from the cost.

Land acquired free of cost from the State Government is valued at Re.1/- except for that acquired after 16th July 1969, in which case the same is valued at the acquisition price of the State Government concerned, by corresponding credit to capital reserve.

3. **Borrowing Costs**

Borrowing costs that are attributable to the manufacture, acquisition or construction of qualifying assets, are included as part of the cost of such assets.

A qualifying asset is one that necessarily takes more than twelve months to get ready for intended use or sale.

Other borrowing costs are recognised as expense in the period in which they are incurred.

4. **Investments**

- (i) Long-term investments are carried at cost. Decline, other than temporary, in the value of such investments, is recognised and provided for.
- (ii) Current investments are carried at cost or quoted/fair value whichever is lower. Unquoted current investments are carried at cost.
- (iii) The cost of investment includes acquisition charges such as brokerage, fees and duties.

Any reduction in the carrying amount & any reversals of such reductions are charged or credited to the Profit & Loss Account.

5. **Revenue Recognition**

- (i) Sales are recorded based on significant risks and rewards of ownership being transferred in favour of the customer. Sales include goods despatched to customers by partial shipment which are billed or unbilled pending formal billing.
- (ii) Recognition of sales revenue in respect of long production cycle items (Hydro and Thermal sets including gas based power plants, boilers, boiler auxiliaries, compressors and industrial turbo sets) is made on technical estimates. When the aggregate value of shipments represents 30% or more of the realisable value, they are considered at 97.5% of the realisable value or in its absence, quoted price. Otherwise, they are considered at actual / estimated factory cost or 97.5% of the realisable value, whichever is lower. The balance 2.5% is recognised as revenue on completion of supplies under the contract.
- (iii) Income from erection and project management services is recognised on work done and billed based on :  
Percentage of completion; or  
The intrinsic value, reckoned at 97.5% of contract value, the balance 2.5% is recognised as income when the contract is completed.
- (iv) Income from engineering services rendered is recognised at realisable value based on the certified percentage of work completed and billed.
- (v) Income from supply / erection of non-BHEL equipment / systems and civil works is recognised based on despatches to customer / work done at project site.



## 6. Leases

### FINANCE LEASE

#### A) i) Assets Given on Lease Prior to 1st April 2001

Assets manufactured and given on finance lease are capitalised at the normal sale price/fair value/contracted price and treated as sales.

Depreciation on the same is charged at the rate applicable to similar type of fixed assets as per Accounting Policy on 'Depreciation'. Against lease rentals, matching charge is made through Lease Equalisation Account.

Finance income is recognised over the lease period.

#### (ii) Assets Given on Lease on or after 1st April 2001

Assets manufactured and given on finance lease are recognised as sales at normal sale price / fair value/NPV.

Finance income is recognised over the lease period.

Initial direct costs are expensed at the commencement of lease.

#### B) Assets Taken on Lease on or after 1st April 2001

Assets taken on lease are capitalised at fair value / NPV / contracted price.

Depreciation on the same is charged at the rate applicable to similar type of fixed assets as per Accounting Policy on 'Depreciation'. If the lease assets are returnable to the lessor on expiry of lease period, the same is depreciated over its useful life or lease period, whichever is shorter.

Lease payments made are apportioned between finance charges and reduction of outstanding liability in relation to assets taken on lease.

### OPERATING LEASE

#### Assets Given on Lease:

Assets manufactured and given on operating lease are capitalised. Lease income arising therefrom is recognised as income over the lease period.

#### Assets Taken on Lease:

Lease payments made for assets taken on operating lease are recognised as expense over the lease period.

## 7. Inventory Valuation

- (i) Inventory is valued at actual/estimated cost or net realisable value, whichever is lower.
- (ii) Finished goods in Plant and work in progress involving Hydro and Thermal sets including gas based power plants, boilers, boiler auxiliaries, compressors and industrial turbo sets are valued at actual/estimated factory cost or at 97.5% of the realisable value, whichever is lower.
- (iii) In respect of valuation of finished goods in plant and work-in-progress, cost means factory cost; actual/estimated factory cost includes excise duty payable on manufactured goods.
- (iv) In respect of raw material, components, loose tools, stores and spares cost means weighted average cost.
- (v) Where current estimates of cost and selling price of an individually identified project forming part of a contract indicates loss, the anticipated loss in respect of such project on which the work had commenced, is recognised. In arriving at this loss, total income from the project including incentives on exports/deemed exports is taken into consideration.
- (vi) The components and other materials purchased / manufactured against production orders but declared surplus are charged off to revenue retaining residual value based on technical estimates.

## 8. Terminal Benefits

Provident Fund and Employees' Family Pension Scheme contributions are accounted for on accrual basis.

Liability for gratuity, half pay leave, leave encashable at the time of retirement, travel claims on retirement and post retirement medical benefits are accounted for in accordance with actuarial valuation. The actuarial liability is determined with reference to employees at the beginning of each calendar year.

#### 9. Depreciation

- (i) Depreciation on fixed assets (other than those used abroad under contract) is charged on straight-line method as per the rates prescribed in Schedule XIV of the Companies Act, 1956, except where depreciation is charged at rates shown hereunder:-

	<b>Single Shift</b>	<b>Double Shift</b>	<b>Triple Shift</b>
General Plant & Machinery	8%	12%	16%
Automatic/Semi - Automatic Machines	10%	15%	20%
Erection Equipment, Capital Tools & Tackles	20%		
Township Buildings			
-Second Class	2.5 %		
-Third Class	3.5 %		
Railway Sidings	8 %		
Locomotives & Wagons	8 %		
Electrical Installations	8 %		
Office & Other Equipments	8 %		
Drainage, Sewerage & Water supply	3.34 %		
Electronic Data Processing Equipment	20 %		

In respect of additions to/deductions from the fixed assets, depreciation is charged on pro-rata monthly basis.

- (ii) Fixed assets used outside India pursuant to long term contracts are depreciated over the duration of the initial contract.
- (iii) Fixed assets costing Rs.10,000/- or less and those whose written down value as at the beginning of the year is Rs.10,000/- or less, are depreciated fully. In so far as township buildings are concerned, the cost per tenement is the basis for the limit of Rs.10,000/-.
- (iv) At erection/project sites: The cost of roads, bridges and culverts is fully amortized over the tenure of the contract, while sheds, railway sidings, electrical installations and other similar enabling works (other than purely temporary erections, wooden structures) are so depreciated after retaining 10% as residual value.
- (v) Purely Temporary Erection such as wooden structures are fully depreciated in the year of construction.
- (vi) Leasehold Land and Buildings are amortised over the period of lease. Buildings constructed on land taken on lease are depreciated over their useful life or the lease period, whichever is earlier.
- (vii) Where the carrying amount on any fixed assets has undergone a change in accordance with the policy for Foreign Currency Transactions, the depreciation on the unamortised depreciable asset is spread over the residual useful life of the asset.

#### 10. Research and Development Expenditure

Research and development expenditure is charged to profit and loss account in the year of incurrence. Fixed assets acquired for purposes of research and development are capitalised.





#### 11. Claims by/against the Company

- (i) Claims for liquidated damages against the Company are recognised in accounts based on management's assessment of the probable outcome with reference to the available information supplemented by experience of similar transactions.
- (ii) Claims for export subsidy, duty draw back, refund of customs duty and insurance are taken into account on accrual.
- (iii) Amounts due in respect of price escalation claims and/or variations in contract work are recognised as revenue only when there are conditions in the contracts for such claims or variations and/or evidence of the acceptability of the same from customers. However, escalation is restricted to intrinsic value.

#### 12. Accounting for Foreign Currency Transactions

Exchange differences arising out of Foreign Currency Transactions are recognised as income or as expense in the period in which they arise.

Adjustment of exchange differences to the carrying amount of fixed assets are made as under:

- a. For any increase/decrease in the liabilities related to fixed assets acquired in foreign currency due to translation;
- b. On repayment of liabilities incurred for the purpose of acquiring fixed assets.

The effect of past extraordinary and permanent fluctuations in the exchange rate including on devaluation/revaluation other than those related to fixed assets, are treated as deferred revenue charge and adjusted over the residual period of such liabilities.

#### 13. Translation of Financial Statements of Foreign Branches

- (i) Items of income and expenditure are translated at average rate except depreciation, which is converted at the rates adopted for the corresponding fixed assets.
- (ii) Current assets and current liabilities are translated at the closing rate, while fixed assets are translated at the rates in force when the transactions take place.
- (iii) All translation variances except in relation to fixed assets are taken to Profit & Loss Account.

#### 14. Provision for Warranties

- (i) Provision for contractual obligations in respect of contracts under warranty at the year end is considered at 2.5% of the value of contract. In the case of contracts for supply of more than a single product, 2.5% of the value of each completed product is provided.
- (ii) Warranty claims/ expenses on rectification work are accounted for against natural heads in the year of actual incurrence.

#### 15. Government Grants

Government Grants are accounted when there is reasonable certainty of their realisation.

Grants related to fixed depreciable assets are adjusted against the gross cost of the relevant assets while those related to non-depreciable assets are credited to capital reserve. Grants related to revenue, unless received as compensation for expenses/losses, are recognised as revenue over the period to which these are related on the principle of matching costs to revenue.

Grants in the form of non-monetary assets are accounted for at the acquisition cost, or at nominal value if received free.

#### 16. Deferred Revenue Expenditure

Lump sum payments made under Voluntary Retirement Scheme are treated as Deferred Revenue Expenditure and amortised over the period during which the benefits are expected to be derived by the Company.

# BALANCE SHEET

## AS AT MARCH 31, 2003

		(Rs. in lakhs)		(Rs. in lakhs)	
		AS AT 31.3.2003		AS AT 31.3.2002	
SOURCES OF FUNDS					
Shareholders' Funds					
Capital	1	24476.00		24476.00	
Reserves & Surplus	2	455891.01	480367.01	422484.54	446960.54
Loan Funds					
Secured Loans	3	50000.00		50027.97	
Unsecured Loans	4	3109.10	53109.10	16551.74	66579.71
			533476.11		513540.25
APPLICATION OF FUNDS					
Fixed Assets					
Gross Block		334930.69		318199.63	
Less: Depreciation to-date		223027.97		205768.46	
		111902.72		112431.17	
Add : Lease Adjustment Account		5147.44		5225.76	
Net Block	5	117050.16		117656.93	
Capital Work-in-Progress	6	5869.75	122919.91	5666.96	123323.89
Investments	7		1032.72		1034.35
Current Assets, Loans and Advances					
Current Assets	8				
Inventories		200105.61		199422.87	
Sundry Debtors		407578.21		458407.08	
Cash & Bank Balances		132091.11		47658.92	
Other current assets		99.84		0.50	
Loans and advances	9	94964.89		99649.65	
		834839.66		805139.02	
Less:					
Current Liabilities & Provisions					
Liabilities	10	394959.66		406886.45	
Provisions	11	80646.29		64460.09	
		475605.95		471346.54	
Net current assets			359233.71		333792.48
Deferred Tax Assets (Net)			40739.52		30461.80
Miscellaneous Expenditure (to the extent not written off or adjusted)					
Deferred revenue expenditure	12		9550.25		24927.73
			533476.11		513540.25
Notes	19				

Schedules 1 to 23 & Significant accounting policies form an integral part of the Accounts.

N K Sinha  
Secretary

C Srinivasan  
Director (Finance)

K G Ramachandran  
Chairman & Managing Director

As per our report of even date  
For J C Bhalla & Company  
Chartered Accountants

Sudhir Mallick  
Partner

Date : 13th June, 2003  
Place : New Delhi



# PROFIT & LOSS ACCOUNT

For the year ended 31st March 2003

	Schedule	(Rs. In lakhs) For the year ended 31.03.2003	(Rs. In lakhs) For the year ended 31.03.2002
<b>EARNINGS</b>			
Turnover (Gross)	13A	748221.99	728662.54
Less Excise Duty		55191.56	46351.50
Turnover (Net)		693030.43	682311.04
Other operational income	13B	33249.99	35905.75
Other income	13C	10123.48	7181.33
Interest Income	13D	5388.94	5282.32
(TDS Rs.339.86 lakhs (Prev. Year Rs. 651.22 lakhs)			
Exchange Variation		2109.78	1022.75
Provisions written back		32878.08	27606.78
Accretion/Decretion to Work-in-progress, Finished Goods & Scrap	14	-4532.16	-3728.92
		<u>772248.54</u>	<u>755581.05</u>
<b>OUTGOINGS</b>			
Consumption of raw Material & components		296157.83	313298.12
Consumption of stores & spares		19880.01	17378.70
Erection and Engineering expenses			
- payment to subcontractors		44629.00	41758.21
Employees' remuneration & benefits	15	150464.44	144461.72
Other expenses of manufacture, Administration, selling and distribution	16	100267.21	94674.74
Interest & other borrowing costs	17	5478.02	9697.57
Depreciation		18535.00	16920.16
Provisions	18	42030.83	32722.64
less: Cost of jobs done for internal use		1796.47	1065.44
		<u>675645.87</u>	<u>669846.42</u>
Profit before prior period adjustments and extra-ordinary items		96602.67	85734.63
Less : Extra-ordinary items	18A	15378.61	19999.61
Profit before prior period adjustments		81224.06	65735.02
Add/-less: Prior period Adjustments (Net)	18B	-980.60	548.19
<b>Profit before tax :</b>		80243.46	66283.21
Less: Provision for taxation	18C	35792.19	19488.56
<b>Profit after tax</b>		44451.27	46794.65
Add: Balance of profit brought forward from last year		1902.24	
Profit available for appropriation		46353.51	46794.65
<b>Less: Appropriation-</b>			
- Foreign Project Reserve		116.24	102.01
- Bonds Redemption Reserve		10000.00	10000.00
- General Reserve		20000.00	25000.00
- Dividend		9790.40	9790.40
- Corporate Dividend tax		1254.40	
		41161.04	44892.41
<b>Balance carried to Balance Sheet</b>		5192.47	1902.24
<b>Basic and Diluted Earning per share (in Rs.)</b>		18.16	19.12

## Notes

19

Schedules 1 to 23 & Significant accounting policies form an integral part of the Accounts.

N K Sinha  
Secretary

C Srinivasan  
Director (Finance)  
As per our report of even date  
For J C Bhalla & Company  
Chartered Accountants  
Sudhir Mallick  
Partner

K G Ramachandran  
Chairman & Managing Director

Date : 13th June, 2003  
Place : New Delhi

## SCHEDULE - 1 SHARE CAPITAL

	(Rs. in lakhs) AS AT 31.3.2003	(Rs. in lakhs) AS AT 31.3.2002
Authorised Capital		
32,50,00,000 (Previous Year		
32,50,00,000) equity shares of Rs. 10/- each	32500.00	32500.00
Issued,Subscribed & Paid up		
24,47,60,000 (Previous Year 24,47,60,000) Equity	24476.00	24476.00
Shares of Rs. 10/- each fully paid up, of which		
7,41,11,200 (Previous Year 7,41,11,200) shares		
allotted for consideration other than cash		
	<b>24476.00</b>	<b>24476.00</b>

## SCHEDULE - 2 RESERVES & SURPLUS

Capital Reserve	276.98	276.98
Foreign Project Reserve		
Opening Balance	3006.55	3389.73
Add:Transferred from Profit & Loss Account	116.24	102.01
Less:Transferred to General Reserve	680.47	485.19
	<b>2442.32</b>	<b>3006.55</b>
Bonds Redemption Reserve Account		
Opening Balance	10000.00	
Add: Transferred from Profit & Loss Account	10000.00	10000.00
	<b>20000.00</b>	<b>10000.00</b>
General Reserve		
Opening Balance	407298.77	354893.58
Add:Transferred from Foreign Project Reserve	680.47	485.19
Add:Deferred Tax Assets (Net) as on 1.4.2001		26920.00
Add: Transferred from Profit & Loss Account	20000.00	25000.00
	<b>427979.24</b>	<b>407298.77</b>
Profit & Loss Account	5192.47	1902.24
	<b>455891.01</b>	<b>422484.54</b>



### SCHEDULE 3 - SECURED LOANS

	(Rs. in lakhs) AS AT 31.3.2003	(Rs. in lakhs) AS AT 31.3.2002
Bonds (8.85% Non-convertible,secured, Redeemable Taxable Bonds)	50000.00	50000.00
Loans and advances from banks		
--Cash Credit		27.97
	<b>50000.00</b>	<b>50027.97</b>

### SCHEDULE 4 - UNSECURED LOANS

From financial Institutions (due within one year Rs. 5.60 Lakhs (previous year Rs. 5.60 Lakhs)	8.40	14.0
Post Shipment credit		
--From Exim Bank (Due within one year Rs. 307.28 lakhs (Previous year 307.28 lakhs)	460.92	1546.93
--From Bank (Due within one year Nil (Previous year Rs. 12627.63 lakhs)		12627.63
Credits for Assets taken on lease (Due within one year Rs. 808.38 lakhs (Previous year Rs. 617.50 lakhs)	2393.85	2128.60
Interest accrued and due on:		
--State Government Loans	233.29	233.29
--Credits for Assets taken on lease	12.64	1.29
	<b>3109.10</b>	<b>16551.74</b>

## SCHEDULE 5

(Rs. in lakhs)

Fixed Assets	Gross Block			Net Block					
	Cost as at 01.04.2002	Additions/ adjustments during the year	Deductions/ adjustments during the year	Cost As at 31.03.2003	Lease adjustment Account	Depreciation upto 31.03.2003	As at 31.03.2003	As at 31.03.2002	Depreciation for the year
<b>Factory/ Office Complex</b>									
Freehold land (including development exp.)	745.75	-	-	745.75	-	-	745.75	745.75	-
Leasehold land (including development exp.)	643.94	9.92	-	653.86	-	43.64	610.22	603.47	3.17
Roads, bridges and culverts	820.87	68.22	38.19	850.90	-	350.33	500.57	479.35	46.99
Buildings	25487.25	925.69	519.68	25893.26	-	14632.86	11260.40	11277.76	835.08
Leashold buildings	308.77	-	-	308.77	-	84.18	224.59	229.71	5.12
Drainage, sewerage and water supply	1237.61	6.00	0.16	1243.45	-	806.74	436.71	465.88	35.00
Railway siding	762.18	2.34	-	764.52	-	747.08	17.44	19.47	4.37
Plant & Machinery	178503.80	13702.79	465.10	191741.49	-	144203.82	47537.67	43673.99	9783.17
Construction equipment	12760.98	784.09	233.44	13311.63	-	11425.26	1886.37	2101.89	974.09
Electronic data processing equipments	6519.22	690.71	137.85	7072.08	-	5146.56	1925.52	1995.26	713.75
Electrical installations	7549.30	317.22	3.87	7862.65	-	5456.99	2405.66	2469.30	384.53
Locomotives and wagons	1598.34	2.33	-	1600.67	-	1305.84	294.83	336.54	44.05
Vehicles	1818.99	-	67.03	1751.96	-	1256.58	495.38	619.12	109.83
Furniture & fixtures	626.83	55.56	-	682.39	-	365.89	316.50	298.35	30.48
Office & other equipments	5203.90	383.91	78.10	5509.71	-	3773.37	1736.34	1659.28	279.51
Trade marks, patents and designs	0.12	-	-	0.12	-	0.12	-	-	-
Fixed assets costing upto Rs.10000/-	3465.75	249.10	4.31	3710.54	-	3710.54	-	-	249.10
Locomotives given on lease	49714.88	-	-	49714.88	5147.44	20761.81	34100.51	38156.02	3977.19
Capital expenditure	44.05	72.58	-	116.63	-	44.96	71.67	21.29	22.20
EDP Equipment taken on lease	1845.63	831.79	-	2677.42	-	695.10	1982.32	1656.28	505.75
Office & other equipment taken on lease	609.84	50.70	-	660.54	-	107.26	553.28	572.21	69.63
	300268.00	18152.95	1547.73	316873.22	5147.44	214918.93	107101.73	107380.92	18073.01
<b>Township/ Residential</b>									
Freehold land (including development exp.)	80.94	134.08	-	215.02	-	-	215.02	80.94	-
Leasehold land (including development exp.)	311.85	-	122.32	189.53	-	39.91	149.62	273.85	1.91
Roads, bridges and culverts	487.52	-	-	487.52	-	219.60	267.92	275.84	7.92
Buildings	11943.17	19.34	2.73	11959.78	-	4202.79	7756.99	7981.78	243.45
Leasehold buildings	33.17	-	-	33.17	-	16.40	16.77	17.88	1.11
Drainage, sewerage and water supply	1658.86	2.12	-	1660.98	-	1057.53	603.45	641.74	40.41
Plant and Machinery	832.94	9.03	-	841.97	-	583.38	258.59	306.08	56.50
Electrical installations	1213.72	8.06	-	1221.78	-	1145.19	76.59	95.76	27.06
Vehicles	114.71	-	-	114.71	-	88.96	25.75	31.61	5.54
Furniture & fixtures	29.00	0.90	24.24	5.66	-	3.34	2.32	19.00	0.37
Office & other equipments	1068.31	63.80	-	1132.11	-	585.54	546.57	551.53	68.76
Fixed assets costing upto Rs. 10000/-	157.44	5.87	-	163.31	-	163.31	-	-	5.87
Capital expenditure		31.93	-	31.93		3.09	28.84	-	3.09
	17931.63	275.13	149.29	18057.47	0.00	8109.04	9948.43	10276.01	461.99
Total of factory & township	318199.63	18428.08	1697.02	334930.69	5147.44	223027.97	117050.16	117656.93	18535.00
Previous year	300404.54	20936.21	3141.12	318199.63	5225.76	205768.46	117656.93	114261.19	16920.16

Gross Block excludes fixed assets of small value charged off upto 31.3.1991 amounting to Rs. 7815.31 lakhs (Prev. Year Rs. 7815.31 lakhs)

Gross Block excludes cost of assets purchased out of grant received from Government of India Rs. 2845.49 lakhs (Prev. Yr Rs. 2827.82 lakhs) for research and assets as executing agency since the property does not vest with the Company.

Depreciation on fixed assets upto 31.3.2003 includes Rs. 2219.97 lakhs (Prev. Year Rs. 2219.97 lakhs) of fixed assets charged off to revenue.

The Company's contribution or expenditure towards construction, development of assets not owned by the Company is capitalised under the general head 'Capital Expenditure' and written off to revenue in five years.

Building costing Rs. 2180.53 lakhs (Prev. Yr Rs. 2275.35 lakhs) has been constructed on land not owned or leased by the company.

Deductions/adjustments in Gross Block in respect of township leasehold land are on account of conversion into freehold land.





## SCHEDULE 6 CAPITAL WORK- IN- PROGRESS (AT COST)

	(Rs. in lakhs) AS AT 31.3.2003	(Rs. in lakhs) AS AT 31.3.2002
Construction work-in-progress -Civil	1022.61	622.34
Construction Stores (including in transit)	201.56	209.40
Plant & Machinery and other equipments		
-Under Erection/ Fabrication/awaiting erection	3051.73	2873.10
-In transit	1593.85	1962.12
	<b>5869.75</b>	<b>5666.96</b>

## SCHEDULE 7 INVESTMENTS

Long Term,unless stated otherwise

### Shares :

UNQUOTED AT COST (Fully Paid up)

### TRADE :

360 (previous year 360) Equity shares of Rs.1000/- each in Engineering Projects (India) Ltd.

728960 (previous year 728960) Equity shares of Rs. 10/- each in AP Gas Power Corporation Ltd.

Nil (previous year 16333) Equity Shares of Rs 10/- each in Management & Technology Applications (India) Ltd.

5000000 (Previous year 1000000 Equity shares of Rs.10/- each in 'Konark Met Coke Ltd(KMCL),Bhubneswar

Shares in Joint Ventures Companies

--1999999 (previous year 1999999) Equity Shares of Rs. 10/- each in Powerplant Performance Improvement Ltd.

--2379999 (previous year 2379999) Equity Shares of Rs. 10/- each in BHEL-GE Gas Turbine Services Pvt. Ltd.

Advance paid to Konark Met Coke Ltd(KMCL), Bhubneswar towards allotment of Equity Shares

### OTHER THAN TRADE :

3 (previous year 3) Shares of Rs.100/- each at par in

BHEL House Building Cooperative Society Ltd.,Hyderabad

\* Value less than Rs. 1000/-

3.60	3.60
91.12	91.12
	1.63
500.00	100.00
594.72	196.35
200.00	200.00
238.00	238.00
438.00	438.00
	400.00
*	*
<b>1032.72</b>	<b>1034.35</b>

## Inventories @

### Stores & Spare parts

5957.67

630.04

606.83

7194.54

50880.07

17804.27

3281.68

891.03

22881.25

4599.85

14552.66

4009.02

27481.10

93842.84

---

2170.58

429.31

202705.50

1993.72

355.51

2599.89

200105 61

200103.61

220990.96

254343.47

---

475334.43

67756.22

407578 21

407578.21

---

70



## SCHEDULE 8 (Contd.)

	(Rs. in lakhs)		(Rs. in lakhs)	
	AS AT		AS AT	
	31.3.2003		31.3.2002	
Particulars of Sundry debtors :				
Debts considered good for which the Company holds no security other than the debtors' personal security	407578.21		458407.08	
Debts considered doubtful and provided for	67756.22		63841.57	
	<b>475334.43</b>		<b>522248.65</b>	
<b>Cash and Bank Balances</b>				
Cash, Cheques, Demand Drafts & stamps in hand	430.47		119.37	
Remittances in transit	795.14		103.55	
Balances with Scheduled Banks				
Current Account	110304.27		46832.75	
Deposit Account	20000.53		2.52	
Balance with non-scheduled Banks				
		Maximum Balance during the year		
	(Rs. in lakhs)	(Rs. in lakhs)		
	2002-03	2001-02		
Current Accounts				
-Arab Bank ,Jordan	13.48	11.68	0.16	5.57
-Bank of Cyprus, Nicosia	34.01	34.45		34.01
-Bank Muskat, Oman	290.71	2896.98	11.40	309.49
-Barclays Bank Ltd., Zambia	0.68	0.68	0.68	0.68
-Bhumiputra Commerce (Bank of Commerce) Malaysia	102.86	120.45	53.96	88.13
-Indo Jambia Bank ,Lusaka	336.92	6.39	336.92	6.39
-National Bank of Egypt	11.67	33.35	11.17	11.31
Deposit Accounts				
-Bhumiputra Commerce (Bank of Commerce) Malaysia	146.41	145.15	146.41	145.15
			<b>132091.11</b>	<b>47658.92</b>
<b>Other Current Assets</b>				
Interest Accrued on Deposits			99.84	0.50
			<b>99.84</b>	<b>0.50</b>
<b>Summary of Current Assets</b>				
Inventories			200105.61	199422.87
Sundry Debtors			407578.21	458407.08
Cash & Bank Balances			132091.11	47658.92
Other Current Assets			99.84	0.50
			<b>739774.93</b>	<b>705488.87</b>

## SCHEDULE 9 LOANS AND ADVANCES

	(Rs. in lakhs) AS AT 31.3.2003		(Rs. in lakhs) AS AT 31.3.2002	
<b>Loans</b>				
Loans to Employees	767.74		1216.48	
Materials Issued on loan	2.61			
Loans to others	47.25		52.75	
Interest accrued and or due on loans	2619.20	3436.80	2923.25	4192.48
<b>Advances</b>				
(Recoverable in cash or in kind or for value to be received)				
To employees	1514.71		1657.33	
For purchases	5689.61		7825.36	
To others	36327.22		29329.13	
For capital expenditure	736.82	44268.36	580.68	39392.50
<b>Deposits</b>				
Balance with customs, Port Trust and other Govt Authorities *[includes Rs. 4.71 lakhs (Previous Year Rs. 4.71 lakhs) by pledge of Post Office pass book with Central Excise Authorities)	14245.66		13356.83	
Others	35110.78	49356.44	28516.69	41873.52
<b>Income Tax Payments</b> (Net of Provision of Rs. 55526.00 lakhs)			15898.11	
		97061.60	101356.61	
Less: Provision for doubtful loans & advances		2096.71	1706.96	
		<b>94964.89</b>	<b>99649.65</b>	
Particulars of Loans & Advances :				
Loans & Advances considered good in respect of which the Company is fully secured		1398.26	3896.90	
Loans & Advances considered good for which the Company holds no security other than the Debtors' personal security		93566.63	95752.75	
Loans & Advances considered doubtful & provided for		2096.71	1706.96	
		<b>97061.60</b>	<b>101356.61</b>	

Maximum Balance  
during the year  
(Rs. in lakhs)

	2002-03	2001-02		
Due from Directors of the Company	0.89	1.11	0.57	0.72
Due from Officers of the Company	26.11	22.81	16.11	15.18



## SCHEDULE 10 CURRENT LIABILITIES

	(Rs. in lakhs) AS AT 31.3.2003		(Rs. in lakhs) AS AT 31.3.2002	
Acceptances		1718.98		2778.48
Sundry Creditors				
-Total outstanding dues of SSI under-takings (incl. interest)	7098.27		13213.34	
-Other Sundry Creditors	<u>174568.38</u>	181666.65	<u>172501.55</u>	185714.89
Advances received from customers		180156.15		189542.41
Deposits from Contractors	6043.95		5611.64	
Less:Deposits received in the form of Securities	<u>204.56</u>	5839.39	<u>307.61</u>	5304.03
Investor Education & Protection Fund shall be credited by the following amount:				
-Unclaimed dividend*		39.39		33.75
Other liabilities		23829.83		21623.06
Interest accrued but not due		<u>1709.27</u>		<u>1889.83</u>
		<b><u>394959.66</u></b>		<b><u>406886.45</u></b>

\*There is no amount due & outstanding as at Balance Sheet date to be transferred to Investor Education & Protection Fund.

## SCHEDULE 11 PROVISIONS

Provision for Taxation (Net of Income Tax payments Rs. 62505.63 lakhs)	10237.90	
Dividend	9790.40	9790.40
Corporate Dividend Tax	1254.40	
Contractual Obligation	44331.21	38804.04
Others	<u>15032.38</u>	<u>15865.65</u>
	<b><u>80646.29</u></b>	<b><u>64460.09</u></b>

## SCHEDULE 12 DEFERRED REVENUE EXPENDITURE

Lump sum payment under Voluntary Retirement Scheme	9550.25	24927.73
	<b><u>9550.25</u></b>	<b><u>24927.73</u></b>

### SCHEDULE 13 A TURNOVER (Gross)

	(Rs. in lakhs) For the year ended 31.3.2003	(Rs. in lakhs) For the year ended 31.3.2002
Sales less returns (incl. Despatches made to customers Rs 315518.76 lakhs (Previous year Rs. 292793.42 lakhs)	657050.95	649004.94
Income from external erection & other services	87025.10	77678.55
Revenue from Works Contract	4145.94	1979.05
	<b>748221.99</b>	<b>728662.54</b>

### SCHEDULE 13 B OTHER OPERATIONAL INCOME

Export Incentives	14700.29	19043.03
Rental income on leased assets	8717.83	8887.91
Add/-less:Lease equalisation account	<u>-78.31</u>	<u>537.29</u>
Scrap sales	5280.51	4445.13
Receipt from sale/transfer of surplus stock	60.89	62.17
Others	4568.78	2930.22
	<b>33249.99</b>	<b>35905.75</b>

### SCHEDULE 13 C OTHER INCOME

Profit from sale of fixed assets	351.32	183.44
Dividend on Investment (TDS Rs. 146.19 lakhs (Previous year Rs Nil lakhs)	1392.30	226.10
Others (including grants of Rs. 7.58 lakhs (previous year Rs. 9.26 lakhs) from Government of India for Research & Development Projects)	8379.86	6771.79
	<b>10123.48</b>	<b>7181.33</b>

### SCHEDULE 13 D INTEREST INCOME

From customers	274.12	4425.70
From employees	146.34	222.30
From banks	1587.03	196.88
Others	3381.45	437.44
	<b>5388.94</b>	<b>5282.32</b>





# **SCHEDULE 14** **ACCRETION/(DECRETION) TO WORK-IN-PROGRESS, FINISHED GOODS & SCRAP**

	(Rs. in lakhs)		(Rs. in lakhs)	
	For the year ended		For the year ended	
	31.3.2003		31.3.2002	
Work -in -progress				
Closing Balance	93842.84		107413.61	
Opening Balance	107413.61	-13570.77	108809.45	-1395.84
Finished Goods				
Closing Balance	22881.25		14552.66	
Opening Balance	14552.66	8328.59	17472.66	-2920.00
Scrap				
Closing Balance	1329.97		1210.79	
Opening Balance	1210.79	119.18	1207.62	3.17
Inter-division transfer in transit		590.84		583.75
		<b>-4532.16</b>		<b>-3728.92</b>

# **SCHEDULE 15** **EMPLOYEES REMUNERATION & BENEFITS**

Salaries, Wages, Bonus, Allowances & other benefits	115024.66	110968.41
Contribution to gratuity fund	9770.00	9097.37
Contribution to Provident and other funds	9968.38	9816.58
Group Insurance	213.25	327.32
Staff Welfare Expenses	15488.15	14252.04
	<b>150464.44</b>	<b>144461.72</b>

	2002-2003				2001-2002			
	Salaries & Allowances	C.P.F.	Contribution to Gratuity Fund	Others	Salaries & Allowances	C.P.F.	Contribution to Gratuity Fund	Others
Directors (including Chairman & Managing Director)	29.95	3.42	3.56	7.19	27.45	3.30	3.05	5.11

## **Notes:**

The above figures exclude the premium paid for group insurance policy.

The Chairman & Managing Director & Functional Directors have been allowed the use of staff car for both duty and non-duty journeys. The ceiling of the non-duty journey is 1000 Kms per month against recovery of prescribed amount in accordance with their terms & conditions of appointment. The monetary value of the above perquisite for the use of car ,if calculated in accordance with the provisions of Income Tax Rules, 1962 would amount to Rs. 1.73 lakhs (previous year Rs. 0.59 lakhs)

**SCHEDULE 16**  
**OTHER EXPENSES OF MANUFACTURE,**  
**ADMINISTRATION, SELLING & DISTRIBUTION**

	(Rs. in lakhs) For the year ended 31.3.2003	(Rs. in lakhs) For the year ended 31.3.2002
Resident Consultant's Charges	346.43	183.16
Royalty,technical documentation & other consultancy charges	2196.65	1522.89
Rent(includes Rs. 2202.42 lakhs for residential rent- Previous year Rs. 2116.08 lakhs)	3032.07	2926.25
Excise Duty (including on stock of Finished Goods)	17656.99	22802.95
Power & Fuel	19996.05	18569.30
Rates & Taxes	1492.01	1315.59
Insurance	2931.22	2606.11
Repairs:		
Buildings	1155.42	1017.85
Plant & Machinery	984.15	839.61
Others	3172.79	3655.35
Other expenses in connection with exports	2176.14	3131.86
Bad debts and amount written off	2118.97	774.66
Loss on investment	1.52	
Miscellaneous Expenses	38918.65	34654.95
Cash discount	53.09	5.11
Liquidated damages charged off	4027.42	655.29
Donations	0.58	1.29
Village development & social expenses under 20 point programme	7.06	12.52
	<b>100267.21</b>	<b>94674.74</b>
<b>Notes:</b>		
Repairs do not include expenditure on departmental maintenance which are as under:		
Plant & Machinery	7653.79	9399.45
Buildings	1831.89	1801.53
Others	1340.57	2290.81
	<b>10826.25</b>	<b>13491.79</b>
Agency Commission on exports included in expenses in connection with exports	<b>1104.89</b>	<b>3036.51</b>
Expenditure on research & development	7324.14	7964.71



## SCHEDULE 16 (Contd.)

	(Rs. in lakhs) For the year ended 31.3.2003	(Rs. in lakhs) For the year ended 31.3.2002
Payment to Auditors		
----Fees (includes Rs. 1.19 lakhs (Previous year Rs.1.32 lakhs) to auditors abroad)	18.15	17.05
----Expenses	17.31	11.28
----Income tax matters (includes Rs. 0.64 lakhs (Previous year Rs.6.59 lakhs) to auditors abroad)	4.07	9.48
----Certification work (includes Rs. 0.03 lakhs (Previous year Rs.0.06 lakhs) to auditors abroad)	2.61	3.34
----Other Professional services (includes Rs.0.41 lakhs (Previous year Rs.0.40 lakhs) to auditors abroad)	0.53	0.50
Payment to Cost Auditors	0.68	0.65
*Expenditure on entertainment	350.95	349.79
*Expenditure on foreign travel (for 562 tours (previous year 383 tours))	637.75	490.71
Expenditure on Publicity and Public relations		
Salaries allowances & other benefits	348.23	378.80
Other expenses	530.25	458.60
Director's Fees	3.65	1.63
*As certified by the management		

## SCHEDULE 17 INTEREST AND OTHER BORROWING COSTS

Interest on :		
Bonds	4425.00	1660.89
Banks/financial Institutions borrowings	415.37	5236.37
Others	972.96	3439.27
Other Borrowing Costs	1.71	90.01
	5815.04	10426.54
Less: Borrowing Cost capitalised	337.02	728.97
	<b>5478.02</b>	<b>9697.57</b>

## SCHEDULE 18 PROVISIONS

Doubtful debts, Loans & Advances	11873.47	8123.78
Contractual Obligations	14361.82	12982.50
Others	15795.54	11616.36
	<b>42030.83</b>	<b>32722.64</b>

## SCHEDULE 18A EXTRA-ORDINARY ITEMS

	(Rs. in lakhs) For the year ended 31.3.2003	(Rs. in lakhs) For the year ended 31.3.2002
<b>INCOME</b>		
<b>Expenditure</b>		
Amortisation of Lump sum payment under Voluntary Retirement Scheme	15378.61	19999.61
Extra-ordinary items (Net)	<b>15378.61</b>	<b>19999.61</b>

## SCHEDULE 18B PRIOR PERIOD ITEMS

<b>INCOME</b>			
Turnover	181.96		410.47
Other Operational income	49.30		
Other Income	14.28		-6.58
Accretion to work in progress,finished goods and scrap	46.00		665.84
Others	291.54	34.82	1104.55
<b>EXPENDITURE</b>			
Consumption of Raw material & components	-69.31		462.80
Employees' Remuneration and benefits	1228.79		1.15
Depreciation	-2.31		32.51
Payment to Sub-contractors	68.09		31.77
Interest	-30.74		
Power & fuel	3.24		
Other expenses	74.38	1272.14	28.13
Prior period adjustments (Net)	<b>-980.60</b>		<b>548.19</b>

## SCHEDULE 18C PROVISION FOR TAXATION

For Current Year			
-Current Tax	34200.00		24551.23
-Deferred Tax	-5048.57	29151.43	-3541.80
For earlier years			
-Tax	11869.91		-1520.87
-Deferred Tax	-5229.15	6640.76	-1520.87
	<b>35792.19</b>		<b>19488.56</b>



## SCHEDULE – 19

### EXPLANATORY NOTES.

1. Estimated amount of contracts, net of advances, remaining to be executed on capital account and not provided for is Rs. 9405.38 lakhs (previous year Rs. 11761.81 lakhs).
2. Details regarding rentals in respect of assets taken on lease prior to 1.4.2001 is as given below:

(Rs. in lakhs)

Assets	Cost of Assets		Rentals payable over unexpired period of lease	
	2002-2003	2001-2002	2002-2003	2001-2002
Computers & Peripherals	8288.73	9915.21	2219.87	3785.22
Land & Buildings	22.25	104.33	1.96	7.59
Office equipments	933.47	1179.67	298.28	442.93
Others	11.78	11.78		0.59
TOTAL	9256.23	11210.99	2520.11	4236.33

3. Land and buildings include:
  - a) 15126.667 acres of land (previous year 15154.997 acres), 52 flats (previous year 79 flats) and one building (previous year one building) for which formal transfer/lease deeds have not been executed including for 101.520 acres of land (previous year 101.520 acres) for which the cost paid is provisional; registration charges and stamp duty net of provision already made thereon, would be accounted for on payment.
  - b) 94.936 acres of land (previous year 94.936 acres) leased to Ministry of Defence, Government Departments and others.
  - c) 180 acres of land including 100 acres given on licence valid upto 30<sup>th</sup> November, 1990 (previous year 180 acres and 100 acres respectively) being used by the Ministry of Defence and for which further approval of the competent authority for continuance of licensing of this land is awaited.
  - d) 209.507 acres (previous year 209.507 acres) of land is under adverse possession.
4. The impact on the profit of providing 100 percent depreciation on fixed assets upto Rs.10000/- each, without considering such impact of earlier years, is as under :

(Rs. in lakhs)

	2002-2003	2001-2002
100% depreciation on assets upto Rs.10,000/- charged off in the accounting year	446.35	275.11
Normal depreciation on above	157.79	88.37
Excess amount charged off	288.56	186.74

5. Sales and despatches to customers :
  - (a) Includes Rs. 9083.64 lakhs (previous year Rs. 17003.80 lakhs) based on provisional prices.
  - (b) Includes Rs.20468.77 lakhs (previous year Rs. 18193.95 lakhs) for escalation claims raised in accordance with the sales contracts, inclusive of escalation claims on accrual basis to the extent latest indices were available;
  - (c) Includes despatches of equipment valued at Rs. 1275.25 lakhs (previous year Rs. 5366.87 lakhs) held on behalf of customers at their request for which payment has been received by the Company; and
  - (d) Excludes Rs. 612.97 lakhs (previous year Rs. 901.91 lakhs) for price reduction due to delay in delivery as per terms of the contract.

6. Contingent Liabilities :

- (a) Claims against the company not acknowledged as debt :
    - (i) Income Tax pending appeals (net of provisions) Rs.15659.10 lakhs (previous year Rs. 29709.89 lakhs).
    - (ii) Sales Tax demands Rs. 32405.05 lakhs (previous year Rs. 28349.86 lakhs) against which Rs.7938.64 lakhs (previous year Rs. 7392.75 lakhs) has been paid under protest/court orders and included under the head advances recoverable.
    - (iii) Excise Duty demands Rs.25367.10 lakhs (previous year Rs. 26524.53 lakhs), against which Rs 1474.07 lakhs (previous year Rs. 1655.43 lakhs) has been paid under protest/court orders and included under the head advances recoverable.
    - (iv) Customs Duty demands Rs. 5.82 lakhs (previous year Rs. 5.82 lakhs).
    - (v) Court / Arbitration cases Rs.8146.33 lakhs (previous year Rs. 4548.53 lakhs) against which NIL (previous year Rs. 21.07 lakhs ) paid under protest/court orders.
    - (vi) Liquidated Damages Rs.4996.05 lakhs (previous year Rs. 9827.00 lakhs).
    - (vii) Counter claim by contractors Rs. 4156.63 lakhs (previous year Rs. 4113.52 lakhs).
    - (viii) Others Rs. 1588.70 lakhs (previous year Rs. 1962.88 lakhs).
  - (b) Bills discounted under IDBI scheme outstanding at the close of the year amounting to Rs.20336.25 lakhs (previous year Rs. 30610.16 lakhs).
  - (c) Bank Guarantees outstanding at the close of the year amounting to Rs.275804.62 lakhs (previous year Rs. 268503.18 lakhs).
  - (d) Corporate Guarantees issued on behalf of joint ventures outstanding at the close of the year amounting to Rs.1880.00 lakhs (previous year Rs. 205.00 lakhs).
7. Cash credit limit from banks aggregating Rs.75000 lakhs (previous year Rs. 75000 lakhs) and company's counter guarantee/ indemnity obligations in regard to banks guarantee/letter of credit limits aggregating to Rs.750000 lakhs (previous year Rs.750000 lakhs) sanctioned by consortium of banks are secured by first charge by way of hypothecation of raw materials, components, work in progress, finished goods, stores, book debts and other current assets.
8. 8.85% Non convertible,secured,redeemable taxable Long Term Bonds of face value of Rs. 1 crore each amounting to Rs. 500 crores were issued on 15.11.2001 for a period of 7 years with put/call option at the end of 5 years. These are secured by way of a legal mortgage and charge in favour of trustees on the immovable properties of the company situated at Apartment No. A/T – 1 on 3<sup>rd</sup> floor in Shrikrishna Apartments,Nr. Gowan Square,Nagpur,by equitable mortgage by deposit of title deeds in respect of the Company's immovable properties situated at Hardwar and Ramachandrapuram, Hyderabad Units and by hypothecation of the whole of the movable properties of the company of these units including its movable plant & machinery,machinery spares,tools and accessories and other movables,both present and future (except specific assets on which exclusive first charge had already been created and book debts).
9. (a) The Company has filed an appeal in Income Tax Appellate Tribunal contesting the non-acceptance of claim of normal and extra ordinary exchange variation loss of Rs.37745.00 lakhs (previous year Rs.37745.00 lakhs) on accrual basis relating to the assessment year 1992-93. Based on the legal decisions, as the demand is likely to be deleted, no provision thereof has been made and the sum is shown as contingent liability as in the past in para 6(a)(i) above. The demand of Rs. 24974.61 lakhs (previous year Rs.24974.61 lakhs) raised by the income tax department in respect of the said income tax liability has been adjusted by the income tax department against the refunds due to the company and the company is showing the same as "other deposits" in Schedule 9 - Loans and Advances in the balance sheet. However, as the Income Tax department held, that the said claim is allowable on payment basis , the same was claimed and allowed by the income tax department in the subsequent years and refunds received therefrom were adjusted to the profit and loss account of the years of receipt. In the event of allowability of the above appeal, refund of tax allowed earlier will have to be refunded back. Accordingly, a sum of Rs.12200 lakhs (excluding interest) over and above provision held has been provided in the accounts during the year. While providing the amount, the amount receivable by the company from the department by way of interest on the earlier adjustments has not been considered.
- (b) During this year the assessing officer reduced the amount of interest waived earlier and raised a demand of Rs.1425.07 lakhs for assessment year 1992-93 which has been partly recovered to the extent of Rs.1304.00 lakhs by adjusting the refund due to the company. The company has been legally advised that the demand is based on incorrect interpretation of earlier order of Commissioner of Income Tax granting the waiver and is also time barred. Based on expert advise, no provision has been made for the demand. Further, the company will be taking the necessary steps to get the demand quashed.





10. Capital equipments and civil works costing Rs. 687.72 lakhs (previous year Rs. 700.60 lakhs) relating to EPP at HEEP-Hardwar unit, was fully depreciated/provided for in the earlier years, for non use of these equipments and civil works on account of non-availability of essential raw materials. The matter continues to be under investigation.
11. Amorphous Silicon Solar Cell Plant (ASSCP), Gurgaon was taken from Ministry of Non-conventional Energy Sources on lease for a period of 30 years. The lease agreement with the Government is yet to be finalised.
12. Other liabilities include a sum of Rs. 10051.51 lakhs (previous year Rs. 10051.51 lakhs) towards guarantee fee demanded by the Government of India in respect of Foreign Currency loans taken by the company at the instance of the Government upto 1990-91. The matter for its waiver has been taken up with the Government since there was no stipulation for payment of such guarantee fee at the time the loans (guaranteed by Government) were taken.
13. Liability due to small scale industrial undertakings shown in Schedule-10 has been determined from database maintained at units/divisions of the company, and updated to the extent responses received from such undertakings as to their SSI status. Name of SSIs to whom company owes sum for more than 30 days are included in Annexure.
14. The details of lumpsum amount paid under Voluntary Retirement Schemes 1999-2000, 2000-2001 and 2001-2002 by the company and charging off of the same as per Accounting Policy No.16 is as follows:

(Rs. in Lakhs)				
	Total lumpsum amount paid	Charged off upto 2001-2002	Charged off in 2002-2003	Balance amount deferred
	(a)	(b)	(c)	(d)
VRS 1999-2000				
—paid in 1999-2000	28913.10	24094.33	4818.77	*
—arrear paid in 2000-2001	9554.27	7961.92	1592.35	**
—arrear paid in 2001-2002	3.40	2.82	0.58	***
VRS 2000-2001				
—paid in 2000-2001	4833.84	2819.76	1611.26	402.82 ****
—Spillover paid in 2001-2002	561.43	187.15	187.14	187.14 *****
VRS 2001-2002				
—Paid in 2001-2002	21503.55	5375.86	7167.86	8959.83 *****
—Paid in 2002-2003	1.11		0.65	0.46 *****
Total	65370.70	40441.84	15378.61	9550.25

- \* 1/6th of the total lumpsum amount charged off in 1999-2000 , 1/3rd each in 2000-2001 & 2001-2002 and balance 1/6th in the current year.
- \*\* 1/2 and 1/3<sup>rd</sup> of the total lumpsum amount charged off in 2000-2001 & 2001-2002 respectively and balance 1/6th of the total sum charged to revenue in the current year.
- \*\*\* 5/6th charged off in 2001-2002 and balance 1/6th charged off in the current year.
- \*\*\*\* after charging off 1/4th , 1/3rd and 1/3rd of the total lumpsum amount in 2000-2001, 2001-2002 and 2002 2003 respectively. Balance 1/12<sup>th</sup> will be charged to revenue in 2003-2004.
- \*\*\*\*\* after charging off 1/3th of the total lumpsum amount in 2001-2002 and 1/3 rd in 2002-2003 .Balance 1/3rd will be charged off in 2003-2004.
- \*\*\*\*\* after charging off 1/4th of the total lumpsum amount in 2001-2002 and 1/3rd in 2002-2003. Balance will be charged to revenue over the next two accounting periods in the ratio of 1/3rd and 1/12th of the total sum respectively.
- \*\*\*\*\* after charging off 7/12th of the total lumpsum amount in 2002-2003 .1/3rd of the total lumpsum amount will be charged off in 2003-2004 and balance 1/12<sup>th</sup> in 2004-2005.
15. a. The Company has revised its accounting policy relating to liquidated damages to make it more objective. The effect on profit before tax due to this change is a decrease of Rs. 2292.71 lakhs
  - b. The Company has revised its accounting policy relating to travel benefits of employees at the time of retirement in line with Accounting Standard 15—Accounting for Retirement benefits. The effect on profit before tax due to this change is a decrease of Rs 383.16 Lakhs .
  16. a. The Company has revised its accounting practice relating to accounting of insurance spares in line with Accounting Standard 10—Accounting for Fixed Assets. The effect on profit before tax due to this change is a decrease of Rs. 103.28 lakhs.
  - b. The Company has revised its accounting practice to provide for LTC claims. The effect on profit before tax due to this change is a decrease of Rs. 23.93 lakhs.
  17. The amount of exchange differences adjusted in the carrying amount of fixed assets during the accounting period is Rs. 94.33 lakhs (Previous year Rs. 61.82 lakhs).
  18. Related Party Transactions:
    - i) Related Parties where control exists (Joint Ventures):
      - Powerplant Performance Improvement Ltd.
      - BHEL-GE Gas Turbine Services Pvt Ltd.
    - ii) Other related parties (Key Management Personnel- Functional Directors):
      - S/Shri K G Ramachandran, Ishan Shankar, H W Bhatnagar, R C Aggarwal, C Srinivasan, Virendra Kumar
    - iii) Details of transactions:

(Rs. in lakhs)

Particulars	Joint Ventures		Key Management Personnel		Relatives of KMP	
	2002-03	2001-02	2002-03	2001-02	2002-03	2001-02
Purchase of Goods and Services	958.00					
Sales of Goods and services	983.45	956.44				
Purchase of Fixed Asset						
Sale of Fixed asset						
Assets taken on lease						
Dividend income	1392.30	226.10				
Royalty income	87.94	50.61				
Amounts due to BHEL at end of the year	328.58	407.53	0.57	0.72		
Amounts due from BHEL at end of the year	508.38					
Provision for Doubtful debts	12.65	12.02				
Provision for Doubtful Advances						
Amounts written off						
Amounts written back						
Guarantees given on behalf of	1880.00	205.00				
Payment of Salaries			44.12	38.91		

19.Details of assets taken on finance lease after 1st April, 2001 are as under:

(Rs. in lakhs)

		As On 31-3-2003	As On 31-3-2002
a.	Outstanding balance of Minimum Lease payments		
	-not later than one year	1111.14	826.68
	-later than one year and not later than five years	2096.16	2182.01
	-later than five years	0.00	77.68
	Total minimum lease payments at the balance sheet date	3207.30	3086.37
b.	Present Value of (a) above		
	-not later than one year	808.38	617.50
	-later than one year and not later than five years	1585.47	1474.84
	-later than five years	0.00	36.26
	Total present value at the balance sheet date	2393.85	2128.60
c.	Finance charges	813.45	957.77

20. As per the Accounting Standard 20 issued by the Institute of Chartered Accountants of India, while calculating the Earning per Share:

- the amount used as numerator in calculating the basic and diluted earning per share is the net profit of Rs. 44451.27 Lakhs for the year disclosed in the Profit & Loss Account; and
- The weighted average number of equity shares used as the denominator in calculating both basic and diluted earnings per share is 2447.60lakhs.
- Nominal value of share is Rs. 10/-.

21. The break up of net deferred tax asset on account of timing differences are as under:

(Rs. in lakhs)

	As on 31.3.2003	As on 31.3.2002
<b>Deferred Tax Assets</b>		
Provisions	47289.14	43842.08
Deferred Revenue Expenditure of Voluntary Retirement Schemes	3389.09	617.55
Statutory dues	2344.41	1236.24
Modvat Adjustments	384.07	728.20
Others	1791.59	
	<b>55198.30</b>	<b>46424.07</b>
<b>Deferred Tax Liabilities</b>		
Depreciation	14458.78	15962.27
<b>Net Deferred Tax Assets</b>	<b>40739.52</b>	<b>30461.80</b>



## 22. SEGMENT INFORMATION

Rs. in lakhs

	For the year ended 31.03.2003			For the year ended 31.03.2002		
A. PRIMARY SEGMENT - BUSINESS SEGMENTS						
	Power	Industry	Total	Power	Industry	Total
I. SEGMENT REVENUE						
a. Segment Revenue *	539447.14	262178.77	801625.91	539216.62	244348.92	783565.54
b. Inter-Segment Revenue * (considered above)	810.00	29254.11	30064.11	728.77	25706.00	26434.77
c. Operating Revenue (External)* (net of Inter Segment Revenue) * inclusive of excise duty	538637.14	232924.66	771561.80	538487.85	218642.92	757130.77
II. SEGMENT RESULTS						
a. Segment Results	127373.21	27842.45	155215.66	121780.56	24449.24	146229.80
b. Unallocated Expenses (Net of income)			54115.57			50249.41
c. Profit before Interest, DRE & Income tax (a)-(b)			101100.09			95980.39
d. Interest			5478.02			9697.57
e. Deferred Revenue Expenditure Written Off			15378.61			19999.61
f. Net Profit before Income Tax (c) - (d) - (e)			80243.46			66283.21
g. Provision for taxation			35792.19			19488.56
h. Net Profit after Income Tax			44451.27			46794.65
III ASSETS & LIABILITIES						
a. Segment Assets	475354.44	298260.14	773614.58	517515.53	293649.41	811164.94
b. Unallocated Assets			185177.71			118332.32
c. Total Assets			958792.29			929497.26
d. Segment Liabilities	304097.66	116756.98	420854.64	305746.71	128307.84	434054.55
e. Unallocated Liabilities			54751.31			37291.99
f. Total Liabilities			475605.95			471346.54
IV OTHER INFORMATION						
a. Cost incurred during the period to acquire fixed assets	15432.39	1645.27		13075.94	3900.12	
b. Depreciation	7553.69	9527.81		7112.80	4315.94	
c. Non Cash Expenses (other than depreciation)	15709.22	4425.96		8569.67	3145.55	
B. SECONDARY SEGMENT - GEOGRAPHICAL SEGMENTS						
	Within India	Outside India	Total	Within India	Outside India	Total
1 Net Sales/Income from Operations	726160.91	45400.89	771561.80	658412.51	98718.26	757130.77
2 Total Assets	936349.47	22442.82	958792.29	928231.88	1265.38	929497.26
3 Cost incurred during the period to acquire Fixed Assets	18654.64	132.37	18787.01	20711.79	2.69	20714.48

### NOTES :

- The products and services of the Company have been grouped under "Power" and "Industry" segments depending upon the sector to which they are predominantly identified in the market.
- Power Sector includes products and services relating to various power generation sets and its auxiliaries.
- Industry Sector includes products and services relating to transportation and transmission, electric machines, industrial sets and DG sets, telecommunications and other industrial products and systems.
- Inter segment transfers have been carried out at mutually agreed prices.
- The Company has revised its accounting policy relating to liquidated damages resulting in segment results in respect of Power Sector being lower by Rs. 2292.71 lakhs.

23. Pursuant to compliance of Accounting Standard-27 issued by the Institute of Chartered Accountants of India, relevant disclosures relating to Joint ventures are as follows:

a) Names of joint ventures	Country of Incorporation	Proportion of Ownership
Powerplant Performance Improvement Ltd.	India	One share less
BHEL-GE Gas Turbine Services Pvt. Ltd.	India	than 50%

- (b) (i) Company's share of the contingent liabilities of the joint ventures themselves is Rs. 222.96 lakhs;  
(ii) Company's share of the capital commitments of the joint ventures themselves Rs. 4.15 lakhs;  
(iii) Corporate Guarantees given on behalf of Joint Ventures : Rs. 1880.00 Lakhs ;  
(iv) Aggregate amount of company's interests in the joint ventures as per accounts for the year ending 31.3.2003:

(Rs. in Lakhs)

Fixed Assets	506.84
Net Current Assets	627.66
Misc. Expenditure (Not written Off)	5.06
Secured Loans	119.05
Deferred Tax Liability	37.36
Shareholders' Funds	983.15
Income	11682.25
Expenses	9864.89

(v) The above information is based on the unaudited accounts of the Joint Ventures.

24. The company invested a sum of Rs. 500 lakhs towards equity shares of Rs. 10/- each (at par) in Konark Met Coke Ltd. (KMCL) Bhubaneshwar, to secure orders for equipment being supplied by the company. The equity participation is restricted to 7.5% of the value of the orders received with a maximum of Rs. 2250 lakhs. Government approval of investment in equity shares of KMCL is awaited.
25. Responses to confirmation of outstanding balances and stocks held by sub-contractors/ fabricators were received only in a few cases, some of them seeking details.
26. Previous year's figures have been regrouped/reclassified wherever practicable to conform to current year's presentation.



## SCHEDULE 19A

### Balance Sheet Abstract and Company's General Business Profile

i) Registration details :

Registration No.

0 0 4 2 8 1

State Code

5 5

Balance Sheet

3 1

Date

0 3

Month

0 3

Year

ii) Capital raised during the year (Amount in Rs. Lakhs)

Public Issue

Right Issue

NIL

NIL

Bonus Issue

Private Placement

NIL

NIL

iii) Position of mobilisation and deployment of funds ( Amount in Rs. Lakhs)

Total Liabilities

1 0 0 9 0 8 2 . 0 6

Total Assets

1 0 0 9 0 8 2 . 0 6

Sources of Funds

Paid Up Capital

2 4 4 7 6 . 0 0

Reserves & Surplus

4 5 5 8 9 1 . 0 1

Secured Loans

5 0 0 0 0 . 0 0

Unsecured Loans

3 1 0 9 . 1 0

Application of Funds

Net Fixed Assets\*

1 2 2 9 1 9 . 9 1

Investments

1 0 3 2 . 7 2

\* It includes Capital WIP Rs. 5869.75 Lakhs

Net Current Assets

3 5 9 2 3 3 . 7 1

Misc. Expenditure (Deferred Revenue Exp.)

9 5 5 0 . 2 5

Accumulated Losses

Nil

Deferred Tax Assets

4 0 7 3 9 . 5 2

iv) Performance of Company (Amount in Rs. Lakhs)

Turnover \*

7 4 8 2 2 1 . 9 9

Total Expenditure

6 9 2 2 9 6 . 6 2

\* Inclusive of Excise Duty Rs.55191.56 lakhs

Total earnings including accretion/decretion in inventory, other operational income, other revenue and adjustment of excise duty on turnover for the year is Rs. 772540.08 Lakhs as against total expenditure.

Profit Before Tax

8 0 2 4 3 . 4 6

Profit After Tax

4 4 4 5 1 . 2 7

Earning Per Share in Rs.

1 8 . 1 6

Dividend rate

4 0 %

v) Generic names of three principal products/services of Company (as per monetary terms)

1. Item Code No. : 8 4 0 2 1 0

(ITC Code)

Product Description : Boilers other than parts

2. Item Code No. : 8 5 0 2 3 9 0 2

(ITC Code)

Product Description : Complete generating sets including hydro turbines

3. Item Code No. : 8 4 1 1 8 2 0 6

(ITC Code)

Product Description : Gas turbine of thrust exceeding 115000 KW.

**SCHEDULE 20**  
**Sales, Opening Stocks & Closing Stocks**

(Rs. in lakhs)

Product	Unit	Sales during the year 2002-2003		Op. Stock of Fin. Goods 1.4.2002		Cl. Stock of Fin. Goods 31.3.2003	
		Qty.	Value	Qty.	Value	Qty.	Value
<b>BHOPAL</b>							
<b>SWITCHGEAR, CONTROLGEAR, RECTIFIER, CAPACITORS</b>							
Switchgear-11 kv to 220 kv high speed air blast circuit breakers	Nos	3227 (2734)	5360.36 (4951.51)	71 (0)	116.24 (0.00)	0 (71)	40.77 (116.24)
Control Panels	Nos	465 (606)	1444.77 (1109.55)	2 (100)	6.24 (66.34)	4 (2)	5.3 (6.24)
Industrial controlgear	Nos	6 (7)	725.43 (924.06)	0 (0)	0.31 (0.00)		(0.31)
Traction controlgear for AC, DC & diesel system	Set	143 (192)	5061.89 (4891.64)	0 (0)	0 (0.00)		(0.00)
Rectifiers with Electronics	Nos	345 (453)	4862.24 (3358.30)	0 (16)	0 (17.49)		(0.00)
Capacitors	MVAR	2656 (1818)	1533.38 (1230.93)	558 (0)	289.49 (0.54)	144 (558)	92.42 (289.49)
Bushings		-	644.26 (626.81)	0 (0)	0 (14.25)		11.42 (0.00)
<b>TRANSFORMERS</b>							
Power transformers (upto 400 kv)	MVA/Nos	8827/58 (8567/65)	12321.55 (7976.03)	727/9 (350/4)	775.7 (807.29)	945/5 (727/9)	1634.22 (775.70)
Instrument, welding, transformers and reactors	MVA/Nos	0/560 (0/505)	1082.37 (2439.97)	0/61 (0/19)	55.25 (29.98)	0/41 (0/61)	52.78 (55.25)
<b>INDUSTRIAL AND TRACTION MACHINES</b>							
Traction Motors for AC, DC & diesel system, main/auxiliary generators	Nos	2952 (3552)	25493.05 (24124.85)	64 (171)	333.28 (751.65)	68 (64)	641.97 (333.28)
Industrial machines, AC motors upto 1000 HP, DC motors & generators of all types	Nos	419 (479)	5214.12 (5585.05)	0 (11)	0 (121.59)		(0.00)
Repair contract - EMRP	-		0 (2265.73)	0 (0)	0 (0.00)	0 (0)	0 (0.00)
<b>HEAVY ROTATING PLANT &amp; TURBINES</b>							
Large electrical machines above 1000 HP	Nos	102 (92)	5519.99 (4708.32)	1 (2)	22.7 (54.99)	1 (1)	56.41 (22.70)
Water wheel alternators & water turbines & Mini micro turbines & generators	Nos/ MW	8/T 1330 7/G 1055 (5/T) (395) (7/G) (795)	21962.85 15364.58 11711.08 (10699.15)	0 0 (0) (0)	1142.79 391.6 (114.83) (12.90)	0 0 (0) (0)	0 0 (1142.79) (391.60)



**SCHEDULE 20 (Contd.)**  
**Sales, Opening Stocks & Closing Stocks**

(Rs. in lakhs)

Product	Unit	Sales during the year 2002-2003		Op. Stock of Fin. Goods 1.4.2002		Cl. Stock of Fin. Goods 31.3.2003	
		Qty.	Value	Qty.	Value	Qty.	Value
Turbo Alternators & Steam turbines & Heat Exchangers	Nos		6982.52 (0.00)		162.14 179.13		
	14 H.Ex		3271.13 (5635.89)		0.00 (70.27)		(162.14)
			(0.00)		(155.05)		(179.13)
	(15 H.Ex)		(4079.69)		(0.00)		(0.00)
Others			6862.43 (2676.60)		0 (27.91)		(0.00)
	<b>TOTAL</b>		<b>123706.92</b>		<b>3474.87</b>		<b>2535.29</b>
<b>JHANSI</b>							
Power transformers and special transformers	Nos	89 (86)	9596.84 (8820.10)	0 (4)	0 (407.47)	2	249.51
ESP Transformer	Nos	176 (81)	1505.1 (676.48)				
ACEMU Transformer	Nos	2	16.97 (-0.06)				
Freight Loco transformers	Nos	32 (32)	735.06 (714.58)				
Instrument transformers	Nos	1200 (1507)	1260.38 (1486.47)	2 (3)	1.78 (2.62)	83 (2)	69.18 (1.78)
Bus Duct	Nos/Set		1596.04 (1665.65)		49.56 (2.57)		19.3 (49.56)
Dry Type Transformer	Nos.	65 (43)	732.73 (448.44)	15 (7)	66.04 (13.32)	8 (15)	16.02 (66.04)
Diesel Shunters	Nos	8 (2)	1391.37 (230.84)				
Others	Nos		856.68 (685.54)		11.74 (9.22)		1.35 (11.74)
	<b>TOTAL</b>		<b>17691.17</b>		<b>129.12</b>		<b>355.36</b>
<b>HEEP, HARDWAR</b>							
Electrical Machines	MW/Nos	109/104 (113/117)	2710.89 (3167.17)	13/45 (17/39)	531.27 (628.55)	15/44 (13/45)	535.77 (531.27)
Industrial controls panels	Nos.		0 (50)	15 (9)	44.65 (30.97)	3 (15)	19.24 (44.65)
Turbo Sets	MW/Nos	1945/5 (2330/6)	55890.89 (45065.34)	-	435.84 (193.28)		205.79 (435.84)
Hydro sets	MW/Nos	42/1 (15/1)	2680.69 (1376.99)	-	5.94 (0.56)	-	(5.94)



**SCHEDULE 20 (Contd.)**  
**Sales, Opening Stocks & Closing Stocks**

(Rs. in lakhs)							
Product	Unit	Sales during the year 2002-2003		Op. Stock of Fin. Goods 1.4.2002		Cl. Stock of Fin. Goods 31.3.2003	
		Qty.	Value	Qty.	Value	Qty.	Value
Super Rapid Gun Mount	Nos.	2	3430.32		89.15		89.15
		-	(185.94)	-	(89.15)	-	(89.15)
Others			17237.35		193.62		81.04
		-	(16893.96)	-	(107.27)		(193.62)
<b>TOTAL</b>			<b>81950.14</b>		<b>1300.47</b>		<b>930.99</b>
<b>CFFP, HARDWAR</b>							
Steel Castings	MT	154.02	172.10	2.085	3.62	53.52	7.60
		(52.00)	(71.46)	(14.613)	(29.16)	(2.085)	(3.62)
Steel forgings	MT	134.01	340.03	24.622	50.90	14.46	25.29
		(45.964)	(129.18)	(31.610)	(63.73)	(24.622)	(50.90)
NF Casting	MT			2.080	3.43		
						(2.080)	(3.43)
<b>TOTAL</b>			<b>512.13</b>		<b>57.95</b>		<b>32.89</b>
<b>BOILER PLANT &amp; SSTP TRICHY</b>							
Boilers	MT	+142481	157812.93	2569	1177.45	1294.00	1016.24
		+(129812)	(144875.77)	(1116)	(881.70)	(2569)	(1177.45)
Valves	Nos *	34108.00	11736.88	2658	123.05	969.00@	215.73
		(30258)	(11157.03)	(1397)	(198.97)	(2658)@	(123.05)
Income from testing & other services			7109.42				
			(6209.63)				
Seamless steel tubes	MT	2322.00	1002.25	21**	12.78**	4.00**	1.66**
		(2937)	(1209.19)	(5)	(3.23)	(21)	(12.78)
Armoured recovery vehicle	Nos.						
		(9)	(3666.67)	(2)	(681.00)		
<b>TOTAL</b>			<b>177661.48</b>		<b>1313.28</b>		<b>1233.63</b>
<b>BAP,RANIPET</b>							
Boiler auxiliaries	MT	6757	4485.39	3221	1063.67	2108	741.84
		(10401)	(4971.70)	(1701)	(567.71)	(3221)	(1063.67)
Wind Mill	MT		25.27				
			(60.46)				
Income from testing & other services			176.67				
			(244.48)				
Income from external erection & other services			628.48				
			(973.43)				
<b>TOTAL</b>			<b>5315.81</b>		<b>1063.67</b>		<b>741.84</b>
<b>HYDERABAD</b>							
60 MW Sets	MW						
		(1+P)	(483.91)				



**SCHEDULE 20 (Contd.)**  
**Sales, Opening Stocks & Closing Stocks**

(Rs. in lakhs)

Product	Unit	Sales during the year 2002-2003		Op. Stock of Fin. Goods 1.4.2002		Cl. Stock of Fin. Goods 31.3.2003	
		Qty.	Value	Qty.	Value	Qty.	Value
110/120 MW Sets	MW	1+P (1+P)	4746.67 (5067.30)	1P	297.70	(1+P)	(297.70)
Small & Medium Sets	MW	18+P (7+P)	21090.60 (11247.19)		762.93 (261.52)	1P	374.29 (762.93)
Pumps and heaters	Nos	5+P (2+P)	12402.13 (8741.47)	1P	105.88 (38.00)	1P (1+P)	12.66 (105.88)
Compressors	Nos	1+P (2+P)	3600.31 (3185.62)				
Gas Turbine	Nos	8+P (3+P)	29746.34 (50554.29)	1P (3+P)	2952.33 (7940.14)	3P (1+P)	14234.82 (2952.33)
Aux.Prodn.Breakers	Nos	97.00 (205)	2154.26 (2623.08)	56 (61)	280.75 (431.55)	48.00 (56)	406.95 (280.75)
Bowl Mills		43+P (29+P)	15567.24 (14152.04)				
Heat Exchangers			0.00 (1477.63)				
Erection Income			455.56 (326.85)				
Castings			704.51 (788.25)		209.11 (376.54)		291.10 (209.11)
Others (serv.)			8574.19 (6701.48)				
Breakers Spares			425.05 (503.54)				
Spares Other than breakers			24590.37 (17894.71)		60.51 (60.51)		
<b>TOTAL</b>			<b>124057.23</b>		<b>4669.21</b>		<b>15319.82</b>
<b>INDUSTRIAL SYSTEMS GROUP</b>							
Control panels		298.00 (347)	421.11 (1231.60)				
Motors & spares		9.00 (10)	9.45 (323.14)				
Other Equipments		599.00 (426)	4123.72 (3088.98)		(2.71)		
Other services			523.03 (553.71)				
<b>TOTAL</b>			<b>5077.31</b>		<b>0.00</b>		<b>0.00</b>
<b>ELECTRONICS DIVISION</b>							
Energy meters a/ Single Phase	Nos	341668 (310841)	2266.98 (2036.89)	26847 (1650)	180.19 (8.01)	2076.00 (26847)	13.60 (180.19)

**SCHEDULE 20 (Contd.)**  
**Sales, Opening Stocks & Closing Stocks**

(Rs. in lakhs)							
Product	Unit	Sales during the year 2002-2003		Op. Stock of Fin. Goods 1.4.2002		Cl. Stock of Fin. Goods 31.3.2003	
		Qty.	Value	Qty.	Value	Qty.	Value
b/ Poly Phase	Nos	125240 (93830)	1733.97 (1517.23)	32678 (3088)	467.78 (25.52)	7946.00 (32678)	76.37 (467.78)
Capacitors-Electrolytic	Nos	(4232)	(2.95)	7674 (7631)	(0.00) (8.63)	7674.00 (7674)	0.00 (0.00)
Power devices	Nos	2561 (3949)	135.54 (140.69)	781 (740)	25.90 (18.13)	530.00 (781)	16.08 (25.90)
Photovoltaics	KWs	989.00 (887)	2014.93 (2741.90)	154 (145)	401.28 (304.09)	66.00 (154)	437.73 (401.28)
Telecommunications	Lines	110971.00 (333776)	3251.38 (9214.98)				
Simulators (Defence Electronics)	Sets	86.00 (172)	1060.13 (4776.54)				
Control Equipments	Cubicles	997.00 (876)	26220.73 (20679.94)	7 (0)	12.13 (0.00)	2.00 (7)	223.11 (12.13)
<b>TOTAL</b>			<b>36683.66</b>		<b>1087.28</b>		<b>766.89</b>
<b><u>ELECTRO PORCELAINS DIVISION</u></b>							
Insulators & bushings	MT	5295.00 (7019)	3546.23 (7215.84)	431 (576)	251.75 (444.89)	380.00 (431)	246.66 (251.75)
Ceralin	MT	1697.00 (962)	1775.48 (905.88)	20 (50)	29.19 (29.19)	4.00 (20)	4.31 (29.19)
Income from testing & other services			11.96 (60.88)				
<b>TOTAL</b>			<b>5333.67</b>		<b>280.94</b>		<b>250.97</b>
<b><u>POWER GROUP</u></b>							
Income from sales, erection & Other Services			110731.51 (85843.91)		481.98 (417.40)		435.62 (481.98)
<b>TOTAL</b>			<b>110731.51</b>		<b>481.98</b>		<b>435.62</b>
<b><u>OVERSEAS PROJECTS CO -ORDINATION UNIT</u></b>							
Income from sales, erection Other services & spares			38897.45 (88638.95)		0.00 (603.83)		
<b>TOTAL</b>			<b>38897.45</b>		<b>0.00</b>		<b>0.00</b>
<b><u>JAGDISHPUR</u></b>							
Insulators	CMT	5296.34 (4475.21)	3772.46 (2825.11)	330 (381)	207.23 (192.81)	318.31 (330)	146.30 (207.23)
Ceralin	MT	700.93 (456.76)	770.69 (488.53)		(0.00)	8.30	10.69
Erection & Services			(1.69)				
<b>TOTAL</b>			<b>4543.15</b>		<b>207.23</b>		<b>156.99</b>
<b><u>GOINDWAL</u></b>							
Industrial Valves	Nos	(0)	(0.00)	135 (124)	32.02 (29.50)	150.00 (135)	31.13 (32.02)
<b>TOTAL</b>			<b>0.00</b>		<b>32.02</b>	<b>-</b>	<b>31.13</b>



**SCHEDULE 20 (Contd.)**  
**Sales, Opening Stocks & Closing Stocks**

(Rs. in lakhs)

Product	Unit	Sales during the year 2002-2003		Op. Stock of Fin. Goods 1.4.2002		Cl. Stock of Fin. Goods 31.3.2003	
		Qty.	Value	Qty.	Value	Qty.	Value
<b><u>CENTRE OF TECHNOLOGY</u></b>							
<b><u>TRANSFER, HYDERABAD</u></b>							
8 HP Servo Motor	Nos.	0	0				
		(1)	(11.75)				
MCBG for Railways	Nos.	0	0				
		(4)	(25.06)				
12000 RPM,3 Phase	Lots	1P	103.97				
400 HZ 30-40 KVA Alternator		(0)	(0.00)				
205 KW 3300 RPM D C Motor	Nos.	3P	27.00				
		(0)	(0.00)				
Income from testing & services			159.51				
			(115.67)				
Spares for tank truck automation	Lot	2.00	0.35				
		(1)	(10.28)				
Automation of Tank Truck Filling	Set	1P	2.55				
		(1P)	(13.77)				
GTO Type West Gate Thyristors	Nos.	5.00	3.13				
		(0)	(0.00)				
Steam & Water Chemistry	Lot	1.00	13.57				
Diagnostic Software		(0)	(0.00)				
Solar Geysers	Nos.	20.00	3.40				
		(0)	(0.00)				
Microwave Sintering System	Nos.	1	1.55				
		(0)	(0.00)				
	<b>TOTAL</b>		<b>315.03</b>		<b>0.00</b>		<b>0.00</b>
<b><u>CFP RUDRAPUR</u></b>							
HAWM	Nos		0.00	8	0.40	8	0.40
			(0.00)	(8)	(0.40)	(8)	(0.40)
SWHS	Nos	2842	292.79	243	12.48	71	2.45
		(2135)	(236.79)	(361)	(21.12)	(243)	(12.48)
Solar Lantern	Nos.	17153	517.50	1190	15.72	168	1.85
		(16831)	(530.27)	(655)	(10.48)	(1190)	(15.72)
	<b>TOTAL</b>		<b>810.29</b>		<b>28.60</b>		<b>4.70</b>

**SCHEDULE 20 (Contd.)**  
**Sales, Opening Stocks & Closing Stocks**

(Rs. in lakhs)							
Product	Unit	Sales during the year 2002-2003		Op. Stock of Fin. Goods 1.4.2002		Cl. Stock of Fin. Goods 31.3.2003	
		Qty.	Value	Qty.	Value	Qty.	Value
<b><u>HERP/VARANASI</u></b>							
Spares & Repairs for Boiler/			1762.50		107.41		85.13
Turbine & Auxiliaries			(2805.99)		(152.64)		(107.41)
	<b>TOTAL</b>		<b>1762.50</b>		<b>107.41</b>		<b>85.13</b>
<b><u>ADVANCE RESEARCH PROJECT</u></b>							
Others (Services)			107.69				
			(58.85)				
	<b>TOTAL</b>		<b>107.69</b>		<b>0.00</b>		<b>0.00</b>
<b><u>TPG BHOPAL</u></b>							
Spares(Including Services)			11350.66		318.63		
			(14823.11)	-	(0.00)	-	(318.63)
	<b>TOTAL</b>		<b>11350.66</b>		<b>318.63</b>		<b>0.00</b>
<b><u>OSBG &amp; EMRP</u></b>							
Repair & Project work			1714.19				
			(0.00)				
	<b>GRAND TOTAL</b>		<b>748221.99</b>		<b>14552.66</b>		<b>22881.25</b>

Figures in brackets represent previous year's figures

\* Correct weight particulars in terms of tonnage could not be ascertained

	Nos.	Rs. in Lakhs
@ This excludes closing stock meant for Boiler treated as WIP	4392	155.68
	(2588)	(83.24)
Valves drawn for Boilers	26432	3254.89
	(36694)	(2165.45)

\*\* This excludes opening stock of 56 MT (Rs. 27.68 lakhs) and closing stock of 30 MT of Rs. 10.98 lakhs meant for Boiler Plant treated as WIP.

'P' denotes partly completed units, 'T' Turbines, 'G' Generators & 'H.Ex' Heat Exchanger.

+' This includes 36587 MT (Previous Year 27980 MT) of BAP Ranipet, composite turnover for Fossil Boiler.



**SCHEDULE 21**  
**Licensed Capacity, Installed Capacity and Actual Production**

SI NO	Product	Unit	Installed Capacity		Actual Production	
			2002-03	2001-2002	2002-03	2001-2002
<b><u>BHOPAL</u></b>						
1	Turbo Sets					
	-Steam Turbine	Nos.	3	3	0	0
		MW	360	360	0	0
	-Marine Turbine	Nos.	2	2	0	0
		MW	24	24	0	0
	-Nuclear Turbine	Nos.	1	1	0	0
		MW	236	236	0	0
2	Hydro Sets					
	-Hydro Turbine	Nos.	12	12	8	5
		MW	720	720	1330	395
	-Hydro Generator	Nos.	12	12	7	7
		MW	720	720	1055	795
3	Large Electrical Machine	Nos.	100	100	102	97
4	Traction Machines (Incl.TG/AG,Blower Motors,BPRV etc.)	Nos.	2850	2850	3048	3473
5	Power Transformers	Nos.	65	65	56	71
		MVA	12000	10000	9049	8948
6	Instrument Transformer	Nos.	200	200	540	547
7	Electrical Machines	Nos.	550	550	427	471
8	Switchgear	Nos.	3000	3000	3232	3061
9	Capacitor	MVAR	3200	3200	2242	2380
10	Industrial Controlgear	Nos.	250	250	18	7
11	Traction Controlgear	Set	220	220	143	192
12	Control Equipment	Nos	600	600	457	534
13	Heat Exchangers	Nos.	52	52	14	15
		MT	1100	1100		
14	Control Panels	Nos.	600	600	533	592
15	Cathodic Protection System	Tonne	2700	2700	0	0
<b><u>JHANSI</u></b>						
1	Power Transformers 33kv/ 132kv	Nos./MVA	65/4000	65/4000	95/4713	91/4663
2	Other Transformer					
	- Special Purpose Transformer (Dry Type Trfr. etc.)	Nos.	180	180	63	59
	- Traction Transformer. (Frt. Loco & ACEMU)	Nos.	140	140	129	66

## SCHEDULE 21 (Contd.)

### Licensed Capacity, Installed Capacity and Actual Production

SI NO	Product	Unit	Installed Capacity		Actual Production	
			2002-03	2001-2002	2002-03	2001-2002
	-Instrument Transformer	Nos.	1960	1960	1301	1635
	-ESP Transformer	Nos.	*	*	200	110
3	Bus Duct	Set	@	@		
4	Diesel Shunters	Nos.	10	10	8	2
5	AC Locomotives (Upto 6500 HP)	Nos.	30	30	-	-

\* ESP Trfr. are being manufactured by using the installed capacity of instrument Trfs

@ Bus duct manufacturing is being done within the existing capacity of Transformers.

Dry Type Trfr. : 3 Nos.

#### HEEP - HARDWAR

1	Turbo Sets	MW	3500	3500	1945	2330
2	Hydro Sets	MW	625	625	42	15
3	Electrical Machines	MW	450	450	111	114
4	Gas Turbine @@	MW			150	450
5	Super Rapid Guns	NOS	3	3	2	

@@ Capacity installed for manufacture of gas turbines components like rotor equivalent to 600 MW Gas Turbines. Balance Components for Gas Turbines from existing thermal sets facilities.

#### CFFP HARDWAR

1	Steel Castings	MT	6000	6000	3502	3117
2	Steel Forging					
	(a) Heavy Forgings	MT	2410	2410	581	841
	(b) Medium Forgings	MT	3000	3000	1903	1642
3	Billets and Blooms	MT	4000	4000	131	446
4	C I Casting	MT	7170	7170		
5	N F Casting	MT	250	250	23	20

#### HYDERABAD

1	Thermal Sets	MW	770	770	120	120
2	Industrial Turbines	MW	65	65	442.8	110.99
3	Gas Turbine & Accessories	MW			425.1	440.8
4	Compressors	Nos			8	7
5	Drive Turbines	Nos	12	12	4	4
6	Pumps	Nos	137	137	61	52
7	Breakers	Nos	1050	1050	89	200
	132 kv equiv		1035xx	1035xx	319	622
8	Bowl Mills	Nos	80	80	35	40





## SCHEDULE 21 (Contd.)

### Licensed Capacity, Installed Capacity and Actual Production

Sl NO	Product	Unit	Installed Capacity		Actual Production	
			2002-03	2001-2002	2002-03	2001-2002
9	HP Heaters	Nos	20	20	31#	45#
10	De- aerators	Nos			7	6

# Includes LP Heaters, Gas Coolers, Spl. H Ex. manufactured using the capacity of H.P. Heaters

xx 132 kv Equivalent no. of Breakers.

Note: A. Installed Capacity for items (3), (4) & (10) can not be stated separately since BHEL Hyderabad had diversified into these products without any additional / with addition of marginal facilities.

1) Sl. No. (3) Gas Turbine & Accessories are manufactured using facilities of Sl.No.(1) & (2).

2) Sl. No. (4) Compressors are manufactured using facilities of Sl.No.(5).

3) Sl. No. (10) De-aerators are manufactured using facilities of Sl.No.(9).

B. Actual production figures against items (1), (2) and (3) include sets where the orders were only for partial sets viz without Turbine or sets without Generator

#### EDN - BANGALORE

1	Energy Meters	Nos.	600000	600000	418986	460050
2	Control Equipments	CUBICLE	1200	1200	1099	1000
3	Power Devices	Nos.	30000	30000	7788	8537
4	Photovoltaics	KWS	2000	2000	1038	1070
5	Telecommunications	LINES	275000	275000	110971	333776
6	Simulators (Defence Electronics)	SETS	*	*	86	172

\* Not ascertainable as it varies in quantity depending upon product mix.

#### TIRUCHY

1	Boilers	MT	108000+*	108000+*	104619+*	104991+*
2	Valves	MT	2712*A	2712*A	4769	4258
3	Nuclear Steam Generating Equipments	MW	382/500**	382/500**	XX	XXX
4	Seamless Steel Tubes	MT	40000	40000	21038	20376
5	Armoured Recovery Vehicles	Nos.	25	25	0	7

+ Including 5000 MT for manufacture of equipments for Process Industries.

\*\* Corresponding to 6.5 Steam Generators and 6.5 Reactor Headers for 235 MW (or) 4 Steam Generators and 4 Reactor Headers for 500 MW

A Excludes 788 MT of IVP/Goindwal.

\* Includes sub-contracting and sub-delivery

XX The capacity was utilised for manufacturing components for Nuclear Projects and other Heat Exchangers, Pressure Vessels, 2 nos. 500 MW Steam Generators, 4 nos. Standby Coolers and 35 nos. of hairpin heat exchangers were manufactured during 2002-2003.

XXX The capacity was utilised for manufacturing components for nuclear Projects & other Heat Exchangers, Pressure Vessels, 2 nos. Nuclear Steam Generators, 1 no. Passive Cooler and 1 no. Pre Cooler, 1 no. Bleed Cooler, 2 nos. Standby Cooling HX, 4 nos. Standby Coolers have been manufactured during 2001-2002.

**SCHEDULE 21 (Contd.)****Licensed Capacity, Installed Capacity and Actual Production**

SI NO	Product	Unit	Installed Capacity 2002-03	2001-2002	Actual Production 2002-03	2001-2002
<b><u>BAP - RANIPET</u></b>						
	Boiler Auxiliaries	MT	57000	57000	42430	42238
<b><u>I V P GOINDWAL</u></b>						
	Industrial Valves	MT	788	788	560	616
		Nos.			4907	4854
<b><u>EPD - BANGALORE</u></b>						
1	Insulators & Bushings	CMT	6250	6250	5330	5214
2	Assembled Production	MT			7625	8253
3	Ceralin	CMT	745	745	815	769
4	Ceralin (Assembled)	MT			2328	1639
<b><u>IP - JAGDISHPUR</u></b>						
1	Insulators	CMT	6000	6000	5377	4641
2	Ceralin	MT	330	330	769	508
<b><u>CFP - RUDRAPUR</u></b>						
1	S W H S	Nos.	4000	4000	2680	2020
2	Solar Lanterns	Nos.	4000	4000	16152	17377



## SCHEDULE 22

	(Rs. in lakhs)	
	For the year ended 31.3.2003	For the year ended 31.3.2002
<b>Information regarding Imports &amp; Exports</b>		
<b>Value of imports</b>		
CIF basis		
Raw materials	40700.18	28617.23
Components and spare parts	80187.17	102789.58
Capital goods	7422.13	6376.58
<b>Expenditure in foreign currency on account of</b>		
Royalty	240.43	104.76
Know-how, professional consultation fee	743.33	1344.64
Interest and others (including on foreign sites)	1606.06	1613.97
Dividend :@		
a) number of non-resident shareholders (Nos.)	326	269
b) number of shares held (Nos.)	38164670	38815286
c) gross amount of dividend	1526.59	1164.46
- tax deducted at source Rs. Nil (previous year Rs. Nil)	222.47	
d) year to which dividend relates	2001-2002	2000-2001
@ No payment of dividend to the non-resident shareholders has been made in foreign currency relating to 2000-2001 and 2001-2002 paid during the financial year 2001-2002 and 2002-2003 respectively. The payments have been made to their respective Bankers or Power of Attorney holders in India and the exact amount of dividend remitted in foreign currency can not be ascertained.		
<b>Value of consumption of raw materials, components, stores &amp; spare parts</b>		
#Imported (including customs duty)	132609.63	144531.36
Indigenous	183428.21	186145.46
Percentage of total consumption		
Imported	42	44
Indigenous	58	56
<b>Earnings in foreign exchange</b>		
Export of goods (FOB basis) **	42928.76	97464.30
Interest	0.56	127.01
Erection charges	1168.34	1252.75
Miscellaneous	24.80	102.73

\*\*This does not include Rs. 148190.29 lakhs (previous year Rs.117850.09 lakhs ) on account of deemed exports

# Includes canalised items wherever ascertained.

## SCHEDULE 23

		For the year ended 31.3.2003		For the year ended 31.3.2002	
Statement for Raw Materials and Components Consumed					
Group of materials	Units	Quantity	Value (Rs. in lakhs)	Quantity	Value (Rs. in lakhs)
Ferrous materials	MT	159,467	73604.92	120,410	65778.57
	Meters	4,349,266		3,988,324	
	Nos	613,240		1,027,122	
	Sq.M	24,985		31,826	
	Kg.	29,651,662		28,349,851	
	OTHERS	44		3	
Non-ferrous materials	MT	99,004	7198.13	96,056	9753.51
	Meters	145,706		131,903	
	Nos	169,253		118,635	
	Sq. Mtr.	1,025			
	Kg.	2,999,243		3,410,500	
	RL	14,580		11,914	
	SET			420	
	OTHERS	9,223		9,220	
Insulating materials	Meters	26,766,467	6017.94	28,278,578	6763.47
	MT	62,499		4,317	
	Nos	108,235		94,755	
	Sq.M.	350,256		219,386	
	Kg	769,488		888,542	
	M3			2	
	LT	2,852,316		4,124,254	
	RL	133,270		132,212	
	M2	30,193		71,941	
	KL	1,926			
	ST	974		1,360	
	OTHERS	44,896		62,827	
Insulated cables and Magnet wires	Meters	324,823	264.93	322,273	211.39
	Nos.	5,511			
	Kg	12,174		246	
	OTHERS	2			
Components			202938.26		224489.62
Others			6133.65		6301.56
			296157.83	313298.12	

N K Sinha  
Secretary

C Srinivasan  
Director (Finance)

K G Ramachandran  
Chairman & Managing Director

As per our report of even date  
For J C Bhalla & Company  
Chartered Accountants

Date : 13th June, 2003  
Place : New Delhi

Sudhir Mallick  
Partner



**BHARAT HEAVY ELECTRICALS LIMITED**  
**CASH FLOW STATEMENT FOR THE YEAR ENDED 31.03.2003**

	<b>2002-2003</b>	<b>(Rs. In Lakhs)</b> <b>2001-2002</b>
<b>A. CASH FLOW FROM OPERATING ACTIVITIES</b>		
Net Profit Before Tax as per Profit and Loss Account	<b>80243.46</b>	<b>66283.21</b>
Adjustment for		
Extraordinary items	15378.61	19999.61
Depreciation	18532.69	16952.67
Lease Equalisation	78.31	-537.29
Profit on sale of Fixed assets	-351.32	-183.44
Loss on investment	1.52	0.00
Interest paid	5447.28	9697.57
Interest/Dividend Income	-6781.24	-5508.42
Operating Profit before Working Capital changes	<b>112549.31</b>	<b>106703.91</b>
Adjustment for		
Trade & Other Receivables	39467.61	-34276.76
Inventories	-682.74	4051.32
Trade Payable	-7057.97	51774.22
Cash generated from operations	<b>144276.21</b>	<b>128252.69</b>
Direct Taxes Paid	-19933.90	-26113.36
Cash flow before Extra-Ordinary items	<b>124342.31</b>	<b>102139.33</b>
Extra-Ordinary Items	-1.11	-22068.38
<b>NET CASH INFLOW FROM OPERATING ACTIVITIES</b>	<b>124341.20</b>	<b>80070.95</b>
<b>B. CASH FROM INVESTING ACTIVITIES</b>		
Purchase of Fixed Assets	-18664.69	-20714.48
Sale and Disposal of Fixed Assets	652.83	1308.53
Sale of Investments	0.11	0.00
Interest & Dividend Receipts	6985.95	5882.41
<b>NET CASH USED IN INVESTING ACTIVITIES</b>	<b>11025.80</b>	<b>13523.54</b>
<b>C. CASH FLOW FROM FINANCING ACTIVITIES</b>		
Short Term Borrowings	-27.97	-99626.99
Repayment of Loans	-13453.99	63645.50
Dividend Paid	-9784.76	-8091.71
Interest paid	-5616.49	-8118.87
<b>NET CASH USED IN FINANCING ACTIVITIES</b>	<b>28883.21</b>	<b>52192.07</b>
<b>D. NET INCREASE IN CASH AND CASH EQUIVALENTS</b>	<b>84432.19</b>	<b>14355.34</b>
Opening Balance of Cash and Cash Equivalents	47658.92	33303.58
Closing Balance of Cash and Cash Equivalents	132091.11	47658.92

N K Sinha  
Secretary

C Srinivasan  
Director (Finance)

K G Ramachandran  
Chairman & Managing Director

As per our report of even date  
For J C Bhalla & Company  
Chartered Accountants

Date : 13th June, 2003  
Place : New Delhi

Sudhir Mallick  
Partner

**Refer Point 13 of Schedule 19**

21st Century Fabricators  
A Bond Strands Pvt.Ltd.  
A.B. Metal Formers (P) Ltd.  
A.N. Instruments Pvt.Ltd.,  
A.Paul & Co  
A.R. Engg. Works  
A.V. Engineers  
Aarthi Engg  
Aathi Industries  
Abdul Cureem And Sons  
Accurate Engineering Ind.  
Acme Engineers & Fabricators  
Acme Forgings (P) Ltd.  
Acro Trans Controls  
Acusize Gauges & Tools (P) Ltd  
Adarsh Electroplating Works  
Adept Fluidyne (P) Ltd.,  
Advance Cooling System Pvt.  
Advance Valves Pvt. Ltd.  
Aerovent Projects Pvt. Ltd.  
AF Noman & Co  
Aflon Engineering Corporation  
Agate Electro Insulants Pvt Ltd  
Agile Heavy Engg. (P) Ltd.  
Agro Auto Grind Engineers (P)  
Ahsaan Ali Engg. Works  
Aishu Castings Pvt. Ltd.  
Ajmer Minerals  
Akson Mechanical Enterprises  
Alert Engineering Enterprise  
Alfa Tools Pvt.Ltd.  
Alfred Herbert  
Aliasons Industries,  
Allied Rubber Products,  
Alucoat Applicators P Ltd.  
Amabarnath Trfr. & Electricals Ltd. Mumbai  
Amar Engineering Works  
Amar Radio Corporation  
Ambigai Engg Works  
Ambika Forgings Bangalore  
Amco Industries  
AN Instruments Ltd.  
Anand Auto Engg. Works  
Anand Ferromac  
Anand Udyog Mumbai  
Andhra Bank A/c Hyd. Heavy Machining Ind  
Andrew Industries  
Anil Engg. Works  
Annai Vallankanni Fabricators  
Annapurna Engineering Works

**Annexure**

Anpam Engineering  
Antrieb Technik Pvt. Ltd. Chennai  
Anupam Industries  
Anupam Mudaram  
Aravali Minerals Pvt. Ltd.  
ARCI  
Arco Electro Technologies (P) Ltd  
Arkkays National Engg. & Fdry.  
Armsel Mhe Pvt Ltd  
Arudra Engineers Pvt. Ltd.  
Arun Plast Pvt Ltd  
Arun Structural  
Aruna Ancillary Industries  
Aruna Machine Tools, Madurai  
Arunn Enterprise  
Arunodaya Engg Works  
Arvind Footwear Pvt Ltd.  
Asahi Steel Industries (P) Ltd.  
Asba Industries  
Ashoka Electronics,  
Ashoka Machine Tools Corpn.  
Asian Structural  
ASP Pvt. Ltd. Howrah  
Asrani Steel Pvt. Ltd.  
Associated Automats  
Associated Engineers,  
Aswani Engineering Co.  
Auma (I) Ltd, Bangalore  
Autoparts And Accessories  
AV Engineering Works  
AV Valves Ltd.  
Avaids Technovators New Delhi  
Avee Computata Forms Pvt.Ltd  
B Four Tech. Industries  
B.K.Enterprises,  
B.T.Solder Pvt Ltd,  
B.V.K Industries  
Baba Manufacturing Company  
Babu Engg. Industries  
Babubhai Narotamdas & Co.  
Baby Industries  
Badawe Engineers Pvt Ltd  
Balaji Engg Works  
Balaji Engineering Enterprises  
Balaji Engineering Works  
Balaji Industries  
Balamurugan Engg Works  
Baliga Lighting Equipment Pvt. Ltd.  
Bangalore (N) Ferrus  
Bangalore Malleable Castings P.Ltd.



Bangalore Mines & Minerals Prdts.  
Bangalore Nonferrous Castings  
Bannari Engg Industries  
Bansal Fabwel Industries  
Baroda Bushing & Insulators  
Bend Joints  
Best Wood Packers  
Bhaba Engineering Udyog  
Bhagirath Coach Builder  
Bhandari Off Set Printers,  
Bhanwar Sales  
Bharakath Metal Builders  
Bharat Besto Fab  
Bharat Engg Enterprises  
Bharat Engineering Works  
Bharat Fabricators  
Bharat Metal Abrators  
Bharat Minerals  
Bharat Stamping Products  
Bharat Steel Wire Products  
Bharat Trading Co  
Bharat Wires Ropes Limited Mumbai  
Bhartiya Elemech Corp.  
Bhilai Precision,  
Bhopal Compupherals Pvt.Ltd.  
Bhopal Engineering  
Bhopal Timbers  
Bhupendra Engg. Enterprises  
Bhuvaneswari Industries  
Bimco Engg. Works  
Binda Metals Pvt. Ltd.  
Bindu Enterprises  
Bisheshwar Galvanisers P. Ltd.,  
Bishnai Udyog  
Blasters & Corrosion Preventors  
Blue Mount Machine Works  
Blue Square  
Bluemount Machine Works  
BM Engg Works  
BN Pachal  
Bombay Oil Seals Co  
Boyd Smiths Pvt. Ltd.  
Boys Town Industrial Training Centre  
Bright Flame  
Brite Engineers And Fab.  
Browns Hitech Structure Pvt. Ltd.  
BSBK Engineers Ltd.  
Bundelkhand Industries  
Byte Communication Pvt. Ltd.  
CAG Equipments (P) Ltd.  
Calburg Engineering

Calcutta Industrial Products  
Canara Bank, Bbhag AC Mikroflo Filters P.  
Canara Bank, Fatehnagr A/c Atlas Fasteners  
Canara Metal Works  
Cands Electricals Pvt.Ltd  
Capronics Pvt Ltd.  
Capsule Inds  
Carbo Engg.  
Carbo Engineering Works  
Cast Alloys  
Cast Alloys, Chennai  
Cauvery Engineering Works  
Central India Fabrications  
Chabi Electricals  
Chakson Engg. Co.  
Chaman Eng. Works  
Champak Minerals & Chemicals  
Champion Engg Industries  
Chandra Industries  
Chaudhary & Sons(Forgings)  
Chella Engg Works  
Chempromech Engineers Nagpur  
Chemtrols Engg.Pvt.Ltd.  
Chetna Engineering Co.  
Chloro Control Equipment Co.  
Chouhan Fabricators  
Coimbatore Super Alloys (P) Ltd,Coimbatore  
Coimbatore Super Alloys (P) Ltd.  
Comet Brass Products  
Connect Well Industries Pvt. Ltd  
Control Engg. Co.  
Copper Strips Private Limited  
Cosmic Engineers Combine  
Crawford Industrials  
Crescent Springs  
Crescent Valves Mfg. Co. Pvt. Ltd.  
Crescent Valves Mfg-Co. Pvt. Ltd.  
Crown Furniture & Saw Mill  
CSS Electricals Pvt Ltd.  
CVK Industries  
D.K.Electro-Mech Corpn.  
Dalel Enterprises  
Darshani Enterprises  
Dattatray Engg Works  
Davshani Enterprises  
Deepak Galvanising & Engg. Ind. Pvt.Ltd  
Deepak Industrial Engg.Works  
Deepam Engineering Enterprises  
Deeparti Silicons  
Deffree Engg P Ltd., Coimbatore  
Delta Corporation



Delta Motors  
 Delta Trans Conductors(P)Ltd  
 Detriv Instn. & Elec. Ltd  
 Detrive Instrumentation and Electronics Ltd.  
 Devat Enterprises  
 Devi Kripa Engineering Works  
 Devi Structural  
 Dhanalakshmi Die Castings.  
 Dhanalakshmi Engineering Industries  
 Dhathu Nirman Pvt Ltd  
 Dhawan Engg. Works  
 Dielectric Corporation,  
 Dinesh Engg.Corporation,  
 DJP Industries  
 Doon Galvanising Pvt. Ltd.  
 DSM Industries  
 DTL Machines Private Ltd.,  
 Dum Dum Metalloy  
 Dumdum Valves & Bearing (P) Ltd  
 D-Y Engineers  
 Dynamic Cranes Pvt Ltd.  
 E P Products  
 Eagle Products (India)  
 East Coast Enterprisers Ltd.  
 Eastern Electricals  
 Eastern Minerals  
 EBM-NADI International Pvt Ltd  
 Efficient Fastener Manufacture  
 Elasto Tech (India)Pvt.Ltd.,  
 Elastomeric Engineers  
 Electro Auto Industries  
 Electro Mechanicals,  
 Electronics & Industrial Anc.  
 Elmeca Works  
 Emcee Engg Works  
 Emic Motors Pvt Ltd  
 Emperor Engg. Works  
 Emperor India  
 Empower Control System Pvt.Ltd  
 Engineers Enterprises  
 Ennem Excel Engineering Pvt Ltd  
 Ennem Excel Enginers Pvt. Ltd.  
 Entek IRD International (I) Ltd. Mumbai  
 Enterprising Engineers  
 Enterprising Marketing Engineers  
 EPE Process Filters & Accumulators Pvt.Ltd.  
 Equipment Engrs. Pvt. Ltd.  
 Ess Ess Engg Works  
 Essen Electronics  
 Euroflex Transmissions (India) Pvt. Limited  
 Everbright Engg

Everest Electrical Industries  
 Evonne  
 Excel Industries  
 Excel Process (Bangalore) Pvt Ltd  
 Excelsior Engineering Works  
 Fabro Mech India  
 Fab-Tech India  
 Fabwell Engineers and Fabricators  
 Famech Engg  
 Farmer Engineers  
 Fashionable Furniture  
 Fasteners Allied Products Pvt Ltd  
 Fastner Manufacturers Pvt. Ltd,  
 FCG Power Industries  
 FCI OEN Connectors Ltd.  
 Fe N Fe Metallurgicals  
 Feb Tech India  
 Ferrochem  
 Fibre Poly Glass  
 Five Star Industries  
 Flash Forge Pvt Ltd  
 Flocon Systems Pvt Ltd  
 Floricon Enterprises  
 Fluid Line Engg.  
 Forbes Marshal (Hyd) Ltd.  
 Friends Cable Industries  
 G K & Sons  
 G S Minerals  
 G.B.Engg Enterprises (P) Ltd  
 G.K. Engineering Corpn.  
 G.S. Alloy Casting Ltd.  
 G.S. Engg. Works  
 G.S.Alloys Castings Private Ltd.  
 G.T.I. Electro Plating And  
 Gajalakshmi Engg & Entps.  
 Gala Springs  
 Gala Springs Pvt.Ltd.,  
 Galaxy Controls Pvt Ltd  
 Galaxy Conveyors Pvt Ltd  
 Ganesh Engg Works  
 Gargi Industries  
 Gasket India Pvt. Ltd.  
 Gauri Industries  
 Gautam Udyog  
 Gayathri Metal Works  
 GBM Manufacturing Pvt Ltd  
 GEA Energy System (India) Ltd.  
 GEI Godavari Engineering Ltd.  
 Gellile Industries  
 Gem Equipments  
 General Engg Works



General Mechanical Works  
Ghaziabad Ispat Udyog Pvt Ltd  
Glassfibre & Allied Industries  
Go-Goal Engg. India  
Golden Plastic Enterprises  
Golden Workshop  
Goodlass Nerolac Paints Ltd  
Gopi Krishna Industries  
Grover Forgings,  
Gujrat Smelting & Refining  
Gulab Chand Kochar  
Gultech Fabricators  
Gupta Engineering Corporation  
Guru Engg. Works  
Guru Nanak Engg. Works  
Guru Nanak Steel  
Gwalior Tanks & Vessels Ltd.  
H. Guru Instruments (P) Ltd.  
H. Guru Instruments (Si) Pvt Ltd  
H. Kumar & Co.  
Hari Hara Machine Tools  
Harihar Alloy Castings Ltd. Trichy  
Haritha Industries  
Heat Process Instruments  
Heavy Fab  
Heavy Fab Industries  
Heavy Metal & Tubes Pvt. Ltd.  
Hema Industries  
HI Harvest Discs (India)  
Himachal Shots & Metal (P) Limited  
Himalya Electro Plating Works  
Himalya Steel  
Himgiree Engg. India  
Himtech Pres Co. Bahadrad  
Hind Electronic India  
Hind Press Products  
Hindustan Engineering Works  
Hindustan Forging  
Hindustan Jewels Pvt Ltd  
Hindustan Trading & Engineering  
HI-REL Components (India) Ltd.  
Hitech Engineers  
Hi-Tek Heavy Equipments P Ltd  
Hiten Fasteners Pvt Ltd  
HMT Ltd.  
HMW Metal Works (P) Ltd,  
Honavar Electrodes Ltd  
Howrah Chemical Works  
Hyd Air Engg. Works  
Hyd Air Engineering Works Goa  
Hyd Air Engineering Works Lonavla

Hyd Air Engineers Pvt Ltd  
Hydax Hydraulics Pvt Ltd  
Hyderabad Castings Ltd.  
Hyderabad Engg Works  
Hyderabad Heavy Engineering Private Limited  
Hyderabad Heavy Machining Inds.  
Hyderabad Met Chem Pvt Ltd.  
Hyderabad Pattern & Foundry  
Hyderabad Power Services & Engineers  
Hydropack India  
Hydropack (India) Pvt. Ltd.,  
Hydroquip Engineering  
I M P Power Ltd.,  
I S Engineering Works  
IA Engineering Works  
Ideal Industry  
Iftekhar Timber  
IMI Machine Tools Pvt. Ltd  
Impact Hammer & Mallets  
Impact Safety Glass Works P Ltd  
Inapuri Ancillary Industries  
Ind Auto Products  
Inder Engg. Industries  
Indian Metals & Alloys Mfg  
Indian Rubber Products  
Indian Timber Products(P) Ltd.  
Indira Industries  
Indmech Industrial Corporation  
Indo Electricals  
Indo Engineering Enterprises  
Indome Appliance Co  
Indo-Tech Precision Products  
Indraprastha International  
Industrial Component Mfr.  
Industrial Fasteners  
Industrial Products House  
Industrial Tapes&Fabrics Pvt Ltd  
Infocontrol Systems Inc  
Innovations  
Innovators  
Instrumentation Engineers Pvt  
Instruments And Controls,  
Interklin Industries  
International Industrial Spr.  
International Industries Spring  
Intra Vidyut Ltd.,  
Iresco Electricals (P) Ltd.  
Ishwar Packaging  
ITL Industries Limited  
Iyappan Engg Industries Pvt, Ltd. Chennai  
J.C. Industries.

J.D.M. Enterprise  
 J.K. Minerals  
 J.M.S. Engineering Pvt. Ltd.  
 Jadon Engineering Industries  
 Jagdeep Foundry  
 Jagdeep Machine Tools  
 Jai Ganesh Engg. India  
 Jain Metal Components  
 Jairaj Industries  
 Jay Pee Machining India  
 Jayanthi Wood Works  
 Jayaram Engg. Works  
 Jayaswals Neco Ltd.,  
 Jayshri Enterprises  
 Jindal Electronics Private Ltd  
 JMP Auto  
 JMP Mfg.  
 Jwalapur Engg. Works  
 Jyoti Engg. Industries  
 Jyoti Engineering  
 Jyoti Industries  
 Jyoti Malleable  
 K.B. Computers Form  
 K.C.S. Fastners  
 K.K. Systems  
 K.K. Engineering Works  
 K.S Instruments Pvt. Ltd.  
 Kaarthic Worms  
 Kalyan Industries  
 Kalyani Engg. Works  
 Kamakoti Fabs  
 Kamkoti Industries  
 Kankanala Associates  
 Kankhal Engg.India  
 Kannapiran Engg-Inds.  
 Kanpur Metal Products;  
 Kareyn Precision M/C Pvt. Ltd.  
 Kareyn Precision Machinery Ltd.  
 Kathirmalai Engg. Works  
 Kay Engg. Works  
 Kay Pee Metal Udyog  
 Kayess Engineers  
 Keld Ellentoft India Pvt. Ltd.  
 Khilan Engineering Works,  
 Kiranmayee Engg Works  
 Kisan Machinical Works  
 Kisan Steels Pvt.Ltd.  
 Kismet Industries  
 Kith Engineering,  
 Kiyosh Electronics  
 Klemmen Engineering Corpn. Chennai

Kothari Industries  
 Kottam Engineering Industries (P) Ltd.  
 Koushic Pressure Vessels  
 Krishna Engineering Co. (P) Ltd.  
 Krishna Engineering Co.(P) Ltd.  
 Krishna Galvanising  
 Krishna Gears Pvt Ltd  
 Krishnagiri Engg. Works  
 KRYFS Lamination Pvt. Ltd.  
 Kumar Inds (Engrs & Founders)  
 Kumara Engg Works  
 Kumaran Industries  
 Kunal Industries  
 Kundan Industries Limited  
 KVK Engg Works  
 Kwaliti Forged Fittings  
 L.N. Industries  
 Laguna Enterprises,  
 Lakhotia Belting Pvt Ltd  
 Lakshmi Engineering Works  
 Lakshmi Indl Works  
 Lavson & Toubro  
 Laxmi Diecasting  
 Laxmi Engineering Industries  
 Laxmi Engineering  
 Laxmi Enterprises  
 Leak-Proof Engg. (I) Pvt. Ltd.  
 Lee Vedla Industrial Corporation  
 Lena Industries  
 Letter Emporium & Uni. Pub.,  
 Levcon Instruments Pvt Ltd  
 Levcon Instruments Pvt.Ltd.  
 Lift Well Engg.  
 Lifting Equipments & Accessories  
 Light Engg Metal Industry  
 Lloyed Insulations  
 Lone Star Industries  
 Luna Carbon Brush Mfg Enterp  
 M & S Engineering Works  
 M.G.M.Industries,  
 M.K.Enterprises  
 M.P.K. Machine Tools  
 M.S.Engineering Works  
 M.V. Foundry  
 Machinaid Industries  
 Machine Fab Tech  
 Madhavi Engineering Works  
 Madhya Pradesh Cupro Metals Pvt. Ltd, Mahadev Industries  
 Madras Industrial Products Chennai  
 Magicut Tools Limited



Mahaveer Engineering Kolkata  
Mahendra & Co.  
Mahesh Welding Works  
Maheshvara Engg Industries  
Malik Electro Mechanical Industries  
Malufab Industries  
Manoj Consulting Engineers  
Manometer India Pvt Ltd  
Manu Silica Udyog  
Mark Network.,  
Marmec Pvt Ltd  
Marshall Sons & Co  
Marudhar Laminations (P) Ltd.,  
Maruthi Metals & Plastics Pvt.Ltd  
MAS Computer Foms  
Mass Parts  
Master Fab Industries  
Mayank Industries  
Mech Fab  
Mechano Engineering Co.  
Mechnotek Industries  
Mechstru Fabricators  
Meerut Pife Products Pvt. Ltd.  
Mehi Udyog  
Mekaster Engineering  
Metal Aids  
Metalcraft Industries  
Metallic Bellows (India) Pvt. Ltd.  
Mica Glass Industries  
Micaply,  
Micro Engineering Works  
Micro Precision Products  
Micro Precision Products (P) Ltd.  
Micron Industries.  
Microsign Products,  
Mika Engineers Mumbai  
Minerals Grinders  
Mittal Udyog  
MJ Engineering Works New Delhi  
Modern Allied Industries  
Modern Fabricators  
Modern Fabricators & Engg.  
Modern Machine Components  
Modi Ram Hazari Lal  
Mohan Paints  
Monga Pipe Industries Pvt.Ltd  
Mopati Engg. Inds. P.Ltd.  
Motwane Pvt. Ltd.  
MPP Technologies Pvt.Ltd  
Mudh Clays  
Mukesh Industries,

Multi Fabs  
Multi Tech Engineers  
Multimetal Industries  
Multitex Filtration Engineers Pvt. Ltd.  
Murugan Inds  
Muthumeena Enterprises  
Mysore Polymer  
Mysore Polymers Pvt Ltd  
N V Enterprises  
N.F.Pvt. Ltd.,  
N.S.Engineering Company (P)Ltd  
Nadi Airtechnics Pvt Limited  
Nag Fastening Systems  
Nagachandra Plasto Metals(P)Ltd  
Nagamalai Structural  
Nagappa Springs  
Nagarjuna Fabricators  
Nagasrinivasa Eng Works  
Nagi Enterprises  
Nagpal Engineering Works  
Nagpur Pulver  
Nakarani Enterprises  
Namasivaya Indl Co.  
Nanda Insulation Details,  
Nanra Engg. Works  
Nanra Fabrication  
Nataraj Industries  
Nathan Inds  
National Carbon Brush Products  
National Industries,  
Navabharat Packaging Private Limited  
NC Cable  
New Bharat Engineering Works,  
New Capital Industries,  
New Dhiman Engg.  
New Fabricators,  
New S.K. Industries  
Nirmal Engg. Works  
Nirmal Enterprises  
Nitin Industries  
Nitya Enterprises  
NMC Carbonic  
Nobel Enterprises  
Nova Felx Cable  
Nucleus Electro Enterprise  
Oblum Electrical Industries  
Ohm Sakthi Engineering  
Om Vinayaka Engg Works  
Om Viswasai Metal & Engg. Works  
Omega Engg. Works  
Orbit

Orient Metal Industries  
 Oriental Plants & Equipments  
 Orion, Trichy  
 P N Enterprises  
 P Y R Engg Works  
 P.I. Metal Products  
 P.R.Acoustical Engg.Works (P)  
 P.S. Steel Tubes (P) Ltd.  
 P.V.K. Engineers  
 P.Y.R. Engineering Works  
 Pack & Dec.  
 Packing & Jointings Gaskets Pvt Ltd.  
 Packings & Jointings Gaskets (P) Ltd, Chennai  
 Padma Machine Shop & Allied Industries  
 Padmavathi Engg. Works  
 Pal Engg. Corp.  
 Pal Engg. Works  
 Pal Engineering  
 Pal Industries  
 Panch Dhatu  
 Paragon Industries  
 Paramount Fabs  
 Parasakthi Engg Works  
 Parasakthi Ents  
 Pari Engg Works  
 Parmathy Engg  
 Patel Fab. Machinery Mfgrs.,  
 Patny Systems Pvt. Ltd. Secunderabad  
 Peekay Scientific Glasswares  
 Peevee Engineering Enterprise, Bangalore  
 Pennant Engineering  
 Perfect Engineering Works  
 Perfect Refractory  
 Permal Wallage Ltd  
 Pettchin Tools  
 Pioneer Engg. Industries  
 Pipelines and Process Equipments (P) Ltd  
 Plasotek Enterprises  
 Plastic Product Engineering  
 Plazma Cutting Equipments Pvt Ltd  
 Poly- Pump Industries  
 Polycab Wires Pvt. Ltd. Mumbai  
 Polygon Refractories Pvt. Ltd.  
 Polytech Enterprises  
 Pooja Cables (P) Limited  
 Pooja Cables Pvt.Ltd.,  
 Poondy Madha Engg & Allied Works  
 Pooranmal & Sons Hardwar  
 Power Gear Pvt Ltd  
 Powerline Industries,  
 Pradeep Metal Treatment

Prammen Industries  
 Pranam Associated Industries  
 Prasad Engineering Works  
 Pratibha Enterprises,  
 Praveen Electronics,  
 Prayog Electricals (P) Ltd;  
 Preci Pac  
 Precise Engineering Plastics  
 Precision Electronics Compo  
 Precision Engineering Co.  
 Precision Instruments & Electronics  
 Precision Machine Tools  
 Precision Steel & Components  
 Precon Machine Tools Pvt Ltd  
 Premier Engineering Industries  
 Premier Fasteners  
 Premier Industries, Trichy  
 Premier Plate Fabrication Co  
 President Engg. Works, Mumbai  
 Pressure & Tempeerature  
 Prime Engineering Services  
 Process Aids.  
 Professionals Mkt. Services  
 Progressive Yools & Components  
 PTC Industries Ltd.  
 Punitha Engineering Works  
 Purnima Electrical Industries  
 Pushpa Engineering  
 Pyro Electric Instruments Goa Pvt. Ltd  
 Pyrotech Control (India)Pvt. Ltd  
 Pyrotech Electronics (P) Ltd.  
 Quality Engg & Insulation Products  
 Quality Engg Works  
 Quality Engineering Works, Trichy  
 Quality Engineers  
 Quality Profiles (P) Ltd.  
 Quantam Instruments And Elec.  
 QYX Automats  
 R J Industrial Corporation  
 R M H Corporation (Workshop)  
 R. Industries  
 R.A.Fabricators,  
 R.B. Forging  
 R.G.Engg.Works  
 R.S.Engineering Works  
 R.V.Enterprises  
 Raakam Industries  
 Rachana Industries  
 Radiant Cables Limited Hyderabad  
 Radiant Cables (P)Ltd.  
 Rahul Engg. Works



Raj Engineers  
Raj Foundry & Workshop  
Rajeev Gupta  
Rajendra Engg Works  
Rajesh Engineering Works  
Rajni Fab  
Rajshi Engineers  
Rajya Lakshmi Engg. Works  
Raksha's Enterprises  
Ram Sagar & Sons  
Ramakrishna Engg. Enterprises  
Ramakrishna Engineering Industries  
Ramakrishna Engineering Works  
Ramakrishna Turbo Tech Engineers (P) Ltd.  
Raman Strls & Allied Inds.  
Ramana Engg Works  
Ramesh Engg. Works  
Ramsuns Fabitecs  
Rangasayee Alloy Casting  
Rasab Engg. Works  
Rashm Enterprises,  
Rasu Tools Pvt. Ltd.  
Rasvin Rubbers,  
Rathna Fabricators  
Ratna Tool & Engg. Pvt. Ltd.  
Rattan Engg. Co. Pvt. Ltd.  
Ravi Engg Works  
Ravi Engineering Works  
Ravi Structurals  
Ravichakra Machine Tools  
Ravikiran Ceramics Pvt. Ltd.  
Redsun Inds  
Regional Engg. Works  
Reliable Electronics  
Reliance Engineers Ltd.  
Reynolds Chem Equip Pvt Ltd  
Rishi Automats  
Rishi Carbonics Limited  
RMH Fabrications (P) Ltd  
Robot Instruments India  
Rohit Interlocks & Automation Private Ltd.  
Roorkee Engg. Works  
Royal Gasket  
Royal Gasket Company  
RS Steel Works New Delhi  
RSM Engg Works  
Ruchi Strips And Alloys Ltd.  
Rungta Steel  
Rup Rubber Enterprises  
S. R. R. Engineering Works  
S.C. Products

S.J. Metal Works  
S.K. Industries  
S.K. Systems Pvt. Ltd.  
S. Noor & Sons  
S.R.M Enterprises  
S.S. Rubber Pvt. Ltd.  
S.V. Engineers  
Sachbar Rubber Products  
Sadhana Printing Press  
Sagar Industries  
Sai Engineering Works  
Sai Fab  
Sai Sarag Engineers  
Sai Surface Coating  
Saini Engg. Works  
Saini Enterprises  
Sakthi Engg  
Sakthi Forging,  
Sakthi Inds  
Salzgitter Hydraulics Pvt Ltd  
Sameer Engineering Industries  
Sampoorna Manufacturing Technologies Pvt Ltd  
Samundi Machine Works  
Sanjay Fabricators,  
Sant Sevee Udyog  
Santharam Automobiles  
Santosh Enterprises  
Sarada Fabricators  
Sarala Engg Works  
Sarathi Engg. Enterprises Pvt. Ltd  
Saravanan Inds  
Sareen Steel  
Sarelitronix Pvt Ltd  
Satchitanand Precision Tooling  
Sathyabala Enterprises  
Sathyam Industries  
Satya Fabricators Pvt Ltd  
Satyam Industries  
Saurabh Metals Pvt. Ltd.  
Sawroop Industries  
SBEM Pvt Ltd  
SBH RC Puram A/c S S Pipe Fittings & Forgings  
SBH RC Puram A/c Technostrength  
SBH-Balanagar A/c Panam Controls  
Scientific Mes-Technik Pvt. Ltd.  
Scope Engg. Works  
Sea Shell Plastics  
Seema Enterprises  
Seetharama Engg. Enterprises  
Selvel Engg Products  
Selvi Industries

Senapathy Symons Insulation  
 Senthil Engg. Works  
 Seton Electrical Products,  
 Shaktee Shree  
 Shamstron  
 Shange Laboratories  
 Shankra Machine Tools  
 Shanta Sales  
 Shanta Sales Corporation  
 Shanthi Dhanalakshmi  
 Shape Engg Co. Pvt. Ltd.  
 Shape Engg.  
 Sheela Industries  
 Sherry Forge Pvt.Ltd.  
 Shet Electricals(P)Ltd.  
 Shiv Engg. Works  
 Shivalik Engineering  
 Shivani Galvanizing & Engineering.,  
 Shivganga Paper Converters  
 Shivpra Cranes Pvt.Ltd.  
 Shrao Engg. Works  
 Shree Cables & Conductors (P) Ltd  
 Shree Cables & Conductors (Pvt) Ltd.  
 Shree Hans Alloy Limited  
 Shree Puja Printers  
 Shreeji Fasteners  
 Shreeram Engineering Industry  
 Shri Durga Oil & Steel Works  
 Shri Laxmi Engg. Works  
 Shubham Enterprises  
 Siemag Industries  
 Sigma Industries  
 Silkaans Elect.Mfg. Co. Pvt. Ltd  
 Singhai Mojilal & Sons,  
 Sitaramson Woodchem Process.  
 Sivaa Engg Works  
 Sivasakthi Industries  
 Sivasakthi Machine Tools  
 SK Systems Pvt Ltd  
 Skilt Fabricators Pvt.Ltd  
 Skylab Industries  
 SM Tools  
 Smart Engravers  
 Sokhi Brothers  
 Sol Engineers Private Limited  
 Southern Gasket Products  
 Southern Lubrication Pvt. Ltd.  
 Souvenior Ceramics  
 SPA Engineering Industries  
 Spectra Equipments Pvt.Ltd.  
 Speed Steel Industry

Spring Support  
 Sree Atreya Enterprises  
 Sree Bharat Engg. Works  
 Sree Gayathri Industries  
 Sree Jyothi Enterprises  
 Sree Ram Weld Products  
 Sree Rama Engg Enterprises  
 Sree Venkata Hari Engg.Works  
 Sree Venkateshwara  
 Sree Venkateswara Ceramic  
 Sri Akilandeswari Engg Works  
 Sri Balaji Inds  
 Sri Balamurugan Chemicals  
 Sri Balamurugan Engg.Works Pvt Ltd  
 Sri Bhavani Engineering Enterprises  
 Sri Dhanabushanam Engg  
 Sri Durga Engineering Works  
 Sri Durga Oil Works  
 Sri Durga Structural  
 Sri Engg Works  
 Sri Ganesha Engineering Works  
 Sri Jyothi Engg.Works  
 Sri K.R.S. Industries  
 Sri Kandan Industries  
 Sri Lakshmi Engineering Industry  
 Sri Lakshmi Industries  
 Sri Lakshmi Krishna Engg Works  
 Sri Laxmi Vitreous  
 Sri M Industries  
 Sri Manjunath Industries  
 Sri Rajeswari Engg. Enterprises  
 Sri Rama Engineering Ind.  
 Sri Ramana Inds  
 Sri Sabari Structural  
 Sri Sastha Engineering Works  
 Sri Sri Engg.Works  
 Sri Velmurugan Fabricators  
 Sri Venkateswara Gear Wheels  
 Sri Venkateswara Mech.& Elec. Engg. Works  
 Sri Vishnu Tool Tech. Pvt. Ltd.  
 Sri.Vijayalakshmi Engg Works  
 Srie Mariyamman Structural  
 Srinivasa Engg Co.  
 Srinivasa Industries  
 Srisai Engineers & Fabricators  
 Srivas Blast Tech  
 Srujana Fabricators & Engineers Pvt. Ltd.  
 Star Packaging  
 Stardrive Busducts Private Ltd  
 Steel Art Industries  
 Steel Craft





Steelmet Bridge Bearing (P) Ltd.  
Sterling Varnishes (B'lore) Pvt Ltd  
Strip In Metal Equipment  
Structo Fab  
STYNE  
Subalakshmi Engg Works  
Subhadra Industries  
Sudarsan Engineering Industries  
Sudarsan Engineering Industries, Chennai  
Sudha Engineering Works  
Sugo Industries  
Sukejay Associates  
Sukrut Udyog  
SUMICA  
Sumuka Industries  
Sundaram Paints Pvt Ltd  
Super Engg. Company  
Super Engineering Works  
Super Gasket Industries  
Super Industrial Components  
Super Waudite Jointings Pvt Ltd  
Surendra Engineering Works  
Sushar Fasteners  
Swastik Enterprises  
Swastik Metal Distributors  
System Aids  
T.N. Rajan Engg Industries  
T.V. Engineering  
Talbros Private Ltd.  
Talsan India Faridabad  
TamilIndu Association Of The Blind  
Tape & Tape Industries,  
Tapex Corporation  
Taska Fibres Private Limited  
TEC Engineers  
Tech Fab  
Technikan  
Technofab Engineering Limited  
Technology Products  
Technoplast  
Texplas  
Texplas (India) Pvt. Ltd.  
Thapsons Chemicals  
The Anup Engineering Ltd  
The Delta Motar Co.  
The Hyderabad Heavy Engg. Works  
The Hyderabad Heavy Ind.  
The Karnataka Metal Industries  
The MMTC  
The Motwane Mfg. Co.Private Ltd  
Thermopads Pvt Ltd

Thermowel Insulation & Packaging Pvt Ltd  
Thillai Eng.  
Thillai Engineering Works  
Thiruperumal Engg Inds  
Tide Steel Company  
Tirumala Industries  
Tonk & Associates (P)Ltd.,  
Tool Fab  
Toshniwal Brothers (P) Ltd.  
Trakolly Engineering Pvt. Ltd.,  
Transformer Manufacturing Ind.  
Transpower Industries  
Transvick Industries  
Triomech Engineering Pvt. Ltd  
Triveni Conductors Limited  
Tuf-Pack Industries  
Turbo Jet Engg India Pvt Ltd  
Turbomachinery Engineering Industries(P)Ltd.  
Turn-Max  
Tushaco Pumps Pvt Ltd  
Ubah Instruments Pvt.Ltd.  
Udhayamala Fabs  
Ultimate Alloys (P) Ltd.  
Ultrafilter (India) Pvt. Ltd.  
Uniexcel Agencies & Services Pvt Ltd  
Uniglass Industries (Pvt.) Ltd  
Unique Engineering Enterprises  
Unique Valves Pvt Ltd  
Unitech Machine Ltd.  
Unitech Machine Pvt. Ltd.  
United Engineering Industries  
United Engineers  
United Metal Coiners  
United Metals (India)  
United Rubber Industries  
Unitek Nitriding  
Universal Engg. Works  
Universal Engrs.  
Universal Hoist-O – Fabrik  
Universal Industries  
Universal Transformers  
Uppal Ferrocast Pvt. Ltd.  
Upper India Special Castings Ltd.  
Utsav Electro-Mech Pvt. Ltd.  
V.L.Industries  
V.R.K. Industries  
V.S. Engineering Works  
Vakoseals,  
Valtec Controls Pvt Ltd  
Value Trek Engineers  
Vanguard Industries

Vapcon Manufacturing Engineers  
 Varsha Cables Pvt. Ltd.  
 Vartech Engineers (P) Ltd.  
 Varuni Industries  
 Vasan Industries  
 Vasanthi Heavy Machining (P) Ltd  
 Vayubodhan Upkaran Pvt Ltd  
 Veasons Energy System Pvt Ltd.  
 Vema Metals And Conductors Ltd  
 Venkateshwara Engineering Works  
 Ventech Foundries  
 Venus Engineering Company  
 Venus Pump  
 Vestos Hose Division Pvt. Ltd.  
 Viduyt Carbon Prod.Pvt.Ltd.  
 Vidya Enterprises,  
 Vidyut Carbon Products Pvt  
 Vijainaag Industries  
 Vijay Engg. & Brothers  
 Vijay Engineering  
 Vijay Engineering Industries  
 Vijay Power & Spares  
 Vikas Machino Fabs (P) Ltd.  
 Vimlesh Industries (P) Ltd.  
 Vinir Engineering Pvt Ltd Bangalore  
 Vipin Industries  
 Virdi Engg. Works  
 Virdi Engineering Works

Vishnu Forge Industries Ltd.  
 VKAN Shot Blasting Industries  
 VKN Engineering Enterprises  
 VKN Enterprises  
 VKN Inds  
 VKN Structural  
 VKR Engg Works  
 V-Megh Industries  
 Voltamp Transformer Ltd.  
 Vortex Engineering Works  
 Vulcan Engineers Ltd  
 Vyas Products,  
 Vyjayanth Engineering Pvt. Limited  
 Vyjayanth Engg.  
 Wadhwa Brothers Engg.  
 Weld Fabricators  
 Weldvel Engrs  
 Welflex Polymers Pvt. Ltd.  
 Western India Forgings Ltd, Pune  
 Wincraft  
 Wood & Insulation Products  
 Wood Spot  
 Yogashri Heavy Engineering (P) Ltd  
 Yogeshwar Alloy Casting Pvt.Ltd  
 Yogya Enterprises  
 Y-Way Industries,  
 Zebra Weblift Pvt.Ltd.



# PRODUCT PROFILE

## **THERMAL POWER PLANTS**

- Steam turbines, boilers and generators of up to 500 MW capacity for utility and combined-cycle applications; capability to manufacture boilers and steam turbines with supercritical steam cycle parameters and matching generators of up to 660 MW unit size. Facilities available for 1000 MW unit size.
- Steam turbines, boilers and generators for CPP applications; capability to manufacture condensing, extraction, back pressure, injection or any combination of these types of steam turbines.

## **GAS-BASED POWER PLANTS**

- Gas turbines of up to 260 MW (ISO) rating.
- Gas turbine-based co-generation and combined-cycle systems for industry and utility applications.

## **HYDRO POWER PLANTS**

- Custom-built conventional hydro turbines of Kaplan, Francis and Pelton types with matching generators, pump turbines with matching motor-generators.
- Mini/micro hydro sets.
- Spherical, butterfly and rotary valves and auxiliaries for hydro stations.

## **DG POWER PLANTS**

- HSD, LDO, FO, LSHS, natural gas/biogas based diesel generator power plants, unit rating of up to 20 MW and voltage up to 11 kV, for emergency, peaking as well as base load operations on turnkey basis.

## **INDUSTRIAL SETS**

- Industrial turbo-sets of rating from 1.5 to 120 MW.
- Gas turbines and matching generators ranging from 3 to 260 MW (ISO) rating.
- Industrial steam turbines and gas turbines for drive applications and co-generation applications.

## **BOILERS**

- Steam generators for utilities, ranging from 30 to 500 MW capacity, using coal, lignite, oil, natural gas or a combination of these fuels; capability to

manufacture boilers with supercritical parameters up to 1000 MW unit size.

- Steam generators for industrial applications, ranging from 40 to 450 t/hour capacity, using coal, natural gas, industrial gases, biomass, lignite, oil, bagasse or a combination of these fuels.
  - Pulverised fuel fired boilers.
  - Stoker boilers
  - Atmospheric fluidised bed combustion boilers.
  - Circulating fluidised bed combustion boilers.
- Heat-recovery steam generators.
- Chemical recovery boilers for paper industry, ranging from capacity of 100 to 1000 t/day of dry solids.
- Pressure vessels.

## **BOILER AUXILIARIES**

- Fans
  - Axial reaction fans of single stage and double stage for clean air application, with capacity ranging from 25 to 800m<sup>3</sup>/s and pressure ranging from 120 to 1,480 m of gas column.
  - Axial impulse fans for both clean air and flue gas applications, with capacity ranging from 7 to 600m<sup>3</sup>/s and pressure up to 700m of gas column.
  - Single and double-suction radial fans for clean air and dust-laden hot gases applications up to 400°C, with capacity ranging from 4 to 600m<sup>3</sup>/s and pressure ranging from 150 to 1,800 m of gas column.
- Air-Preheaters
  - Ljungstrom rotary regenerative air-preheaters for boilers and process furnaces.
  - Large regenerative air-preheaters for utilities of capacity up to 1000 MW.
- Gravimetric Feeders.
- Pulverisers
  - Bowl mills of slow and medium speed of capacity up to 100 t/hour.
  - Tube mills for pulverising low-grade coal with high-ash content.
- Pulse Jet and Reverse Air Type Fabric Filters (Bag Filters).
- Electrostatic Precipitators
  - Electrostatic precipitators of any capacity with efficiency up to 99.9% for utility and industrial applications.

- Mechanical Separators.
- Soot Blowers
  - Long retractable soot blowers (travel up to 12.2m), wall deslaggers, rotary blowers and temperature probes and related control panels operating on pneumatic, electric or manual mode.
  - Swivel arm type soot blowers for regenerative air-preheaters.
- Valves
  - High-pressure and low-pressure bypass valves for utilities.
  - High and medium-pressure valves, cast and forged steel valves of gate, globe, non-return (swing-check and piston lift-check) types for steam, oil and gas duties up to 600 mm diameter, 250 kg/cm<sup>2</sup> pressure and 540°C temperature.
  - High-capacity safety valves and automatic electrically operated pressure relief valves for set pressure up to 200 kg/cm<sup>2</sup> and temperature up to 550°C.
  - Safety relief valves for applications in power, process and other industries for set pressure up to 175 kg/cm<sup>2</sup> and temperature up to 565°C.
- Ceramic-lined PF bends.

### **PIPING SYSTEMS**

- Constant load hangers, clamp and hanger components, variable spring hangers for power stations up to 850 MW capacities, combined cycle plants, industrial boilers and process industries.

### **HEAT EXCHANGERS AND PRESSURE VESSELS**

- CS/AS/SS/Non-ferrous shell and tube heat exchangers and pressure vessels.
- Air-cooled heat exchangers.
- Surface condensers.
- Steam jet air ejectors.
- Columns.
- Reactors, drums.
- LPG/propane storage bullets.
- LPG/propane mounded storage vessels.
- Feed water heaters.

### **PUMPS**

- Pumps for various applications to suit utilities up to a capacity of 660 MW.
- Boiler feed pumps (motor or steam turbine driven).

- Boiler feed booster pumps.
- Condensate pumps.
- Circulating water pumps.
- Emergency oil pumps.
- Lubricating oil pumps.
- Standby oil pumps.

### **POWER STATION CONTROL EQUIPMENT**

- Microprocessor-based distributed digital control systems.
- Data acquisition systems.
- Man-machine interface.
- Sub-station controls with SCADA.
- Static excitation equipment/automatic voltage regulator.
- Electro-hydraulic governor control.
- Turbine supervisory system and control.
- Burner Management system.
- Controls for electrostatic precipitators.
- Controls for HP/LP bypass valves.
- Soot blower control.
- Auxiliary pressure reduction and de-superheating system.
- Balance of Plant station controls.
- Gas turbine control system.

### **SWITCHGEAR**

- Switchgear of various types for indoor and outdoor applications and voltage ratings up to 400 kV.
- Minimum oil circuit breakers (66kV - 132kV).
- SF<sub>6</sub> circuit breakers (132 kV - 400 kV).
- Vacuum circuit breakers (3.3 kV - 33 kV).
- Gas insulated switchgears (36 kV).

### **BUS DUCTS**

- Busducts with associated equipment to suit generator power output of utilities of up to 500 MW capacity.

### **TRANSFORMERS**

- Power transformers for voltage up to 400 kV.
- HVDC transformers and reactors up to ± 500 kV rating.
- Series and shunt reactors of up to 400 kV rating.
- Instrument transformers :
  - Current transformers up to 400 kV.
  - Electro-magnetic voltage transformers up to 220 kV.



- Capacitor voltage transformers up to 400 kV.
- Cast resin dry type transformers up to 10 MVA 33 kV.
- Special transformers for : earthing; furnace; rectifier; electrostatic precipitator; freight loco, AC EMU and traction.

### **INSULATORS**

- High-tension ceramic insulators.
  - Disc/suspension insulators for AC/DC applications, ranging from 45 to 300 kN electro-mechanical strength, for clean and polluted atmospheres.
  - Pin insulators up to 33 kV including radio free design.
  - Post insulators suitable for applications up to 220 kV stacks.
  - Hollow porcelains up to 400 kV for Transformers, SF<sub>6</sub> circuit breakers.
  - Solid core porcelain insulators for 25 kV Railway Traction.
  - Composite Insulators for 25 kV Railway Traction and up to 400 kV transmission lines.
  - Disc insulators for 800 kV AC and  $\pm 500$  kV HVDC transmission lines (BHEL is the first Indian manufacturer to supply such insulators).

### **CAPACITORS**

- Power capacitors for industrial and power systems of up to 250 kVAr rating for application up to 400 kV.
- Coupling/CVT capacitors for voltages up to 400 kV.
- CAPSWITCH – solid state switch for on/off control of capacitor banks – for LT applications.

### **ENERGY METERS**

- Single-phase, poly-phase and special-purpose electro-mechanical and electronic meters.

### **ELECTRICAL MACHINES**

AC squirrel cage, slipring, synchronous motors, industrial alternators and DC machines are manufactured as per range summarised below. Special-purpose machines are manufactured on request.

- AC Machines for Safe Area Application
  - Induction Motors

- |   |  |
|---|--|
| Squirrel cage   | 150 to 35000 kW                          |
| Slipring  | 150 to 15000 kW                          |
| — Synchronous motors                                  | 1000 to 17500 kW                         |
| — Variable-Speed drives                               |  |
| Synchronous motors                                    | 1000 to 17500 kW                         |
| Induction motors                                      | 200 to 35000 kW                          |
| • AC Machines for Hazardous Area Application          |  |
| — Flame-proof motors (Ex. 'D')                        | 150 to 1600 kW                           |
| — Pressurised (Ex. 'P')                               | 150 kW and above                         |
| — Non-sparking (Ex. 'N')                              | Variable speed                           |
| — Increased safety (Ex. 'E')                          | Synchronous and Squirrel Cage            |
| • DC Machines   |  |
| — Mill Duty   | 3.5 to 186 kW                            |
| — Medium/Large  | 75 to 12000 kW                           |
| • Industrial Alternators                              |  |
| — steam turbine, gas turbine and diesel engine driven | 2000 kVA to 60,000 kVA                   |
| • Voltage & Enclosure                                 |  |
| — Voltage   | AC-415 V to 13800 V<br>DC - up to 1200 V |
| — Enclosure   | SPDP, CACW, CACA, TETV.                  |

### **COMPRESSORS**

- Centrifugal compressors of varying sizes, driven by steam turbine/gas turbine/motor, for industrial applications handling almost all types of gases; range covers pressure up to 800 kg/cm<sup>2</sup> and capacity upto 350,000 Nm<sup>3</sup>/hour.

### **CONTROL GEAR**

- Industrial Control gear
  - Control panels and cubicles for applications in steel, aluminium, cement, paper, rubber, mining, sugar and petrochemical industries.
  - Liquid rotor starters for slipring induction motors of up to 2500 hp rating.
  - Liquid regulators for variable-speed motors
- Contactors
  - LT air break type AC for voltages up to 660 V.
  - LT air break type DC contactors for voltages up to 600 V.
  - HT vacuum type AC for voltages up to 11kV.
- Traction Control gear
  - Control gear equipment for railways and other traction applications.
- Control and Relay Panels
  - Control Panels for voltages up to 400 kV and

- control desks for generating stations and EHV sub-stations.
- Control and relay boards.
- Turbine gauge boards for thermal, gas, hydro and nuclear sets.
- Turbine electrical control cubicles.
- Outdoor-type control panels and marshalling kiosks, swinging type synchronising panel and mobile synchronising trolley.
- Transformer tap changer panels.

### **SILICON RECTIFIERS**

- Silicon power rectifiers with matching transformers for industrial applications like aluminium/copper/zinc smelting, for electrolysis in chemical industry and AC/DC traction application.

### **THYRISTOR GTO/IGBT EQUIPMENT**

- Thyristor converter/inverter equipment for DC drives and synchronous motors.
- Thyristor high current/high voltage power supplies.
- Static AC variable-speed drive systems using GTO/IGBT.
- Thyristor valves and controls for HVDC transmission.
- High frequency induction heating equipment.
- Thyristor valves and controls for reactive power management.

### **POWER DEVICES**

- High-power capacity silicon diodes, thyristor devices and solar photovoltaic cells.

### **TRANSPORTATION EQUIPMENT**

- AC electric locomotives.
- AC-DC dual voltage electric locomotives.
- Diesel-electric shunting locomotives.
- Diesel hydraulic shunting locomotives.
- OHE recording-cum-test car.
- Electric traction equipment (for diesel/electric locos, electric multiple units, diesel multiple units and urban transportation systems).
- Traction motors.
- Inductors.
- Traction generators/alternators.
- Rectifiers.
- Bogies.
- Vacuum circuit breakers.

- Auxiliary machines.
- Microprocessor-based electronic control equipment.
- Power converter/inverter.
- Static inverter for auxiliary supply.
- Locomotive control resistances i.e. field diverters, dynamic braking resistors and inductive shunts.
- Traction control gear.
- Vessel Traffic Management system.
- Battery-powered road vehicle.
- Ceramic catalytic converter for pollution control.

### **OIL FIELD EQUIPMENT**

- Oil Rigs –  
A variety of on-shore rigs, work-over rigs, mobile rigs, heli-rigs, desert rigs for drilling up to depths of 9,000 m, complete with matching draw-works and hoisting equipment including:
  - Mast and substructure.
  - Rotating equipment.
  - Mud System including pumps.
  - Power packs and rig electrics
  - Rig instrumentation.
  - Rig utilities and accessories
- Well Heads and Christmas Trees/sub-sea equipment:
  - Well Heads and X-Mas Trees for working pressures up to 10,000 psi.
  - Choke and kill manifolds.
  - Mud valves.
  - Full bore valves.
  - Block valves.
  - Mudline suspension system.
  - Casing support system.
  - Sub-sea Well Heads.

### **CASTINGS AND FORGINGS**

- Sophisticated heavy castings and forgings of creep-resistant alloy steels, stainless steel and other grades of alloy steels meeting stringent international specifications.

### **SEAMLESS STEEL TUBES**

- Hot-finished and cold-drawn seamless steel tubes with a range varying from outer diameter of 19 to 133 mm and wall thickness of 2 to 12.5 mm, in carbon steel and low-alloy steels to suit ASTM/API and other international specifications.
- Studded tubes
  - Extended surface tubes for high-performance heat transfer applications.





- Spiral finned tubes
  - High-frequency resistance welded finned tubes for heat recovery steam generators, economisers and heat furnaces.

#### **NON-CONVENTIONAL ENERGY SYSTEMS**

- Wind electric generator of up to 250 kW rating.
- Solar PV systems and power plants.
- Solar water heating system.
- Solar lanterns.
- Battery-powered road vehicle.

#### **TELECOMMUNICATION**

- Switching equipment - RAX, MAX-L, MAX-XL

#### **AVIATION**

- Light aircraft.

#### **SYSTEMS AND SERVICES**

- Power Generation Systems.
  - Turnkey power stations.
  - Combined-cycle power plants.
  - Cogeneration systems.
  - Modernisation and Rehabilitation of power stations.
- Transmission systems
  - Sub-stations/switchyards.
  - HVDC transmission systems.
  - Shunt and Series compensation systems.
  - Power system analysis.
- Transportation system
  - Traction systems.
  - Urban transportation systems.
- Industrial systems
  - Industrial drives and control systems.

Erection, commissioning, operation and maintenance services, spares management and consultancy services for all the above systems.



# War on Wastages (Wow !!)

During 2002-03, to improve value addition of BHEL, reducing wastages was one of the focus areas. A directed programme "War on Wastages" was launched with the aim of minimizing wastages in the organization. A detailed audit on wastages and waste practices was taken up, and selection as well as adoption of equipment and processes generating lowest wastage accomplished with emphasis on waste minimization, waste recycling, and re-use of material. Thus, the concept of curbing wastages and realization of gains therefrom was fully exploited. Various means by which the savings were realized are: combination of all techniques, viz., energy conservation, recycling, salvaging, economic procurement, better financial & commercial management, doing things right the first time, thereby saving on rework and rejection, value engineering, etc.

Total savings accruing from the War on Wastages during the year 2002-03, was Rs. 69 crore, which is a net gain for the Company.