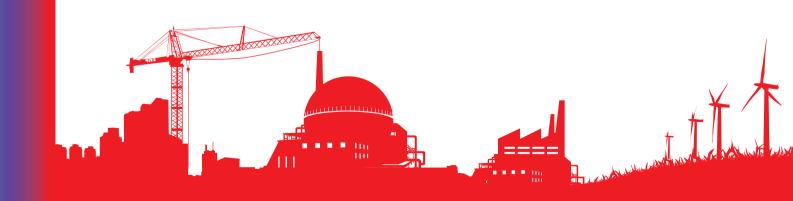
2012 KEPCO E&C Sustainability Report

# **new**power, **new**standard



2354 Yonggudaero, Giheung-gu, Yongin-si, Gyeonggi-do, Korea 446-713

Tel 82-31-289-3114 www.kepco-enc.com

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## **ABOUT THIS REPORT**

KEPCO Engineering & Construction Company, Inc. (hereinafter referred to as "KEPCO E&C") presents its accomplishments and performance in sustainable management in its third Sustainability Report since 2009. The report contains progress and achievements KEPCO E&C has made in its economic, social and environmental responsibilities. In particular, this report reflects stakeholders' interests as assessed through a materiality analysis and efforts have been made to increase the reliability of this report by obtaining third party assurance of the report contents.

#### I. Period and Scope

• This report covers the core sustainable management activities and accomplishments from January 1, 2012 to December 31, 2012 with quantative data provided for 2010 and 2011 to allow for trend analysis. For significant qualitative data, data from the first half of 2013 has also been disclosed. The scope of this report covers KEPCO E&C headquarters (Annex included) and the Daejon office.

#### II. Reporting Guidelines

• The KEPCO E&C 2012 Sustainability Report was prepared in accordance with the Global Reporting Initiative (GRI) G3.1 Guidelines, ISO26000 standards and the 10 principles of the UN Global Cpmpact. Financial data has been prepared based on K-GAAP and K-IFRS.

#### **III. Report Verification**

• KEPCO E&C received third party assurance to ensure reliability of the reporting process and data. The assurance results are available in the Appendix.

#### IV. Additional Information

• This report is available on KEPCO E&C's website (www.kepco-enc.com). For comments and queries, please use the contact information listed below:

Department: Management Strategy Dept., Management Planning Team

Tel: 82-31-289-3103 Fax: 82-31-289-4419

E-mail: yumeeko@kepco-enc.com

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CEO MESSAGE

#### **CEO MESSAGE**

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"We will create a sustainable future based on dynamic creativity through mutual cooperation with our stakeholders."

To our distinguished stakeholders,

I thank you for the continued support and encouragement you have shown to KEPCO E&C and it is my sincerest pleasure to be able to present you with KEPCO E&C's third Sustainability Report.

Since its establishment in 1975, KEPCO E&C has built its reputation over the past 38 years as a power plant design and engineering company that represents Korea and now is known globally for exporting Korean nuclear power plant design and plants as a whole based on its world-class core engineering capacity. In order to expand on our core capacity and secure future growth engines and revenue streams for a lasting corporate foundation, KEPCO E&C entered the global EPC market in 2009 and is preparing to open a new chapter in its history.

In 2012, KEPCO E&C chose "Internal Stability for Sustainable Growth" as our management key-phrase and with the concerted effort of all employees and management, was able to reach its highest sales record in history even in light of the global economic downturn. In addition, we were able to secure original core technology for foreign-dependent nuclear technologies and displayed our potential by being recognized in the internationally prominent American construction and engineering magazine ENR's 2012 Global Source Book Global #1 in overseas Nuclear Plants category. In addition, we made noteworthy accomplishments such as winning the EPC contract for Ghana Takoradi T1 and T2, affirming KEPCO E&C's position as a global EPC.

I feel these accomplishments are a result of our continued implementation of sustainable management practices based on our employees' and managements' passion and will to grow into a world-class company along with creative talent development, shared growth with business partners, transparent governance and other efforts towards sustainability.

Today, issues such as climate change and energy security are central to mankind's sustainable development and the demands for corporations to fulfill their social responsibility. KEPCO E&C will do its part to contribute to this global movement and abide by the 10 principles of the UN Global Compact based on its corporate philosophy of converging people, environment and technology and continuously thrive to be the best in its field globally.

KEPCO E&C will continue to lead the creative economy with the world's most advanced technology. We will contribute to both the future of our company and our country by building the foundation for safe energy by increasing the stability and quality of power plant design and developing new, environmentally friendly technologies. In addition, we will further strengthen stakeholder engagement by fulfilling our social responsibility through actively pursuing shared growth with business partners, creating jobs and contributing to society and communities.

#### Our esteemed stakeholders!

KEPCO E&C will work tirelessly to achieve its goal of being the world's leading global EPC company. We ask for your support and interest as we work towards growing into a global firm that fulfills its social responsibility through transparent and fair management.

Thank you.

June 2013

KEPCO E&C President An, Seung-Kyoo



# 1. Launched slogan to become a global EPC, "New Power, New Standard" (11.10)

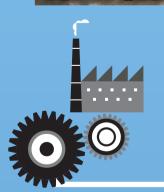
 newpower, newstandard : KEPCO E&C will set the new standard with our technology and promise to deliver new power to our clients.

# 2. Won contract for global nuclear power engineering "ITER Cable Engineering Support Services." ('12.4)

- Ordering Organization : ITER(International Thermonuclear Experimental Reactor) International Organization
- Contract Value/Period: 28 billion KRW / 60 Months
- Location: France, Cadarache ITER Research Centre
- Responsibilities: 500MWt scale nuclear fusion cable design and provision of technical support services



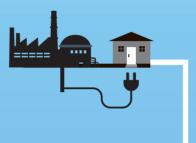






# 3. Won first overseas EPC project, Ghana Takoradi T2 Power plant expansion EPC project ('12.7)

- Ordering Organization : TICO(Takoradi International Company)
- Contract Value/Period: 300 billion KRW / 28.5 months
- Type: 120MW Steam turbine expansion, transition to combined cycle power plant
- Responsibilities: Provide overall EPC\* services.
   \*EPC (Engineering, Procurement, Construction)



# 4. U.S ENR Magazine announces KEPCO E&C as Global #1 in overseas Nuclear Plants category for 2012('13.1)

- Significance: Proves as external acknowledgement that KEPCO E&C is leading the global nuclear plant design market.
- \* ENR: Engineering News Records U.S. Construction and Engineering specialist magazine

#### 5. Secured Core Design Domestic Nuclear Power Technology (12.12)

- Completed development of Safety Analysis Code needed for final confirmation of nuclear power plant design safety and nuclear power plant safety.
- Secured core RCP technology which had been monopolized by advanced foreign firms in the past.

# 6. Selected as the Most Outstanding Quality Competitive Enterprise, 2012, for six years running ('12.10)

- Significance: External recognition of the excellence of KEPCO E&C's quality management system including strategy and management system, corporate culture, and customer satisfaction.
- Awarded by: Ministry of Trade, Industry and Energy (formerly Ministry of Knowledge Economy) - Korea Agency for Technology and Standards









# 7. Groundbreaking Ceremony of New HQ Building for KEPCO E&C's second era of growth ('12.10)

- Location : Gimcheon Innocity, Gyeongbuk Province
- Size/ capacity: Total floor space 145,802m2 / 2,494 persons
- Construction period(Date for completing move): '12.10~'15.3 ('15.5)
- Characteristics: Designed as an energy-saving building that maximizes the use of new and renewable energy



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# 8. Held Conference for Win-win Growth to implement shared growth with small to medium-sized business partners ('12.11)

- Attendees: Approximately 140 persons including KEPCO E&C management and business partner CEOs
- Highlights
- Shared KEPCO E&C's 2013 Win-win Growth action plan and strategy with its business partners
- Signed the Win-win Growth Compact with 75 business partners

#### Awarded Minister of Gender Equality and Family Minister's Award as recognition for KEPCO E&C's happy, family-oriented corporate culture ('12.12)

- Main family-oriented management activities:
- Established a corporate culture focused on balancing work and family
- Firm-wide 'Great Work Place' activities
- Social contribution activities that spread the value of sharing value with local communities and other such activities







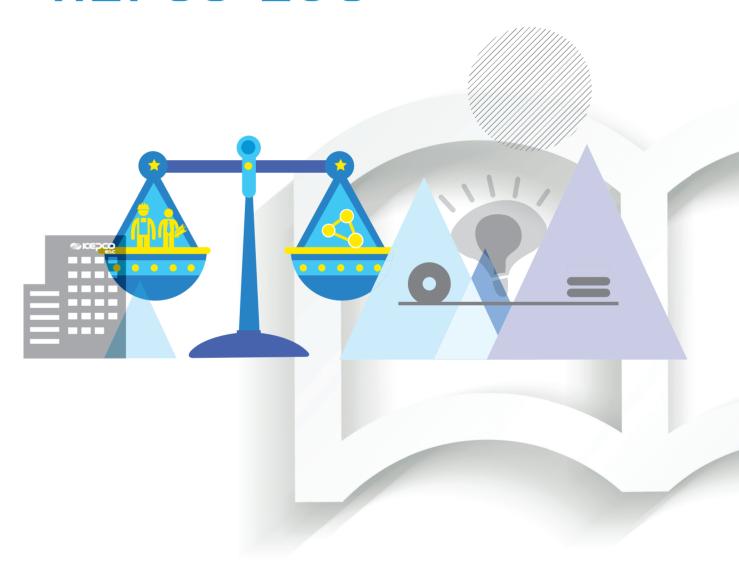


# 10. Opened the Power Engineering School Camp to develop future engineers ('13.1)

- Objective: Develop future talent in the electrical engineering field
- Training period: 10 days (Twice annually)
- Trainees: Second, third year science and engineering students from 30 domestic universities
- Subjects: 17 subjects in 13 fields including nuclear and thermal power offered through specialized lectures and site visits to power plants.

# 01

# HUMANEERING KEPCO E&C



2012 KEPCO E&C Sustainability Report

# Company Overview-About KEPCO E&C

#### I. Company Overview

KEPCO E&C was established to achieve domestic independence in nuclear and thermal power plant engineering and construction. For the past 38 years, KEPCO E&C's management and staff have worked tirelessly to achieve this goal and as a result have developed new technologies for nuclear and thermal power plant design and engineering, and provided technical support for power plants already in operation, thus playing a central role in domestic electricity generation.

From 2009, KEPCO E&C launched its New Vision of becoming a "global power EPC enterprise, pledging to embody customer value with its world-class technology" in order to strengthen and expand on its core competencies. KEPCO E&C aims to enter the ranks of the Top 5 EPC firms globally in order to be an integrated 'total solution' provider and contribute to national synergy generation.

Company Profile	[As of December 31, 2012]
Company Name	KEPCO Engineering & Construction Company, INC.
President & CEO	An, Seung-Kyoo
Foundation	1975. 10. 2
Objective	To secure independence in nuclear and thermal power plant design and engineering
Institution Type	Other Public Organizations (Department: Ministry of Trade, Industry & Energy(MOTIE))
Address	2354, Yonggudaero, Guheung-gu, Yongin-si, Gyeonggi-do
IP0	KOSPI (2009, KRX)
Shareholder	KEPC0[74.86%], Korea Atomic Energy Research Institute[2.06%], Others[23.08%]
Credit Rating	AA (Korea Ratings Corporation)

new headquarters building in Gyeongbuk Province, Gimcheon Innocity

#### **KEPCO E&C's history**

1975 Founded as KOREA ATOMIC BURNS & ROE [A joint venture between KAERI and Burns ROE] 1982 Restructured into Korea Power Engineering Co., Ltd. Selected as prime contractor for Architect Engineering of Youngkwang Units 3 & 4 1987 Acquisition of Nuclear Steam Supply System (NSSS) business area from Korea Atomic Energy Research Institute 2007 Joined UN Global Compact Declared '2020 New Vision' / Shares listed on KOSPI Signed contract on Architect Engineering Service for UAE / Nuclear Power Plant / 2010 Change of English company name to KEPCO E&C Signed EPC contract for Ghana Takoradi T2 Power plant / Broke ground for 2012

#### **Core Business Areas**

#### //////// Synthesis Design Engineering of New Power Plants

"Leading the development of Korean model of nuclear reactors and power plants with independent design Engineering of nuclear · thermal power plants"

Site Assessment

Feasibility Check

Jesign Engineering
(Concept/Basics/
Details)

Procurement of Equipment

Construction
Supervision and
a Test Run

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- Exclusively responsible for design engineering of domestic nuclear power plants and for most thermal power plants design in line with the plan of the development of power resources
- Possessing exclusive technical skills of synthesis design engineering of nuclear/thermal power plants

#### ////// EPC Business

"For sustainable growth in engineering-based business, KEPCO E&C is promoting gradual diversification toward EPC"

Consulting (Feasibility study, etc)

Engineering (Procurement)

Procurement (Construction) Construction (Operation)

Operation

- Gradual expansion from small&medium thermal power to large scale plants
- $\bullet \ \mathsf{Performance} \ \mathsf{in} \ \mathsf{large} \ \mathsf{construction} \ \mathsf{business} \\ \mathsf{(PM/CM)} \ \mathsf{including} \ \mathsf{the} \ \mathsf{management} \ \mathsf{of} \ \mathsf{the} \ \mathsf{new} \ \mathsf{airport} \ \mathsf{construction}.$

#### /////// Environment&Renewable Energy Business

# "Leading Low-carbon Green Growth based on accumulated knowledge and experience in design of eco-friendly power plants"

Flue-Gas
Desulfurization/
Denitrification
System

Business for greenhouse gas emissions reduction(CCS/CDM)

New & Renewable Energy Business Installation of water pollution control facilities

Business for Energy Service Company (ESCO)

• Focusing on original technology of greenhouse gas emissions reduction based on accumulated performance in flueqas desulfurization/denitrification business

#### //////// 0&M(Operation & Maintenance) Business

"Improving economic feasibility & safety of plant operation with the synthesis technology support of operating nuclear power and thermal power plants"

Performance improvement and restoration



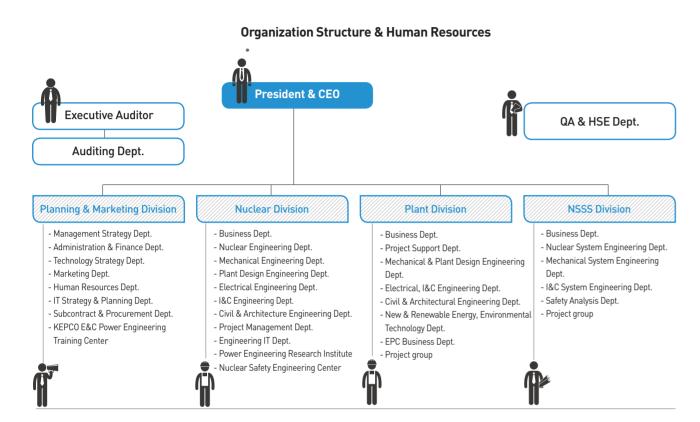
Operating nuclear and thermal power plants



Life extension

- Providing solutions to the technical problems arising during the plant operation
- Carrying out tasks for improvement in and replacement of equipment, licensing support, and improvement in generating station operation

2012 KEPCO E&C Sustainability Report



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#### //////// Direction of organizational changes

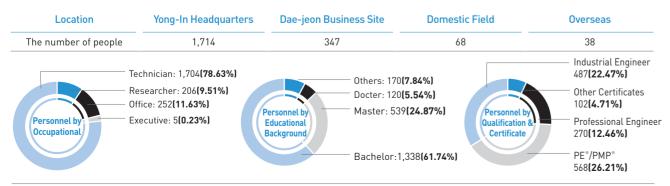
Increase reliability of nuclear power safety, minimize design errors, establish successful EPC implementation structure

- Newly established the "Nuclear Power Design Safety Center" responsible for nuclear safety issues ('11.10)
- EPC Technology Group created to vitalize and accrue EPC related technology ('12.7)
- Project Support Department created for efficient EPC business ('13.1)

#### /////// Manpower that possesses the world's leading power plant engineering expertise

Total personnel 2.167 persons

(As of Aril, 2013)



Non-certified: 740(34.15%)
 PE: Professional of Engineer
 PMP: Project Management Professional

#### **Associated Companies**

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Company Name	Main Business	Homepage	Remarks	
Korea Electric Power Corporation	Electricity Supply	www.kepco.co.kr	Listed	
Korea Hydro and Nuclear Power Co., Ltd.	Power Development and Power Generation	www.khnp.co.kr	Unlisted	
Korea South-East Power Co., Ltd.	Power Development and Power Generation	www.kosep.co.kr	Unlisted	
Korea Midland Power Co., Ltd.	Power Development and Power Generation	www.komipo.co.kr	Unlisted	
Korea Western Power Co., Ltd.	Power Development and Power Generation	www.iwest.co.kr	Unlisted	
Korea Southern Power Co., Ltd.		www.kospo.co.kr	Unlisted	
Korea East-West Power Co., Ltd.	Power Development and Power Generation	www.ewp.co.kr	Unlisted	
KEPCO Plant Service & Engineering Co., Ltd.	Operation and Maintenance	www.kps.co.kr	Listed	
KEPCO Nuclear Fuel	Nuclear Fuel Design and Manufacturing	www.knfc.co.kr	Unlisted	
KEPCO Knowledge, Data & Network Co., Ltd.	Electric Power IT Services	www.kdn.com	Unlisted	

#### II. Business site overview

#### **Domestic**

- Headquarters : 2354, Yonggudaero, Guheung-gu, Yongin-si, Gyeonggi-do
- Bundang Office (Annex): Bundang M Tower, 8 Gumi-ro, Seongnam-si, Gyeonggi-do

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• Daejon Office: 989-113, Daedeokdae-ro, Yuseoung-gu, Daejon

KEPCO E&C operates offices in major countries in the Middle East, Africa and Asia in order to provide support for the UAE Architect Engineering project, Ghana Takoradi EPC works and act as bases for further development of overseas markets.

#### Overseas offices and branches



Nation	Name	Address	Main Business
UAE	KEPCO E&C UAE branch (KEPCO E&C-Abu Dhabi)	#106, SJ Tower , Airport Road, Abu Dhabi, UAE P.O.Box 32562	Projects for UAE Nuclear Power Plant and Business Development in Northern Africa
Saudi Arabia	KEPCO E&C Saudi Arabia branch (Branch of KEPCO Engineering & Construction Company Inc.)	Room No.305, Akaria Plaza BLDG, Olaya, Street, Riyadh PO Box 301186, Riyadh 11372, Kingdom of Saudi Arabia	Business Development in Middle East and Northern Africa
Ghana	KEPCO E&C Ghana branch (KEPCO Engineering & Construction Company Inc.)	Aboadze Thermal Power Staition Beach side, Takpradi, Ghana. P.O. Box AX 1674 Takoradi	Takoradi EPC and Business Development in Africa
Indonesia	(KEPCO E&C Liaison Office) (KEPCO Engineering & Construction Company Inc.)	Wisma GKBI Lt.15, Suite 1505 JL.Jend. Sudirman No.28, Bendungan Hilir,Tanah Abang, Jakarta 10210 INDONESIA	Business Development in East-south Asia

# III. Management Performance

#### **Economic Value Creation**

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(Unit: KRW 100 million)

	Category	2010	2011	2012
Income Statement	Sales	5,801	6,633	7,856
Statement	perating Income	1,122	1,365	1,531
	Net Income	962	1,161	1,343

KEPCO E&C has achieved significant management accomplishments in the last three years. In particular, KEPCO E&C experienced continued annual growth and achieved record sales of 785.6 billion KRW in 2012.

In addition, through strengthening management stability through such actions as cost reduction, KEPCO E&C was able to maintain an operating profit ratio of roughly 20% annually.

KEPCO E&C will continue to be a leader in the age of creative economy based on a balance of qualitative and quantitative growth through increased profitability and internal stability.

#### **Core Financial Indicators**

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%     166.33%       %     94.90%       %     0.70%       %     20.58%       %     17.50%	161.64% 102.33% 0.60% 19.49% 17.10%
% 0.70% % 20.58%	0.60%
20.58%	19.49%
% 17.50%	17.10%
% 30.58%	31.53%
s 1.01 times	0.98 times
s 9.05 times	9.78 times
s 835.81 times	31,250.83 times
14.34%	18.44%
	12.22%
% 20.60%	15.69%
169	

As a result of KEPCO E&C's efforts to protect the interests of its stakeholders, it has maintained the highest level of financial stability in the industry. KEPCO E&C will continue to work towards balancing distribution of value through economic growth with economic stability.

#### Distribution of Financial Value

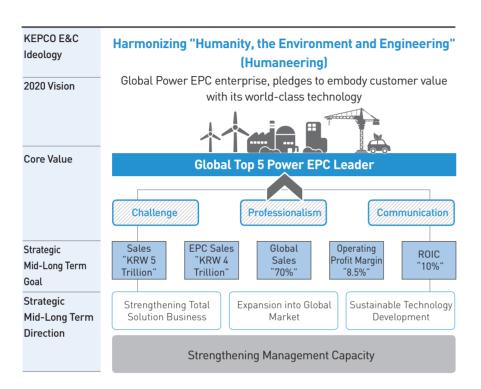
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(Unit: KRW 1 million)

Category	Category	2010	2011	2012
Government	Corporate Tax	32,674	37,832	41,487
Employees	Salary and B enefits	167,502	175,639	183,655
Shareholder	Dividend	70,592	81,256	73,841
Community	Donation	330	1,515	1,089

Remarks: Data in 2010 was reported in line with K-GAAP.

## **KEPCO E&C's Vision and Strategy Structure**



2012 KEPCO E&C Sustainability Report

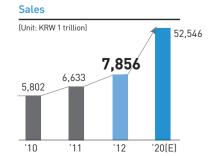
#### I. Management **Philosophy**

KEPCO E&C's management philosophy of Humaneering - harmonizing 'humanity, the Environment and Engineering,' embodies KEPCO E&C's commitment to creating a sustainable future where all our stakeholders can share value.

#### **II. VISION 2020**

KEPCO E&C declared its 2020 NEW VISION on October 1st, 2009 in order to strengthen and expand its world-class core capacities in planning and engineering technologies it accrued over the past 38 years in light of changes in the global environment, launching it as a global power plant EPC firm.

5 trillion KRW in sales, EPC related sales of 4 trillion KRW, overseas sales of 70% were set as targets for 2020. Strengthening 'Total Solution Business,' 'Expansion into Global Market, 'Development of Sustainable Technologies,' and 'Solidification of Management Foundation,' were set as mid to long-term strategic directions and action items.







#### III. 2013 Management **Objectives**

In 2012, KEPCO E&C chose "Internal Stability for Sustainable Growth" as its guiding management principle and secured the platform for entering the global market. In 2013, "Dynamic Creativity for the Future" will be the guiding management principle and action items have been determined accordingly.

#### 2020 Vision **Execution Ability Increase**

- Strengthening Total Solution Business
- · Expanding into Global Market Developing Sustainable Technology
- **Quality Reinforcement** · Observing Plant design

Successful Implementation

of Core Business and

· Observing the review period of supplier documents Observing the site design

review process

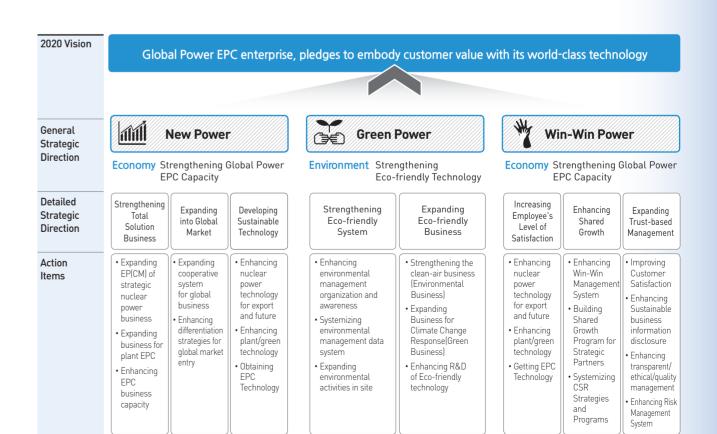
process

#### Strengthening Global Advanced Management Capacity

- · Establishing of Global Advanced Management System
- Strengthening Management Capacity

#### IV. Sustainable **Management Structure**

In order to achieve sustainable management through Vision 2020, KEPCO E&C has developed a sustainable management structure aligned with the firm's mid to longterm management structure and is systematically implementing management activities that fulfill its social responsibility.



2012 KEPCO E&C Sustainability Report HUMANEERING KEPCO E&C

#### Governance

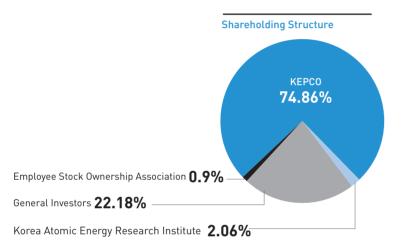
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KEPCO E&C has established transparent and trustworthy governance by operating Board of Directors, the recommendation of the President Nomination Committee, nonexecutive director system and such.

#### I. Shareholders

#### **Current shareholding structure**

As of December 31, 2012, the largest shareholder of KEPCO E&C is KEPCO with the rest of its shares owned by Korea Atomic Energy Research Institute, Employee Stock Ownership Association, and general investors.



The number listed stock		38,220	),000 shar	es			
The date of	flotation	2009.12.14					
The date of	flotation	7,664,000 shares (20% of listed stocks)					
Shares							
Year	2009	2010	2011	2012			
Payout							

#### Protection of shareholders' rights and interests

KEPCO E&C has respected the shareholders' right to information by accurately providing key information through Annual Report, ALIO System which is a public institution management information system, the General Meeting of shareholders, IR, and its webpage.

#### II. Board of Directors

#### Structure of board of directors

KEPCO E&C's Board of Directors is the highest decision-making body that examines and determines vital matters related to corporate management. The Board of Directors consists of executive directors and non-executive directors. Among them, four executive directors are internal directors including the CEO and the number of non-executive directors who have special knowledge of their own special area is 6 persons. Nonexecutive directors hold more than a majority, which prevents arbitrary decision and execution of top management teams. Also, for responsible management, the chairman of the board is the CEO. Profiles of each director and minutes of the meeting of the board of directors are open on KEPCO E&C's homepage at www.kepco-enc.com and through public institution management information ALIO system.

#### **Appointment of Executive Directors & Remuneration**

In line with electing qualified directors who are expected to make contributions to the company's sustainable growth and national development, the CEO is selected during the General Meeting of shareholders on the recommendation of the President Nomination Committee. Evaluations for Public Agency Executive Capacity are performed and final decision on the selection of directors is made at the General Meeting of Shareholders.

Classification	Nomination	Appointment
CEO	President Nomination Committee	the General Meeting of shareholders
Executive Directors	CEO CEO	the General Meeting of shareholders
Non-executive Directors	The largest shareholder, CEO	the General Meeting of shareholders

Remuneration for directors includes basic annual salary, performance-based salary, and severance pay. It can be paid in connection with the company's managerial performance within the maximum limits of compensation that was approved in the General Meeting of shareholders. Executive directors needs to accomplish assigned annual goals and performance is subject to evaluation, which reflects their performance-based salary. For outside directors, a pre-determined amount of money allotted for official activities is paid every month.

#### Operation of Board of Directors

KEPCO E&C's Board of Directors meetings are held with a majority of directors in attendance and decisions are made with the approval of the majority. Furthermore, special regulations are made in the Article of Incorporation so that directors who have interests in agendas do not participate in the voting process, basically to prevent conflicts of interest among directors. Also, a Self-Evaluation System for an efficient operation of each director was established to gather information and diagnose its operational status and vulnerabilities so that the board of director's reputation is substantially recognized. As of 2013, e-Directors webpage has been started to operate.



KEPCO E&C e-BOD webpage



#### Performance of 2012 Board of Directors' activities

KEPCO E&C board of directors is operated to establish core management objective, working principles and monitor top management team's activities. In 2012, nine board of directors meeting were opened to resolve important matters. Related contents are found on the corporate webpage, public institution management information system, Alio, and the 2012 Annual Report.

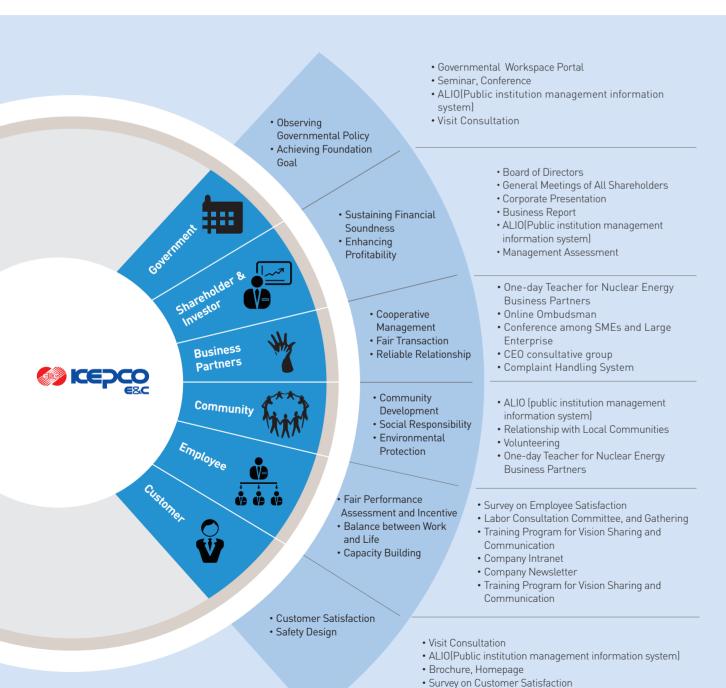


# **Stakeholder Engagement**

# I. Stakeholder Identification

KEPCO E&C recognizes employees, customers, the government, shareholders and investors, business partners and the local community as its stakeholders and listens to their opinions and comments regarding important business issues through a variety of communication channels.

• Stakeholder • KEPCO E&C Responsibility • Communication Channel

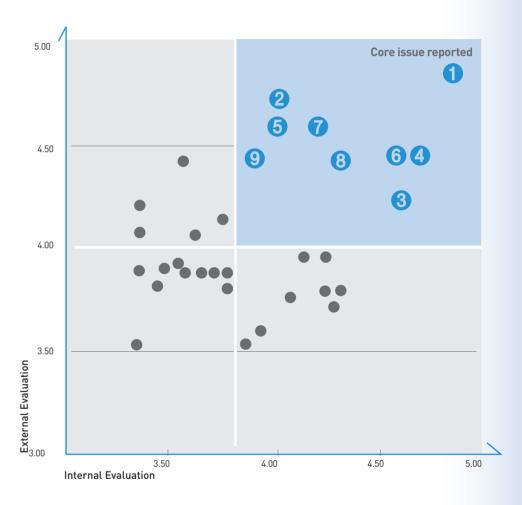


#### //////// Materiality Test Results

Test period : 2013. 04. 15 ~ 2013. 05. 15

Responders : KEPCO E&C employees (30 persons), external stakeholders (15 persons)

HUMANEERING KEPCO E&C



Core Issue	Eported Contents	Page
Creating Economic Value	Sales, Amount of Order, Current Net Income, and etc	12, 13, 84
2 Cultivation of the Sound Governance	Independence of and Transparency in Board of directors	16, 17
3 Ethical Management in Practice	Establishment of Ethical Management Promotion System, Internalization Program	39, 40, 41, 42
4 Increase in Quality Capacity	Technical Development, Quality Renovation of the whole process of EPC	43, 44, 45, 46
Sestablishment of the Advanced-Green Management System	Establishment of the Green Management Strategy and Objective, Management of Achievement	56, 57
Education and Training Program Provision for Employees	Education Program for Human Resources Development	63,64,65
<b>7</b> Expansion of Communication with Employees	Grievance procedure for employees, Managing Communication Channel	18
3 Observance of the Fair Trade	Pledge of abiding by the Fair Contracts, Information Offering, and etc	74, 75, 76, 77
Market Entry Countries, Observing the Local Law	Market Entry Countries, Observing the Local Law	27, 28, 29, 77

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2012 KEPCO E&C Sustainability Report

#### II. Materiality Test

KEPCO E&C, in accordance with the international standard for sustainability reporting, Global Reporting Initiative (GRI) has conducted a Materiality Test on our stakeholders.

#### Index Development for Materiality Test

- GRI(Global Reporting Initiative) Index Reconstitution
- Selecting 32 Evaluation Indices

Based on global standards and industrial trend, major 32 sustainability issues related to KEPCO E&C were selected.



#### **Conducting Materiality Test**

- Conducting Materiality Test to Stakeholders
- Media Analysis('11.01~'13.03)
  For one month('13.4.15~'13.5.15),
  stakeholder survey(30 internal
  stakeholders, 15 external ones)
  was conducted for materiality test.



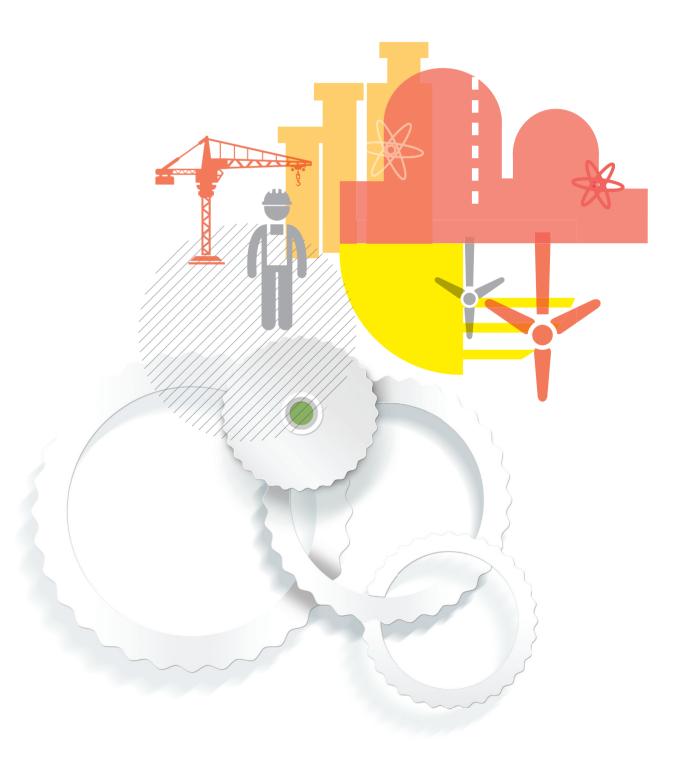
#### Analyzing the Result of Materiality Test

- Comparing the internal result of materiality test with the external one
- Drawing 9 high rank indices
   After comparing the survey
   results of the internal
   stakeholder and external one,
   9 high rank indices which
   stakeholder most focused on
   were selected.

# III. Materiality Test Results

Based on the 2012 KEPCO E&C Materiality Test, a total of 9 material issues were identified for reporting. Both internal and external stakeholders identified economic value creation as the most material issue with stable governance structure and implementation of ethics management also being specified as material to KEPCO E&C. KEPCO E&C will concentrate on applying these results to its sustainable management and will continuously manage and improve on these aspects.

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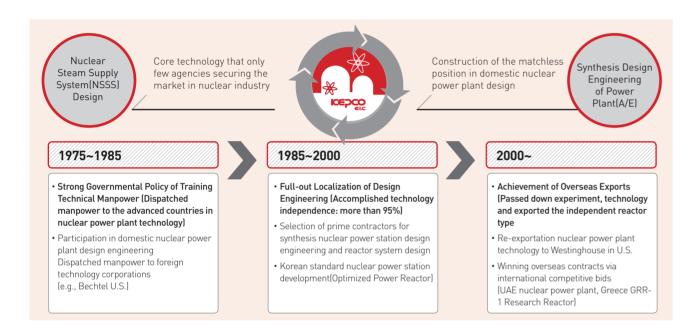


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### **Strengthening Total Solution Business**

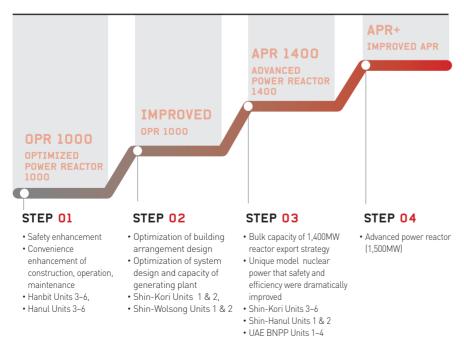
#### I. Nuclear Power

KEPCO E&C has been responsible for both total engineering of nuclear power plants and nuclear reactor systems and since its establishment in 1975, it has designed all nuclear power plants in Korea since designing Hanbit units 3&4.



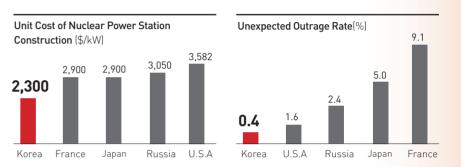
24

#### Korean Standard Nuclear Power Plant Design Engineering Development



#### The Excellence of KEPCO E&C's Korean Nuclear Power Plants

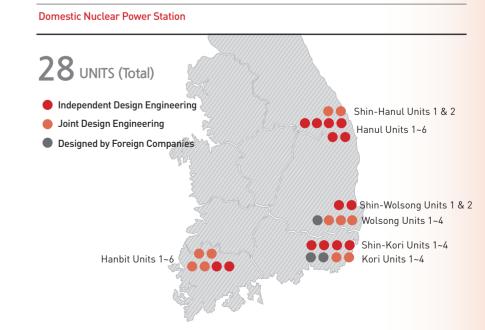
KEPCO E&C's Korean nuclear power plants have proven globally to exceed those of countries like the United States and France that have traditionally led this field in both low construction cost and unexpected outage rate making them more economical and safer.



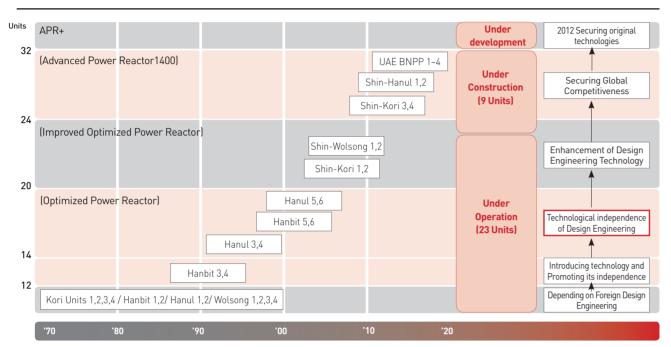
#### KEPCO E&C's Domestic Nuclear Power Plant Business Performance

KEPCO E&C was responsible for designing 25 of the 28 nuclear power plants in operation in Korea as of July 2013. KEPCO E&C contributed to the stabilization of electricity distribution in Korea by completing construction on Shin-Kori Units 1~2 and Shin-Wolsong Unit 1.

In addition, KEPCO E&C has continuously worked to obtain and develop core technologies for nuclear power and as a result, was able to achieve independent nuclear power plant design capability. KEPCO E&C is now able to export Korean Nuclear Power Plants freely in the global market without being reliant on foreign technology.



#### Performance of Nuclear Power Plant Design Engineering



\* Kori Unit 1, 2 and Wolsong Unit1-performed by other companies



- Strong Governmental Policy of training Technical Manpower (Dispatched manpower to the advanced countries in nuclear technology)
- Full-out Localization of Design Engineering (Accomplished technology independence: more than 95%)
- Achievement of Overseas Exports (Passed down experiment, technology and exported the independent reactor)

#### II. Thermal Power

Based on the internationally recognized standard Korean coal thermal power plant design technology, KEPCO E&C is able to design economic and eco-friendly thermal power plants.

# Excellence of KEPCO E&C's Standard Coal Thermal Power Plant Design Technology

As a result of KEPCO E&C's development of thermal power plant design technology tailored to customer needs, it was able to achieve independent design capabilities for a standardized 500MW scale plant in 1995 and 800MW scale standardized coal thermal plant in 2004. 95.8% independence has been achieved in the 1,000MW scale plant while designing Dangjin Units 9 and 10 and plans to achieve full independence by 2015.

#### Korean Standard Design Engineering Technology for Coal Thermal Power Generation Engineering 1,000MW 800MW Standard Coal 500MW Standard Coal 200MW STEP 01 STEP 02 STEP 03 STEP 04 Circulation fluid bed • Using super critical • Ultra super critical · Improvement of thermal boiler system pressure steam and high efficiency by increasing pressure high efficiency • Compatibility efficiency operation steam temperature Bulk capacity(1,000MW) improvement of • Eco-friendly construction • 3D CAD Model Dangjin Units 9 & 10 fuel for use(Utilizing Shin-Boryeong Units 1 & 2 • Borveona Units 3~8 • Yeongheung Units 1~4 domestic anthracite) Taean Units 1~8 • Donghae Units 1 & 2 Dangjin Units 1~8 Yeongwol Unit 3

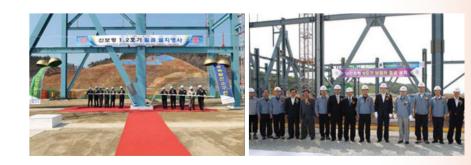
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#### KEPCO E&C's Domestic Thermal Power Plant Business Performance

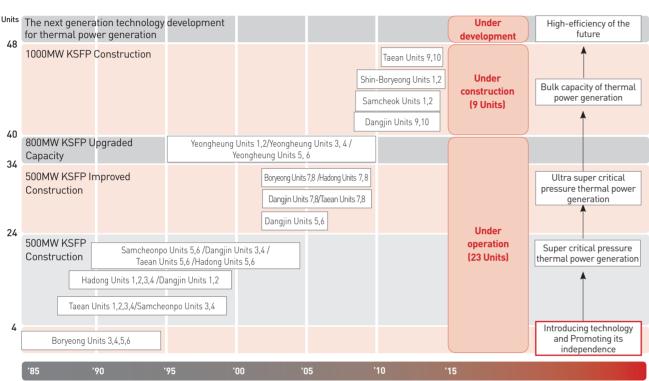
• •

As of July 2013, 38 thermal power plants are in operation at present and KEPCO E&C is working towards building a landmark for the 21<sup>st</sup> century that lead the world in efficiency, eco-friendliness and economical with these efforts being applied to the 1,000MW scale plants in Dangjin Units 9 and 10 and Shin-Boryeong Units 1 and 2.

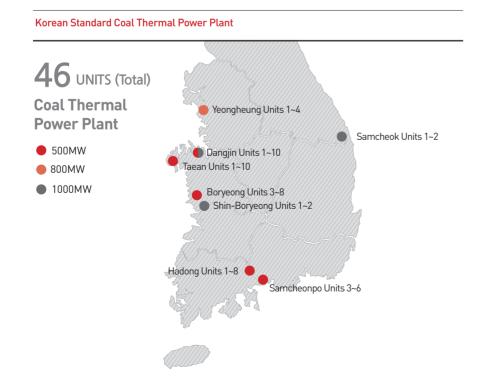
KEPCO E&C offers total solution services for coal thermal plants based on its best-inclass domestic technology and is exporting this technology throughout the world.



#### Performance of Thermal Power Plant Design Engineering



\* Yeongheung Unit 5,6-perforned by other companies



# **Expansion into the Global Market**

#### I. Engineering Project

#### Exporting Korean Nuclear Power Plants - Design for UAE BNPP (Barakah **Nuclear Power Plant)**

KEPCO E&C is providing the design for UAE BNPP Units 1~4, the first export of Korean nuclear power plants.

UAE BNPP project obtained the construction permit in July 2012 and work has progressed on schedule with geological surveys for Units 3 and 4 being completed in August 2012.

KEPCO E&C has gained global recognition of its technology in its successful execution of Korea's first nuclear reactor export. KEPCO E&C will continue its efforts to expand its presence in the global nuclear power plant market.



#### ITER(International Thermonuclear Experimental Reactor) Cable **Engineering Services**



KEPCO E&C has seemlessly been executing the Cable Engineering Support Service (CESS) contract awarded by ITER, an international joint R&D project among 7 countries (Korea, USA, EU, Japan, China, Russia and India) with the goal of commercialization of thermonuclear energy.

KEPCO E&C was able to win this particular contract and additional contracts such as the System Engineering Support (SES) contract based on successful implementation of previous ITER contracts including support of engineering electrical installations, development of detailed manuals and numerous other works.

KEPCO E&C expects that its successful participation in ITER's works will contribute to development of future energy sourcse and Korea's accumulation of thermonuclear technology.

#### Efforts to secure design certification for nuclear power plant exports

In order to meet the requirements in some international bidding, KEPCO E&C is working to obtain Design Certification (DC) from the U.S. Nuclear Regulatory Commission and meet European Utility Requirements (EUR) through technology

2012 KEPCO E&C Sustainability Report

development and advancement.

Through these efforts, KEPCO E&C was able to develop domestic APR1400 reactor technology and obtain Design Certification from both the U.S. and Europe, confirming the high level of technological expertise and stability on a global level. This will further enhance KEPCO E&C's ability to export Korea's nuclear power plant technology to Asia, Europe and other new diverse international markets.

#### II. EPC Project

#### KEPCO E&C supplies thermal power plant equipment to Turkey Tufanbeyli

KEPCO E&C won the contract in September 2011 to purchase and supply facilities and equipment, including desulfurization facilities, electric precipitators, and coalhandling facilities required for the construction of the plant and has been fulfilling its responsibilities with respect to this project.

The Tufanbeyli project calls for the construction of three 150MW-class units in mining areas in Tufanbeyli, some 350 km southeast of the Turkish capital of Ankara and is the first large-scale purchase project KEPCO E&C was awarded since its transformation into an EPC company in 2009.

KEPCO E&C is concentrating its efforts on a firm-wide scale to continue its expansion into the global EPC market and will leverage this experience to enhance its global purchase and supply capabilities.

#### Ghana Takoradi T2 Expansion Project



The Ghana Takoradi T2 power plant expansion project is KEPCO E&C's first overseas EPC project that it has undertaken. This project aims to improve the poor electricity supply situation in Ghana by adding a steam turbine (120MW), two heat recovery steam generators (HRSGs) and a sea water direct cooling system to the existing two gas turbines (110MW each) to the Takoradi T2 plant in operation in the western region of Sharma.

KEPCO E&C plans to successfully complete this project and will utilize its experience to secure further business in Ghana and expand into Western Africa as a whole.

In addition, KEPCO E&C will collaborate with private Korean firms to jointly enter the African market, building the foundation for public-private partnership and will contribute to the growth of related industries exporting Korean generation equipment.







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### **Securing Sustainable Technologies**

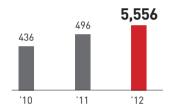
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#### I. KEPCO E&C's Technology **Management**

In order to secure future growth engines, KEPCO E&C has set "Developing Sustainable Technologies" as its mid to long-term technology development strategy and has set three strategic action plans to guide its development: 1) Securing export-based, nextgeneration nuclear technology, 2) Strengthening plant and eco-friendly technologies, and 3) Securing EPC technologies.

#### Investment in Technical Development

(Unit: KRW 100 million)



#### Mid to Long-term Technology Development Strategy

KEPCO E&C has identified 7 focal technology development projects and 13 focal technology items to comprise its core technology development strategy and has developed mid to long-term technology Road Maps for each project, commercialization focused Research and Business Development (R&BD) projects and is implementing a top-down R&D structure to guide the direction of technological development and strengthen its core capacities.

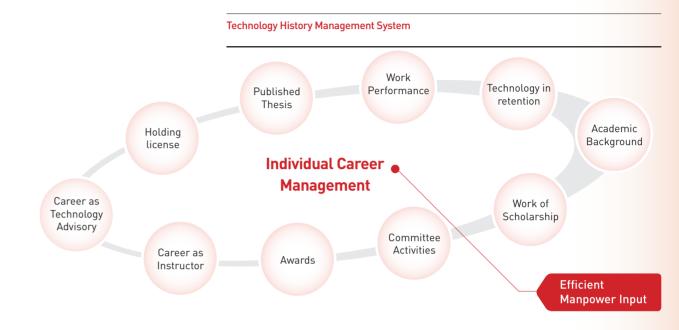
In addition, it has increased it annual technological development investment from 43.6 billion KRW in 2010 to 49.6 billion KRW in 2011 and to 55.6 billion KRW in 2012. This investment continuously exceeds 7% of its total sales.

#### Establishing the Foundation for Technology Management

KEPCO E&C has developed a Technology History Management system that allows management of technologies possessed by employees, project performance data, academic accomplishments and research papers published allowing for efficient and effective management of its technological resources.

#### 2012 Mid-Long Term Rolling Technology Development Strategy

In response to the changes to the global and domestic situation brought on by the Fukushima Nuclear Power Plant accident and policy changes such as the introduction of the Renewable Portfolio Standard (RPS), KEPCO E&C strengthened its strategic focus on improving nuclear safety technologies that can withstand natural and other disasters. In addition, Site Decontamination and Dismantling Technology was added to KEPCO E&C's core technology portfolio, and IGCC, CCS, Offshore wind power development to secure Plant and Green Technologies as a part of KEPCO E&C's reestablishment of its technological development direction.



#### Technology Collaboration with Small & Medium-sized Enterprises (SMEs)

KEPCO E&C is making efforts to identify joint research opportunities with SMEs in order to create new growth engines by sharing developments with SMEs. In this respect, KEPCO E&C has influenced regulatory policy to support technology cooperation and has signed the contract for the joint R&D project "3D-based advanced pipe wall thinning management program development" that will act as a foundation for both win-win growth with SMEs and develop future growth engines.

#### II. Status of Core Technology **Development Activities**

Securing core technology for independent nuclear power plants design

#### //////// Development of Safety Analysis Technology

- · Secured original technology that allows for final confirmation of design safety and nuclear plant
- Completed development of Safety Analysis Technology -SPACE and Safety Analysis Methodology
- Reduces obstacles for exporting nuclear power plants by reducing foreign dependancy on Design Codes as it solves the problem of Code Restrictions in the License Agreement

#### //////// Reactor Coolant Pump (RCP) Design Technology Development

- Developed domestic RCP technology, which was traditionally monopolized by advanced foreign firms, allowing for technological independence from foreign technologies
- Secured commercialization-ready design, manufacturing and testing capabilities and was applied to the development of the new APR+ type nuclear reactor
- Will be able to contribute to import substitution by applying original RCP technology to future nuclear power plants

#### **Develop Export-ready** nuclear power plant technology

#### //////// EU-APR1400 Technology Development

- Developed U.S. based APR1400 technology suited to meet EUR certification standards
- · Strengthened its competitiveness in the global market and established a base for entering the European nuclear power plant market

2012 KEPCO E&C Sustainability Report

• Submitted bid for the Olkiluoto Nuclear Power Plant, Unit 4 I (OL4) in Finland (January 2013)

#### //////// Obtained U.S. Nuclear Regulatory Commission (NRC) Design Certificate (DC)

- Obtained Design Certification necessary for entering the U.S. market
- Established an entry point into the U.S. market and enhanced competitiveness of Korean Nuclear Power Plants

#### **Develop Next-Generation Nuclear Power Plants**

#### //////// Developed next-generation Nuclear Power Plant APR+ Technology

- Obtained original nuclear reactor technology that removes export obstacles
- Reduces construction time and increases safety through broader application of the passive
- · Strengthened technical and economic competitiveness compared to comparable reactor types enhancing export capabilities

#### //////// Research and Development of Seismic Isolation System

- KEPCO E&C led a joint between the government and 6 institutions
- Led a Seismic Isolation expert group from the IAEA based on acquisition of commercial design and high oscillation range expertise
- Gained a competitive edge for development of Seismic Isolation technology for APR1400 and export to countries with high earthquake frequency

#### Securing Plant • Green Core Technology

#### //////// Development of Carbon Capture & Storage Design Technology (CCS)

- Developing 3 types of CCS technologies: Capture process using dry regenerable sorbent, Capture process using amine-based sorbent, Pre-Combustion CO<sub>2</sub> Capture process
- Building the base for commercialization by developing and demonstrating a CO<sub>2</sub> capture process integrated with the overall process of the power plant and its basic design
- Securing original technology by registering CO<sub>2</sub> capture process copyrights (1 registered, 2 applied)

#### JUJUILLA Development of Next-generation Coal-Fired Power Generation Technologies IGCC, SNG

- Built the foundation for IGCC generation by providing architect/engineering services for Korea's first IGCC Pilot Plant, a 300MW scale plant in Taean
- · Developed engineering standards and optimal engineering technologies for Substitute Natural Gas (SNG) Plants and created a launchpad for securing technology base and entry points for SNG by executing related projects in Boryeong and Indonesia

#### //////// Foundation for Offshore Wind Power Design Technology

- Installed meteorological tower and provided architect/ engineering services for the Jeju Offshore Wind Power Project which will be the basis of KEPCO E&C's entry into the wind power
- Set plans for each phase in offshore wind power engineering and construction starting with securing design and procurement technologies, plant construction and plant operation

\* APR : Advanced Power Reactor, Korea Standard Nuclear Power Plant IGCC: Integrated Gasification Combined Cycle

#### III. Design Safety

Precaution

• Automatic safety protection system

· Facilities for blocking mistaken operation

Rigid standards

against malfunction & accident

KEPCO E&C holds safety at the pinnacle of nuclear power plant design and has enhanced general plant design concepts with nuclear power safety concepts to protect humans and the environment from radiation.

#### 01 | Nuclear Power Design Safety Targets and Concepts each Stage

Based on the following basic concept of nuclear power safety design, KEPCO E&C is implementing flawless design works.

#### 3rd Stage: Prevention against leakage of radioactive material

• Utilizing a defense-in-depth concept

such as emergency core cooling

Application of engineered safety feature

#### 2nd Stage: Prevention against accident & its expansion

- Early detection of abnormal symptoms
- in equipment and devices
- Reactor emergency shutdown

1st Stage Precaution against

2nd Stage Prevention against

- The most conservative standards in plant design
- Automatic safety protection system and facilities for preventing unexpected
- 3rd Stage Prevention against

accident & its expansion

- in equipment and devices and reactor emergency shutdown Utilizing a defense-in-depth concept in
- Application of engineered safety feature such as emergency core cooling

order not to let radioactive materials to be

- malfunction & accident
- malfunction and accidents Early detection of abnormal symptoms
- accident & its expansion
- released

2012 KEPCO E&C Sustainability Report

#### 02 | Safety System Characteristics

36

In designing nuclear power plants, KEPCO E&C applies safety systems that will prevent operator error or equipment malfunction from escalating into serious accidents.

#### Redundancy

KEPCO E&C installs two or more of the same equipment/facility in order to ensure that there is at least one is operational and can maintain safety system functions.

#### Independency

.

2 systems or facilities or equipment with the same function are installed separately in order to prevent exposure to the same factors for malfunction. This will ensure that if malfunction is caused by a particular reason, this will not effect the other duplicate facility or equipment and the safety function will maintain its function.

#### Diversity

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KEPCO E&C installs two or more systems or facilities with different characteristics to maintain safety system functionality.

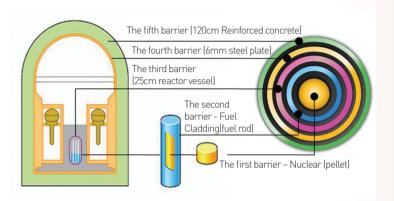
#### **Multiple Barrier Technology**

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KEPCO E&C includes multiple safety barriers in nuclear plant design to prevent radioactive materials from escaping the plant.

The importance of installing multiple barriers, especially that of the barrier surrounding the containment building, was proven by the Three Mile Island accident in the United States and Chernobyl in the former Soviet Union. In the Chernobyl Nuclear Power Plant, the containment building was not built with barriers that could withstand pressure allowing radioactive materials to leak into the general population. In comparison, in the case of the Three Mile Island Nuclear Power Plant, radioactive material was captured in the containment building minimizing external impact.

#### Performance of Thermal Power Plant Design Engineering



#### 03 | Securing Reliability of Safety Systems and Nuclear Power Plant Safety

In order to enhance reliability in the design, procurement and construction of safety systems, KEPCO E&C has strict requirements for types of material, conditions of use, stress limits and also requires verification of seismic design and resistance to natural disasters.

In particular, five-layer safety barriers are built into the design to prevent nuclear radiation leaks and stringent geological studies are performed in the site selection process to ascertain the risk of possible earthquakes and sites are selected that are located on stable bedrock. Nuclear power plants are designed to withstand strong earthquakes of roughly 7 on the Richter scale.

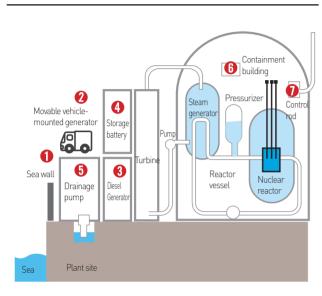
# 04 | Nuclear Safety in the Aftermath of the Fukushima Nuclear Power Accident in Japan

In light of the Fukushima accident, KEPCO E&C conducted safety inspections on all domestic nuclear power plants and also ran EU Stress Tests as well. Based on these tests, KEPCO E&C identified points for improvement and applied this to design immediately in order to prevent leakages of radioactive materials from the reactor core.

To prepare for large-scale natural disasters from leading to accidents, KEPCO E&C is evaluating extending sea walls and installing flood gates. In addition, utilizing mobile generation vehicles to provide emergency electricity needed to maintain cooling for the reactor core and spent fuel rods, securing storage batteries, securing external cooling flow path, and obtaining emergency cooling water sources are also being examined.

In addition, in order to maintain the stability of the containment building and increase emergency response capabilities for multiple-unit accidents, installation of a non-electric severe accident hydrogen removal facility in nuclear power plant design.

#### Performance of Thermal Power Plant Design Engineering



#### 56 short- and long-term improvement measures

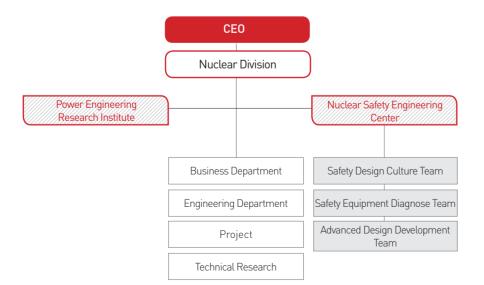
- 1 Extension the sea wall from 7.5m to 10m
- 2 Securing the movable vehicle-mounted generator
- Building Flood door to proof immersion (e.g., Emergency Diesel Generator)
- Securing emergency storage battery at safety zone from flooding Make diverse drainage pump waterproof
- **6** Building PAR\* which is operable without power, Preventing
- 6 hydrogen explosion
- Building filter and exhaust facilities for radioactive material to
- 7 prevent excessive pressure rising of containment building



More than KRW 1.1 trillion invested over 5 years

#### 05 | Establishing Safety Culture

KEPCO E&C is striving to obtain the highest level of design quality in order to cultivate a safety culture in which safety comes first. In addition KEPCO E&C has proactively responded to heightened global and local demands for safety in nuclear power plant construction and operation in the aftermath of Fukushima. As a part of this response, KEPCO E&C created a department devoted to Nuclear Design Safety that will spearhead the embedding of a safety culture that is fit for global standards.



## **Reinforcing Management Stability**

# - Risk Management

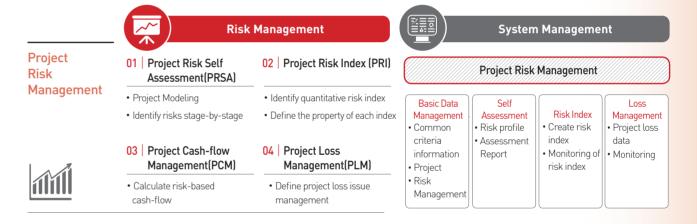
I. Operation of Firm-Wide Risk Management System KEPCO E&C established the firm-wide Enterprise Risk Management (ERM) System in 2010 to enhance its risk management capabilities. This system is comprised of order management, risk management for each project phase, and corporate risk management which covers risk management related to the companies financial accounts.

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#### **Project Risk Management**

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KEPCO E&C, manages risks regarding the execution of projects including contract, technology, client/host country, stakeholder and funding risks by identifying internal and external potential risks, evaluating these risks and creating a response plan to mitigate or handle such risks.



#### Corporate Risk Management

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KEPCO E&C's corporate risk management framework covers 10 areas; Audit, Legal, Marketing, Human Resources, IT, Contract, Technology, Strategic Planning, General Affairs, and Financial Accounting. The department responsible for each type of operational risk sets up risk indicators for each issue and monitors the indicators regularly in order to formulate the appropriate countermeasures.



Corporate Risk Index

- Set up operational risk indicators for 10 management areas
- Identify property of each index

# ĺ

- Risk Management and Response
- Identify and manage the economic/noneconomic risk related to index
- Come up with appropriate countermeasure and implement it



#### Corporate Risk Management

#### Basic Information • Common criteria

Management

Common criteria
 information
 Corporate
 Operation Risk

Corporate Risk Index
Create risk index
Monitoring of risk index

Monitoring of risk index

Nonitoring of risk index

 Countermeasures and Implementation 2012 KEPCO E&C Sustainability Report

#### II. Operation of **Corruption Risk Pre-Control System**

#### e-Audit System

KEPCO E&C focuses on preventing corruption instead of penalizing corrupt actions after they have occurred. In order to prevent corruption effectively, KEPCO E&C operates the e-Audit system to continuously monitor business aspects that are vulnerable to corruption risk. Once risk factors are detected through real-time monitoring, all audit capacity is focused on preventing the risks from materializing into problems.

#### III. Transparent Auditing **System**

In order to address society's call for transparent accounting and changes in the related legal framework, KEPCO E&C has set up an internal Accounting Management System and reports to the Board of Directors and Audit Committee every fiscal year. Based on this report, potential risks are identified and corrected and efforts to enhance the accuracy and transparency and prevent distortion. 2012's annual assessment showed that all 451 of the assessment categories were of favorable standing and none of the items were below the internal Accounting Management System's standards.



내부회계관리제도 운영실태 평가보고에 대한 감사의 평가보고서 감사 집 장 수

Corruption Risk Pre-Control System : e-Audit System



## Reinforcing Management Stability

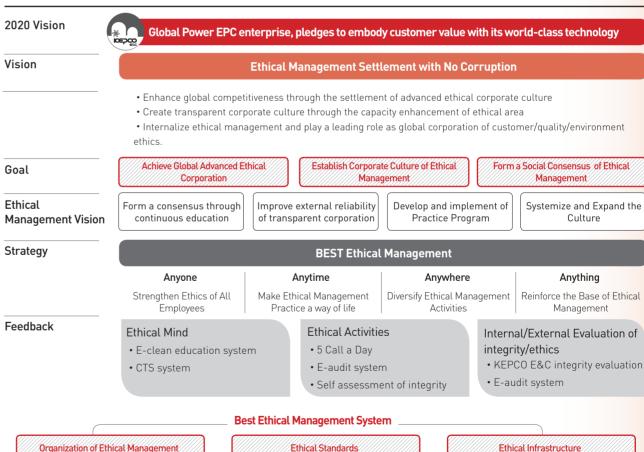
## - Ethics Management

#### **BEST Ethics Management**

KEPCO E&C's ideal for BEST Ethics Management is that KEPCO E&C and its employees will maximize sustainable value by placing ethics at the core of their standards in accordance with international standards and share all the company's activities and achievements transparently with stakeholders.

#### I. Ethics Management **System**

To achieve a corruption-free, clean KEPCO E&C, a department dedicated to Ethics Management has been newly established in addition to the Operating Committee for Ethics Management which is headed by the CEO and comprised of the heads of all departments. Furthermore, various ethics management practices have been implemented including the firm-wide signing of the Pledge for Ethics and Integrity and ethics management self-assesment.



#### Organization of Ethical Management

- Operating Committee for Ethics Management
- Ethics Directors by Division (Dept.)
- Execution Group

#### Ethical Standards

- Code of Ethics
- The Charter of Customer Satisfaction
- Management
- The Charter of Transparent Society Practice in Electric Power Industry
- The Charter of the True Love Volunteer Group

- Corporate campaign of integrity, ethics
- Ethical Management e-Clean education

#### II. BEST Ethics Management **Practical Education**

Education Type	The Number of Participants
Audio-visual education	All Employees
Cluster education	422

#### **Ethics Management Education**

KEPCO E&C operates an online cyber ethics management education system called 'e-Clean' that provides constant access to training on ethics management. In 2012, not only were all employees subject to ethics management training, training was extended to employees of business partners performing duties at KEPCO E&C. In order to vitalize participation and increase the effectiveness of ethics management education, various methods of evaluation and assesment were introduced.

2012 KEPCO E&C Sustainability Report

#### Sexual Harassment Prevention Education

KEPCO E&C provides annual sexual harassment and sex trade prevention education to all employees and business partners in order to instill a healthy value system and create a wholesome and comfortable corporate culture and promote and preserve

human rights.

In addition, sexual harassment and sex trade prevention education is linked with training for interns and new hires, and is required as part of the education credit bank system put in place for promotions in order to prevent this issue from becoming a blind spot in corporate culture and ensuring that KEPCO E&C contributes to the promotion of human rights in the workplace.

#### III. BEST Ethics **Management Activities**

In order to promote an ethical mind-set in KEPCO E&C's employees, a "Integrity & Ethics Campaign Day" has been designated for sharing various ethics related contents internally along with holding an Ethics Management Festival in which employee participation is voluntary as a way of working towards embedding ethics in management. Based on these activities, unethical practices are actively identified and fixed through the Ethics Management Reporting and Employee Suggestion System leading to increased employee participation.





Award: Grand prize of the most respected companies('11.11.2) CEO Ethical Management Pledge('12.3.27)

#### IV. BEST Ethics Management Assessment and **Feedback**

The various ethics management programs are reflected in internal performance evaluations through monitoring of external customer satisfaction surveys and internal integrity assessments. Methods to increase and improve integrity and ethics in the company are included in the following year's ethics management plans to increase implementability and launch integrity and ethical management to the next level.

#### Internal Evaluation

- Self assessment of integrity
- Evaluation of the Customer Satisfaction
- Running audit through E-audit
- Link with the performance by the reflection of KPI

### **External Evaluation**

- Evaluation of KEPCO's integrity level
- · Ethics Monitoring
- Integrity Monitoring which targets visited customer through 5 Call a Day

**Carrying Forward Ethical** Management Plan for the **Next Year** 

> **Drawing Strategy Rolling and Core Promotion Work**

#### V. Enhanced Operation of Internal Whistle-**Blowing**

#### Operation of the Popular Enmity Board

KEPCO E&C's "Popular Enmity Board" is a channel for reporting corruption, unfair business practices, demands for bribes and other complaints open to all stakeholders, 24 hours a day.

Reports filed through this channel are investigated stringently and fairly and if the contents of the report are found to be accurate, the related employee is penalized. The identity of the reporter and the contents of the report are protected strictly and only disclosed to relevant institutions when necessary as to prevent backlash as a result of the report.



CEO Ethical Management Pledge('11.3.24)

#### Cooperation on Auditing of the Nuclear Power Plant Industry

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KEPCO E&C has been part of a signed agreement to cooperate on audits related to the nuclear power plant industry with 'Korea Hydro and Nuclear Power,' 'KEPCO Plant Service and Engineering,' 'KEPCO Nuclear Fuel', and 'KEPCO Knowledge, Data & Network' since October 2011 and has been participating in cooperative activities as a basis of this agreement. Based on this agreement, KEPCO E&C has expanded the range of internal reporting from within the firm to the entire nuclear power plant industry and as a result, has contributed to enhancing integrity and transparency within the industry.

# VI. Disciplinary Punishment Policy

KEPCO E&C has established and operates a Code of Conduct for Ethical Management to clearly provide an ethics standard by which employees should base their judgements and actions upon. In line with this, strong measures are taken against corruption and other unethical actions.

In 2012, the Code of Conduct was amended to expressly stipulate standards regarding disciplinary actions in addition to reinforcing these standards. The 'Guidelines on reporting and whistle-blowing of work-related crimes committed by employees' was established allowing the company to take firm action on a corporate level.

As a result of these firm regulations and clear communication of the firm's anticorruption stance, there have been no reason for dismissals or other disciplinary actions to be taken as a result of employee corruption between 2008 and June 2013.

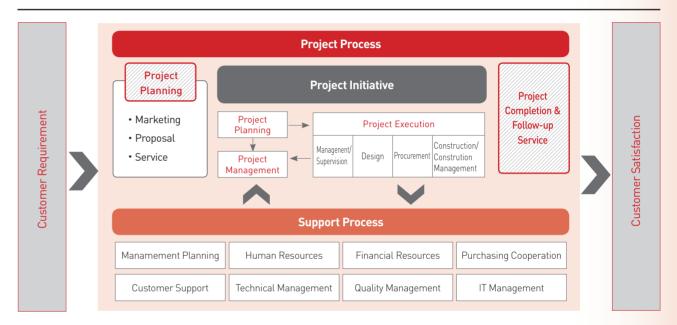
# **Reinforcing Management Stability**

# - Quality Management

#### I. Quality Management System

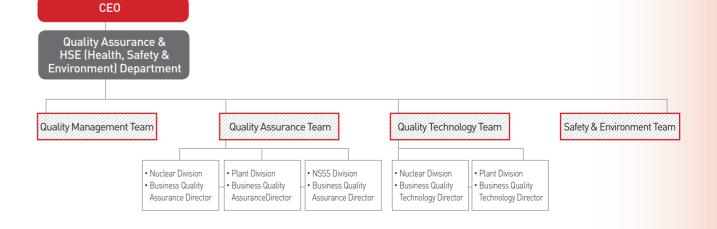
Upon its establishment in 1975, KEPCO E&C also became the first company in Korea to implement a Nuclear Power Quality Assurance System which is still in operation. KEPCO E&C continues to strive for improved quality and gain quality competitiveness by applying ISO 9001 requirements throughout the firm.

56 short- and long-term improvement measures



#### II. Quality Management Organization

KEPCO E&C has a dedicated Department, the Quality Assurance & HSE (Health, Safety & Environmental) Department, which reports directly to the CEO that oversees the company's quality management. This department operates the company's quality management system, performs quality audits, provides support for technical aspects of design quality and other firm-wide quality management activities.

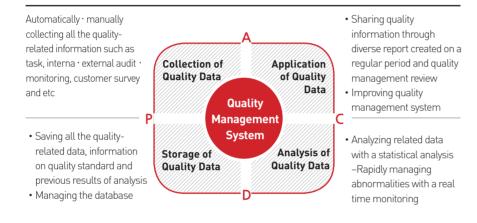


2012 KEPCO E&C Sustainability Report NEW POWER

#### III. Quality Information **System**

KEPCO E&C established the Quality Information System (QIS) in 2011 which allows it to share information related to quality with external parties and business partners in realtime. QIS is operated by Quality Assurance agents who perform quality management activities. These agents input, output, distribute and manage data on related processes and in doing so, enhance execution capabilities, save time and increase design quality through real-time design management.

46



#### IV. Quality Management **Activities**

#### Continual Improvement of Quality Management System

- Customer Focus Quality Management
- Responsibility, Authority and Communication • Quality Management
- Review Work Environment

#### Resource Management

- Provision of Resources · Human Resources
- Technical Resources
- Infrastructure and Work Environment

#### **Quality Management System**

Management

Responsibility

- Planning
- · Process • Documentation Structure
- Subcontract
- · Control of Document
- Control of Quality Record

#### Product Realization

- · Customer-related Process
- Design and Development
- Producing and Provision of Technical Services
- Control of Monitoring and Measuring Equipment

Measurement,

Analysis, and Improvement

Control of Nonconforming

**Engineering Service** 

Continual Improvement

Corrective & Preventive Action

Analysis of data

Monitoring of Engineering Service

· Customer Satisfaction

Quality Audit

and Process

Project Completion and Follow-up Service

#### Operation and Improvement of Quality **Management System**

KEPCO E&C establishes and implements quality policies and quality objectives to meet applicable statutory and regulatory requirements related to quality in both domestic and foreign markets, including customer requirements.

Based on the firm's Quality Management System, KEPCO E&C operates a Quality Assurance System in line with domestic and foreign standards such as ASME NQA-1 and KEPIC QAP. Through this system, KEPCO E&C is able to implement quality manage across all business processes including design, procurement and construction in a systematic manner.

In tandem with the Quality Assurance System, KEPCO E&C operates the Design Improvement Control System as a comprehensive method of managing lessons learned from previous projects in order to prevent the same issues from reoccurring in future projects, which ensures continued improvements in quality.

#### **Quality Management Training**

KEPCO E&C has operated "KEPCO E&C Quality Management Academy" since 2010 for all employees in order to embed quality management focus needed to execute EPC projects. The Academy offers lectures on cases of application of quality management in EPC projects and formulating strategies to secure quality from internal and external EPC experts in order to spread quality-mindedness throughout the firm and strengthen commitment to quality.

In addition, specialized training on domestic and foreign quality standards such as ISO 9001, ASME NQA-1 and KEPIC QAP is provided along with KEPCO E&C's Quality Management System structure and responsibilities of each unit of the organization in an effort to strengthen quality management capacity in staff executing design works.





2012 KEPCO E&C Quality Management Academy

#### **Developing Quality Inspectors and Quality Audit Specialists**

KEPCO E&C is developing specialists in quality technology focused on enhancing capacities in design quality technologies, equipment and materials purchase inspections, and construction quality technology. Design quality reliability and project execution capacities are further enhanced by fully utilizing internal experts with technical certification from each technology and design segment in the quality audit process.



# 원지정본부 중역수를 합력A QUALITY DAY 행사

#### 2013 'Quality Day' with Nuclear Power Business Partners

KEPCO E&C, in efforts to form close working cooperation with its business partners, shares firm-wide policies on quality assurance, quality assurance processes and safety culture, and current issues in nuclear power with project managers and quality officers and staff from business partners. By communicating KEPCO E&C's commitment to

quality management with its business partners, KEPCO E&C hopes to foster the same

commitment in its business partners and develop cooperation in this area.

V. Achievements and Recognition for KEPCO E&C's Quality Management KEPCO E&C obtained ISO 9001 certification in 1996, KEPIC certification in 1999, ASME N certification in 2009 and has continuously upgraded and maintained its quality management system. As a result of its sustained efforts to improve its quality management, KEPCO E&C has been selected as an "Excellent Quality Competitiveness Enterprise" for 6 years running since 2007.

#### certification

ISO9001 Certificate



KEPIC Certificate of Nuclear Structure (SN)



KEPIC Certificate of Nuclear Structure (SN)



ASME N Certificate



Selection of Excellent Quality Competitiveness Enterprise



# 03

# **GREEN POWER**





# Responding to Climate Change and Eco-friendly Technology

I. Carbon Capture
and Sequestration
Technology

KEPCO E&C is actively developing Carbon Capture and Sequestration (CCS) technologies in response to climate change and mid to long-term national emissions reductions targets.

KEPC0 E&C has pursued CCS technology development since 2008 and installed a 0.1MW scale  $CO_2$  capture pilot plant in the Boryeong Power Station in 2010, which is still in operation. The technology applied in this pilot project is able to remove more than 90% of  $CO_2$  while consuming 15% less energy than comparable technologies.

In addition, KEPCO E&C actively participates in CCS initiatives including development of a 10MW scale CO<sub>2</sub> capture test bed using amine-based sorbent based technology and 10MW scale CO<sub>2</sub> capture test bed using solid sorbent. KEPCO E&C is planning on completing full scale demonstration of a 300MW scale CO<sub>2</sub> capture equipment by 2018 and completing preparations for commercialization by 2020.

KEPCO E&C is also participating in developing pre-combustion  $CO_2$  capture process for utilization with Integrated Gasification Combined Cycle (IGCC) generation and plans to complete development for 1MW scale process technology by 2015 and gradually increase this to 10MW.

#### Road Map for Development of CO<sub>2</sub> Capture Technology

	Test Be 0.1~0.5M				Plant MW	Li		Demonst	ration Plan V	t		nercial Pla 500MW	nt
'08	'09	'10	'11	'12	'13	'14	' 15	'16	'17	'18	'19	'20	'21
	Amine-bas pture Test		)		based sorb Pilot Plant	Ta	ask sment		W Verification			Commercia	alization
	Solid Sorber stion CO2 Ca		7	W Solid Sorb bustion CO <sub>2</sub>	ent Post- Capture Pilot	Plant	,		only one task nt/Amine-bas process				

#### Patents Obtained

	Applicant	Patent Name	Application Number	Application Date	Application Country
1	KEPC0 E&C	CO <sub>2</sub> Absorption Device and Method for Absorbing CO <sub>2</sub> Using the Same	12-61672	2012.06.08	South Korea
2	KEPC0 E&C	CO <sub>2</sub> Absorption Device Using Heat of Reboiler Steam Condensate	12-62864	2012.06.12	South Korea



10MW Solid Sorbent post-combustion
CO<sub>2</sub> Capture Technology (Hadong Thermal Power)



10MW Amine-based sorbent post-combustion

#### II. Integrated Gasification Combined Cycle Generation Technology



An Integrated Gasification Combined Cycle (IGCC) is a technology that uses a gasifier to turn any hydrocarbon in the feedstocks into hydrogen and carbon gas-synthesis gas (syngas) as a fuel for the gas turbine in the combined cycle power plant. Excess heat from the primary combustion and syngas cooler is then passed to a steam cycle, similar to a combined cycle gas turbine. This results in eco-friendly efficiency improvements as compared to conventional pulverized coal.

KEPCO E&C won the architect/engineering contract for the Taean IGCC plant in 2011 and is providing the overall basic design for the IGCC (including integrated designs) while also providing technical support on gasification plant, Air Separation Unit (ASU) and Combined Cycle Power Plant for the client. This is a milestone for KEPCO E&C as it is the first domestic next-generation clean-coal power plant project making KEPCO E&C the first Korean engineering company to secure the comprehensive design technology in the gasification industry.

#### III. Wastewater Treatment Technology

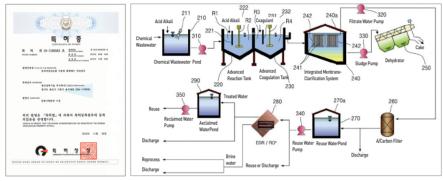


# //////// Patent obtained for Electro-dialysis reversal and electro-chemical treatment process for nitrogen compounds in wastewater (2007)

KEPCO E&C developed and obtained a domestic patent for a new combined wastewater treatment process which removes nitrogen compounds using electrodialysis reversal in 2007. This independently developed technology removes both Chemical Oxygen Demand (COD) and Total Nitrogen (T-N), which are caused by non-degradable components of ethanolamine (ETA) in wastewater.

# Patent obtained for treating wastewater using Integrated-Membrane Clarification System (2012)

KEPCO E&C has developed technology that combines reaction, coagulation, pressurized filtration, sludge settlement and storage processes using an "Integrated Membrane-clarification System" allowing for reduction in construction period and costs while also reducing the size of the required site. This technology obtained a domestic patent in 2012, and by maximizing treatment efficiency, it enables active response to environmental regulations and makes wastewater use easier.



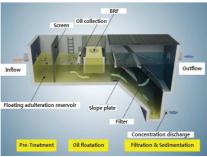
Equipment for treating wastewater using Integrated Membrane-Clarification System

# //////// Patent obtained for Nonpoint Source Removal System Using a Buoyant Rising Floodgate (2013)

KEPCO E&C developed an undercurrent mechanism to remove nonpoint source pollution from stormwater. This mechanism employs Buoyant Rising Floodgate that adjusts in height based according to water level preventing oil and other compounds from spreading. In addition, a screen and filter are used to remove nonpoint source pollutants through filtration and settling.

An automatic back-washing filter function included in this system adds ease of operation, and its high filtration speed allows for treatment of large volumes even in limited space. In addition, filters with different opening sizes are applied depending on the size of the pollutants and additional filters can be added for dissolved solids. This treatment system received domestic patent in 2013.





Nonpoint pollution Source Removal System Using a Buoyant Rising Floodgate

# Eco-Friendly, New & Renewable Energy Business

KEPCO E&C has design and project execution capacity and experience in air pollution prevention technologies including flue gas desulfurization and denitrogenization. Moreover, KEPCO E&C's wide range of technical capabilities include water pollution prevention systems and waste treatment facility development. It is also striving to further low-carbon power plant technologies and implement new and renewable energy projects to conserve the natural environment and contribute to sustainable development.

# I. Flue Gas Desulfurization



Boryeong Thermal Power Plant Unit (KEPAR FGD)

KEPCO E&C possesses the most advanced flue gas desulfurization technology in Korea. Moreover, it has independent design and construction capability for Korea Electric Power Absorption Reactor Flue Gas Desulfurization (KEPAR FGD) system, which is on par with global technologies.

Starting with the installation of Korea's first 200MW flue gas desulfurization facilities in Youngdong Thermal Power Plant Unit 2, KEPCO E&C has gone on to successfully complete nine Turnkey projects including the flue gas desulfurization system for the 500MW Boryeong Thermal Power Plant.

# II. Flue Gas Denitrogenization



Ulsan Thermal Power Plant Unit (Hybrid SCR)

KEPCO E&C possesses a wide range of experience related to the design and construction of flue gas denitrogenization facilities for thermal power plants. In particular, KEPCO E&C has secured catalyst technology which is central to flue gas denitrogenization facilities and has successfully developed and deployed a denitrogenization facility using catalyst technology which has successfully reached commercialization (Trade name: KoNOx®).

KEPCO E&C's Catalyst has demonstrated excellent performance in removing nitrogen even at temperatures of less than  $250^{\circ}$ C which is significantly lower that of existing technologies that operate best at  $300^{\sim}400^{\circ}$ C. As a result, a smaller number of catalysts can be installed and the amount of fuel for reheating device of exhaust gas such as duct-burner can also be reduced.

Moreover, KEPCO E&C has developed a denitrogenization catalyst that functions at temperatures exceeding 500°C which can be applied to a wider range of businesses and projects. The hybrid SCR facility installed in Unit 6 of the Ulsan Thermal Power Plant utilizes a system where SCR and SNCR are integrated, overcoming the problem of low denitrogenization efficiency at low temperature exhaust gas during low load operations.



III. Water Pollution Control

Wastewater Treatment Facility

KEPCO E&C installed the first domestically developed denitrogenization facility in Unit 6 of the Bundang Combined-Cycle Power plant and performed numerous projects including the Incheon Airport denitrogenization catalyst project, and the Turnkey project for Sithe Co-generation Power Plant. KEPCO E&C's technology was recognized in the global market and sold facilities to Co-op City Power Plant and Helco Power Plant in the US. More recently, KEPCO E&C successfully exported its denitrogenization technology through a supply contract for denitrogenization related equipment with Rabigh Power Plant (Four 700MW Units) in Saudi Arabia.

- **\*\*** SCR : Selective Catalytic Reduction
- \* SNCR : Selective Non Catalytic reduction

KEPCO E&C has performed design and engineering for power plant water treatment, wastewater treatment, wastewater reuse for the past 35 years and has developed independent technology for design and construction of wastewater treatment systems, wastewater reclamation and reuse recycling systems and seawater desalination systems.

KEPCO E&C's performance record covers most domestic power plants, overseas power plants, and design and construction of wastewater and sewage treatment facilities for domestic public agencies. Major projects include design contracts for Shin-Kori Nuclear Power Plant Units 1~6, UAE BNPP Units 1~4, Dangjin Thermal Power Plant Units 9&10 and EPC contracts for Ghana Takoradi T2 Power Plant and the Hwaseong City Livestock Sewage Treatment Facility.

KEPCO E&C will continue to develop and provide cost efficient and high-quality water pollution prevention technology that will meet our customers' expectations.



Wastewater Reclamation and reuse system

#### IV. Clean Development Mechanism (CDM)

KEPCO E&C provides technical support services for obtaining various international greenhouse gas reduction certification. KEPCO E&C has made its mark in the CDM field by successful registration and issuance of certified emission reduction for the Sudokwon Landfill Gas CDM project, Kori Wind Power project, and Younggwang Solar Power Project from the United Nations Framework Convention on Climate Change (UNFCCC)

KEPCO E&C, as a global eco-friendly company, will continue to participate actively in GHG reduction projects and contribute to accomplishing national goals and policies on climate change.



Kori Wind Power Facility



Yonggwang Photovoltaic Power Plant

#### V. Environmental **Consulting Services**

#### /////// Environmental Assessment

KEPCO E&C has executed numerous Environmental Impact Assessment projects for power plant and transmission line construction since 1983 and through this accumulated experience, it now possesses the most advanced know-how and most extensive track-record in the domestic market.

KEPCO E&C has expert personnel in areas ranging from meteorology, geology, marine sciences, ecology, environmental engineering and nuclear engineering. It also possesses cutting-edge technology needed for performing assessments. With these resources, KEPCO E&C is able to provide accurate and objective assessment results.

KEPCO E&C's exceptional technological know-how and experience in design and engineering gives it an unique advantage in performing assessments that can identify best available technology economically achievable.

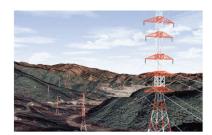


Numerical Modeling for Air Pollution Prediction

#### //////// Site Selection

KEPCO E&C holds the most extensive track record in Korea for site selection of power plants, substations, transmission lines and so on. In particular, KEPCO E&C has

GREEN POWER



Routing of Transmission Line using GIS and 3D

developed a site selection system that incorporates Geographic Information System (GIS) based high-resolution satellite image analysis technology and multi-criteria decision making tools enabling scientifically sound and objective site selection for power transmission and distribution facilities, contributing to environment-friendly sustainable electricity.

KEPCO E&C's Interactive Tower Spotting System (ITSS), which allows designers and engineers to select the optimal location of a transmission tower using high-resolution image data, has been registered with the Ministry of Trade, Industry and Energy (formerly Ministry of Knowledge Economy) and was selected as New Excellent Technology (NET). This technology has been applied to transmission line routing and demonstrates the evolution of technology.

#### VI. Radioactive Waste Management



KEPCO E&C is executing an Architect/Engineering project to construct a low and intermediate level radioactive waste disposal facility in Gyeongju City. This facility is located on a site of  $2.1 \text{km}^2$  and will have the capacity to handle 800 thousand drums. The first stage, planned to be completed in June of 2014, will build six disposal silos based on a Cavern Disposal Method at EL.(-)80m  $\sim$  (-)130m with a total storage capacity of 100 thousand drums.

KEPCO E&C will successfully complete stage 1 and will work to win the stage 2 shallow land disposal project which, if successful, will make KEPCO E&C the first company in the world to have performed and gained experience in applying multiple disposal facilities on a single site. KEPCO E&C will utilize the technology gained in this process to build the foundation for entering overseas radioactive waste disposal market.

#### VII. Windpower



Starting with the design contract for the 2nd phase of the Jeju Hangyeong Wind power project in September of 2004, KEPCO E&C expanded its experience in onshore wind power by carrying out various projects including engineering of wind power plants in Jeongseon city and Pyeongchang city in Gangwon Province. In December of 2010, KEPCO E&C and the provincial government of Jeju entered into an agreement to develop an 100MW offshore windfarm. Following this agreement, wind data is being collected through an offshore meteorological tower that has been installed for this project and the final feasibility study for this project is planned for the first half of 2014. In addition, KEPCO E&C is also actively pursuing large-scale offshore wind power projects in the wind-rich south-east coast of Korea.

#### VIII. Waste to Energy

The Korean goverment developed a boiler specifically for 10MW scale Refuse Derived Fuel (RDF) with domestic technology and has deployed this technology in the Wonju Green Co-generation Power Plant and KEPCO E&C has joined this project as an engineering company. KEPCO E&C also participates in projects using biomass as fuel and performed technical support services for the Donghae biomass power plant project and conducted the Feasibility Study for the GS EPS unit 3 biomass generation project.

Recently, KEPCO E&C installed an organic solid fuel mixing facility in the Dangjin Thermal Power Plant Units 3, 4 which uses solid fuel that is derived from drying sewage sludge. KEPCO E&C also performed feasibility studies on the mix of biomass fuel such as Palm Kernel Shell (PKS) or wood pellets in the Taean Thermal Power Plant Units 1 and 2. KEPCO E&C, on the basis of this study, will pursue the implementation of this project as part of its continued efforts towards transforming waste to energy.



IX. Energy Service
Company (ESCO)
Services

KEPCO E&C is registered as as Class 1 Energy Service Company (ESCO), which specializes in energy reduction and efficiency. Current energy reductions based on ESCO projects are 139,958 TOE annually and annual  $CO_2$  reductions of 385,822  $CO_2$  tons have been recorded.

KEPCO E&C will continue to work as on ESCO projects through improving performance of existing power plants and increasing energy efficiency and reductions.



## **Eco-Friendly Office**

I. Greenhouse Gas **Reduction Activities and Accomplishments** 

KEPCO E&C, in line with "Framework Act for Low Carbon Green Growth" has set targets and action plans for the reduction of Greenhouse Gas (GHG) and energy use and reports annual performance to the Ministry of Environment. In 2012, KEPCO E&C achieved 3.34% reduction from the 2009 baseline and will aims to achieve 20% reductions by 2020.

2012 KEPCO E&C Sustainability Report

KEPCO E&C's emissions can be divided into direct and indirect emissions. Direct emissions are the result of municipal gas (LNG) used for heating purposes and automobile fuel (gasoline, diesel, LPG) used in its corporate fleet. Indirect emissions are from electricity used in the building.

#### Direct and Indirect Greenhouse Gas Emissions

Year	Direct Emissions (tCO₂eq)	Indirect Emissions (tCO₂eq)	Total Emissions (tCO2eq)
2010	856.80	2897.28	3,754.08
2011	827.86	2991.00	3,818.86
2012	753.89	2997.60	3,751.49

Primary Energy Source-Municipal gas(LNG) consumption

KEPCO E&C uses municipal gas for heating, heating water and cooking. Efforts to reduce use include mainting indoor temperature at 18 degrees celsius in the winter months, encouraging employees to wear multiple layers of clothing, providing blankets and other such activities.

Year	Quantity Consumed (m³)
2010	192,434
2011	166,816
2012	161,367

Primary Energy Source-Electricity consumption

KEPCO E&C electricity usage increased in the past year due to increase in personnel and use of new office equipment and temperature control equipment.

KEPCO E&C actively responds to electricity shortages during the summer and winter months by operating an electricity demand and supply warning system. Efforts such as limiting elevator operation and air conditioning for both heating and cooling purposes during peak hours, turning off office lights during lunch and after business hours, installation of motion sensors in the parking lot and limited lighting in stairwells after business hours are made in an effort to reduce KEPCO E&C's electricity usage.

Year	Quantity Consumed (m³)
2010	192,434
2011	166,816
2012	161,367

Year	QuantityConsumed(MWh)	
2010	6,214	
2011	6,416	
2012	6,429	

#### II. Water use reduction activities and accomplishments

KEPCO E&C does not use water resources in its production activities and most water usage is from office use by employees. Efforts to reduce water use and preserve the environment are being made firm-wide.

In addition, a waste water treatment facility is located in Basement Level 3 of the headquarters building where water is treated in accordance to legal requirements. Water is treated to be below 10ppm, which is much lower than the legal limit of 20ppm, before it is discharged. Daily discharge is 200 tons.

Wate Consumption (Unit : ton)				
54,900	48,833	49,724		
2010	2011	2012		

#### **III. Waste Reduction Activities and Accomplishments**



#### KEPCO E&C does not produce significant hazardous materials or other industrial waste. All food-waste produced is reused as fodder and other municipal waste is separated, condensed and placed in the designated location where it is collected and handled appropriately by recycling and waste collection companies designated by the City of Yongin.

Year	Emission Quantity(ton)
2010	162
2011	72
2012	32
Total	266



#### Recycled Paper

Waste paper that is collected during office cleaning is handled separately, shredded then collected by a firm specializing in waste paper collection who submits a certification of processing to KEPCO E&C after the waste paper is processed.

Year	Quantity(ton)
2010	58.5
2011	78.5
2012	92.5



#### Spent Acid

Spent acid produced as a result of cleaning boilers are collected by the cleaning company and turned over to a company that specializes in treatment of spent acid for reuse. The results of processing the spent acid are reported to the municipal government.

Year	Quantity(ton)
2010	1.0
2011	1.0
2012	1.0





#### **Customers**

#### I. Customer Satisfaction **Strategy**

In an effort to accomplish its 2020 New Vision, KEPCO E&C classifies its customers into clients (ordering organization), internal customers (employees), local community and business partners. Based on this classification, KEPCO E&C has created a tailored customer satisfaction strategy for each type of customer leading to increased productivity for internal customers, increased sales for clients, quality innovation for business partners and overall increase in brand value.

Customer definition and progress direction according to CEO suggestion

#### Productivity Increase

- Trust
- Pride
- Fun
- New



Internal

# Customer Shareholder)

#### Sales Increase Customer-oriented business

- Customer trust increase through high design quality
- Enhancing capacity of holding Clients technology

#### Creation of Brand Value

- Sharing Happiness
- Sharing Hope • Sharing Love
- Sharing Life

# Local **Partners** Communities

#### Quality Innovation

 Strengthening Win-win partnership • Supporting policy of win-win

• Forming social consensus of win-win partnership

#### **II. Customer Satisfaction Management Activities**

#### **Customer Satisfaction Center**

KEPCO E&C operates an on-site Customer Satisfaction Center for each division, an emergency response team and has designated customer satisfaction agents in order to actively collect and respond to customers' feedback.

#### **Technology Briefings Tailored to Customers**

ach business unit holds over 100 briefings, presentations, and on-site seminars annually where KEPCO E&C not only shares information on cutting-edge technology but also listens and responds to client feedback in order to improve as an organization.



#### **Customer Satisfaction Management System Operation**

•

A Customer Information System is in place to electronically manage customer information for each business unit as a method of systematically managing KEPCO E&C's customer base.

A VOC system is available on the company's website where customer questions and complaints can be received and responded to in real-time. In line with the Customer Information System, feedback received through the online VOC center is handled swiftly and is shared amongs relevant staff for immediate response throughout the Customer Satisfaction Management System.

KEPCO E&C strictly manages customer information with the utmost care by managing access authorization and access from external parties in order to ensure that customer information is not leaked externally.

#### III. Structure of Customer Satisfaction Feedback

KEPCO E&C conducts a customer satisfaction survey for its employees, clients and business partners and identifies areas of improvement which are reviewed biannually by the Customer Satisfaction Management Committee for an effective feedback response system.

These efforts have resulted in continuous improvement in the Public Agency Customer Satisfaction index which has been tabulated since 2005. KEPCO E&C's score has consistently improved reaching 92.2 in 2012.



# **Employees**

I. Overview of KEPCO E&C's Employees KEPCO E&C has 2,223 employees (including upper management) as of December 31, 2012 with 2,063 (93%) regular staff and 160 (7%) non-regular staff.

#### **Equitable Recruitment**

•

KEPCO E&C recruits annually in order to contribute to reducing youth unemployment. During the recruitment process candidates are treated fairly and equally regardless of gender, academic background, physical disability or other cultural differences.

Category	2010	2011	2012
Total Personnel by Year	2,041	2,179	2,223
No. of New Employees	229	118	97

In 2012, 2.54% of KEPCO E&C's employees were disabled, maintaining a ratio exceeding the requirement of 2.5% stipulated in the Act on Employment Promotion for the Disabled.

Category	2010	2011	2012
No. of the Disabled hired by KEPCO E&C	57	59	56
Employment Rate	3.01%	2.83%	2,54%
No. of Permanent Employees	1,878	2,072	2,219

89% of KEPCO E&C's personnel have an academic background in science or engineering. Based on the fact that women were a minority in these academic fields during the 1980's and 1990's, KEPCO E&C's gender ratio is an unavoidable result of social patterns in education. However, as more women obtain degrees in science and engineering, the ratio of female personnel in KEPCO E&C is rising as well.

2010		2011		2012	
No. of Female Personnel	Rate in the proportion of total No.	No. of Female Personnel	Rate in the proportion of total No.	No. of Female Personnel	Rate in the proportion of total No.
152	7.4%	172	7.9%	191	8.6%

In the second half of 2012, KEPCO E&C hired new high school graduates for the first time and 27 of the 108 new hires who started their careers with KEPCO E&C in 2013 were excellent high school diploma holders.

KEPCO E&C maintains its excellent workforce not only by recruiting talented individuals, but retaining talent through variou methods including open communication, welfare and benefits, and improving the working environment. .

Category	2010	2011	2012
Total No. of Personnel by Beginning of the Year	1,804	1,998	2,062
No. of Turnover	19	36	39
No. of Retirement	31	53	72
Turnover Rate	1.05%	1.80%	1.89%

<sup>\*</sup>Based on Regular Personnel (Excluding executives and those in special positions)

KEPCO E&C utilizes the expertise and experience held by talented retirees by offering them positions in project data management, contract positions related to the design and engineering of the UAE Nuclear Power Plant project and so on.

In its overseas offices and Ghana EPC site office, KEPCO E&C hires from the local community through referrals and open announcements and local hires work in a variety of functions including administrative support, HSE and CAD personnel.

#### **Human Rights Protection**

KEPCO E&C makes every effort in leading human rights protection by strictly abiding by the Labor Standard Act to fulfill its responsibility as a public agency to protect the socially vulnerable.

In particular, KEPCO E&C strives to create the ideal environment for working mothers by providing both pre-natal and maternity leave, making provisions for reduced working hours for mothers of children younger than 3 years, operating workplace childcare, and guaranteeing time off for prenatal medical examinations for both mother and baby. All of these benefits are expressly stipulated in the collective labor agreement and strictly honored.

	2010	2011	2012
Frequency of Female Maternal or Childcare Leave	11	13	9
Female Reinstatement Rate after Maternal or Childcare Leave	100%	100%	100%

As a result of KEPCO E&C's efforts to protect maternal rights and promote child-birth, maternity leave increased from 11 persons in 2010 to 13 persons in 2011. This number decreased as a result of less pregnancies in 2012 but 100% of employees who took maternity leave returned to work. KEPCO E&C's family-friendly workplace is a result of efforts to implement family-friendly management practices such as offering childcare services.

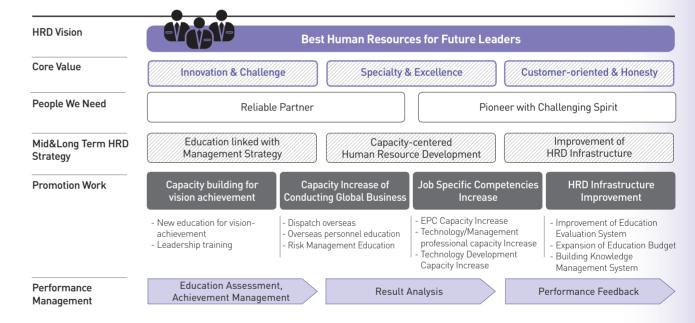
#### II. Fostering Talent for the Future

KEPCO E&C has established a structured system for fostering talent within the workforce by tailoring education based on the requirements of each classification of employee responsibility and is working towards global talent development in order to meet its goals for Vision 2020.

WIN-WIN POWER

#### KEPCO E&C's Vision for Fostering Talent for the Future

KEPCO E&C has a vision of developing the best talent that can bring about change and aims, in the mid to long term, to create talent development education programs aligned with its management strategy, places focus on capacity building in talent development and improve education infrastructure. By systematically implementing specialized technical education, EPC project execution education and other core capacity building training, KEPCO E&C is working to develop talent that can help the company achieve its Vision, and also contribute to the nation's competitiveness.





#### **KEPCO E&C Power Engineering Training Center**

KEPCO E&C operates the Power Engineering Training Center which draws upon a pool of internal experts as professors. Professors share their hands-on knowledge and practical experience and provide specialized technical training tailored to business requirements and domestic and foreign specialists are invited to deliver systematic and in-depth training which creates synergies for project execution and raises the reputation of the company.

• Full-Time Professor : 5 Persons

Concurrent Professor : 11 Persons

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#### **Core Training Accomplishments and Performance**

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#### //////// New Hire Training

KEPCO E&C provides systematic training to help new hires adjust quickly in the organization and contribute to flexible and creative corporate culture.





2013 Teamwork Training for New Employee

2013 Introductory Training for New Employee

#### //////// Capacity Strengthing Training to achieve the Company's Vision

KEPCO E&C has implemented training focused on achieving the company's Vision for three consecutive years for all employees. In 2012, special program to foster synergy was implemented based invigorating the organization through communication and turning the Vision into action based on creating a pioneering environment, passion, pride and professionalism.



2010 (Vision Sharing) Change	2011 [VisionCommunication] Symphony	2012~2013 (Vision Enforcement)  Synergy
Recognize Core Value and Vision	Organize Vision     Communication System     Pursuit Communication     and Harmony	Draw Behavioral Principle of Core Value for Vision Achievement (Pride, Passion, Professionalism) / 13 <sup>th</sup> , 834 Participants

#### //////// Training to build Specialized Capacity for Job Functions

**EPC Capacity Building Training** | KEPC0 E&C introduced a specialized training program to build EPC related capacity for the successful execution of EPC projects. In particular, training on fund procurement, project management, tax and tariffs was provided for administrative staff as of 2013 in order to strengthen EPC project management capabilities.



**Specialized Technical Training** | KEPC0 E&C provides specialized training for each step in an employee's career so that each employee can obtain the highest level of specialization in their respective field within 10 years of joining the company. Introductory courses for each career level, specialized technology training are provided at intermediate and advanced levels. In 2012, KEPC0 E&C strengthened its training system even further by newly introducing the Technology-Focused Advanced Training to foster the highest level of technical expertise in its employees

#### Training System of KEPCO E&C Power Engineering Training Center

Targeted Employee		Contents	Education Level
1 year after joining the company		Occupational introductory training	Engineering introductory training corresponding to corporate overall work
2 years ~4 years experience after joining the company	<b></b>	Introductory course of technology	To recognize basic knowledge to work in the related area and be enable to carry out the most of the work
5 years ~7 years experience after joining the company	-	Intermediate course of technology	To solve the frequently-happened problem under each condition and carry out technical task independently
8 years ~10 years experience after joining the company	<b></b>	Advanced course of technology	To get broad knowledge on related area and lead a role as a occupational specialist

#### **Education Credit Bank**

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KEPCO E&C offers equal opportunities for training while also promoting employees to participate in required courses by operating an Education Credit Bank. Hours of education are designated as departmental key performance indicators (KPI) and are referred to during individual evaluations and are used during promotion evaluations to some degree.

#### Specialist System

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KEPCO E&C, in an effort to gain competitive advantage in the global market, is operating a specialist system comprised of 65 special areas to develop highly-skilled core personnel with specialized knowledge.

KEPCO E&C Specialists receive a higher salary in comparison to general personnel and are provided with various incentives and benefits including individual research facilities and systems. They are also given priority for attending overseas education and academic seminars and provided work hours specifically to further their research so that they may concentrate on their area of expertise

#### Compensation

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KEPCO E&C introduced an Annual Salary System for all employees on the basis of labor-management consent in accordance with government policies for management advancement. Salaries are comprised of basic annual salary, employee benefits, performance salary, and retirement grants. In order to successfully implement a performance-based salary system, KEPCO E&C is working to improve fairness and objectivity in employee evaluation. KEPCO E&C does not discriminate on gender, religion or other factors in salary or working conditions.

Employees' Average Salary in 2	012 (Unit: KRW 1 million
Category	Average Salary
President & CEO	230
Auditor	170
Executive Director	187
Employee	79

\* Included Salary for Performance

Starting salary for a new hire with a college degree is 30 million KRW annually, which is roughly 260% above the statutory minimum wage.

Non-regular employment at KEPCO E&C refers to fixed-term contracts. These are specific positions that are needed for performing EPC projects and other specialized functions. These positions are filled through officially announcing job openings in which working conditions and salaries are disclosed and evaluating candidates.

Compensation for non-regular employees are determined based on individual experience and qualifications and are provided as a monthly salary. The monthly salary includes allowances, employee benefits, performance salary. Legal benefits such as overtime pay and paid-annual leave are also provided in addition to the monthly salary. In 2012, KEPCO E&C extended the selective welfare system to non-regular staff in order to deepen company loyalty.

#### **Retirement Pension**

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In order to contribute to employees' financial stability even after retirement, KEPCO E&C adopted a Retirement Pension plan in December 2011.

KEPCO E&C adopted a Defined Benefit Retirement Pension program and as of the end of 2012, 1,909 employees were enrolled in the program with external deposits reaching 85.1 billion KRW. KEPCO E&C plans to offer employees the option to transition to a Defined Contribution Retirement Pension Program according to personal preference.

#### **Welfare and Benefits**

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KEPCO E&C operates a selective welfare system, workplace childcare facilities and is putting all efforts into improving welfare and benefits so that employees can enjoy a family-friendly culture and achieve work-life balance from the beginning of their careers until the day they retire.

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The per capita welfare and benefit expenditure for 2012 was roughly 11 million KRW. In addition, KEPCO E&C designated each Wednesday as Family Day and provided office tours and supported employees' leisure activities with their families.

Execution of Welfare Benefit fo	r the past 3 years		(Unit: KRW 1 million)
Category	2010	2011	2012
Welfare Benefit Expense	20,439	23,421	25,366
Expense per head	10	11	11

\* Included 4 Major National Insurances

As a result of these efforts to create a family-friendly workplace, KEPCO E&C was awarded the Minister of Gender Equality and Family Minister's Award in 2012.

#### KEPCO E&C's Welfare System

Category	Description	
Health Management	Operation of medical clinic (The headquarters and annex buildings)  • Implementation of physical check-up test for employees once a year  • Provision of health consultation	
Support for Social Security Insurance	National pension, health insurance, unemployment insurance, accident Insurance and group personal accident insurance	
Stabilization of Residential Life	Allowing employees to use condominium and resorts in Korea	
Operation of Workplace Childcare Facility	Operation of childcare facilities in areas where large numbers of employees live	
Support for Culture and Physical Activities	Support for athletic meetings, Culture Day and associations and club activities	
Operation of Selective Welfare System	Support for self-development(purchase of book, language education cost) and cultural education	
Operation of Condominium and Resort	Allowing employees to use condominium and resorts in Korea	
Internal Employee Welfare Fund	Support for celebrations & condolence, subsidy for childhood education, loan for livelihood stabilization etc	
Others	Operation of commuting buses linking subway schedule, fitness center, sauna club, table tennis room, rest room for women and so on, Day of Family Love (every Wednesday): Encourage employees to leave the office on time, Lights-out after 7pm (without O/T office)	



2012 KEPCO E&C Athletics Competition



Certified as Familyfriendly Corporation and Award-winning from the Minister of Gender Equality and Family



KEPCO E&C Baseball club



Place of Communication among Employees

2012 KEPCO E&C Sustainability Report

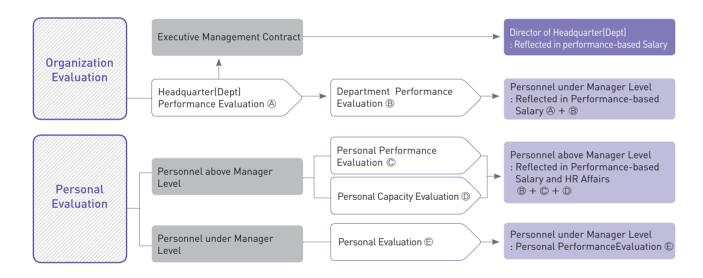
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# IV. Fair Employee Performance Evaluation

KEPCO E&C has established a performance-based evaluation system that reflects the characteristics of the engineering-oriented work process optimized for increasing implementing its mid to long term management strategy.

In light of the nature of engineering business process which is based on project collaboration matrix organization, mutual growth between the individual and the team is necessary to achieve quality targets and firm-wide management goals.

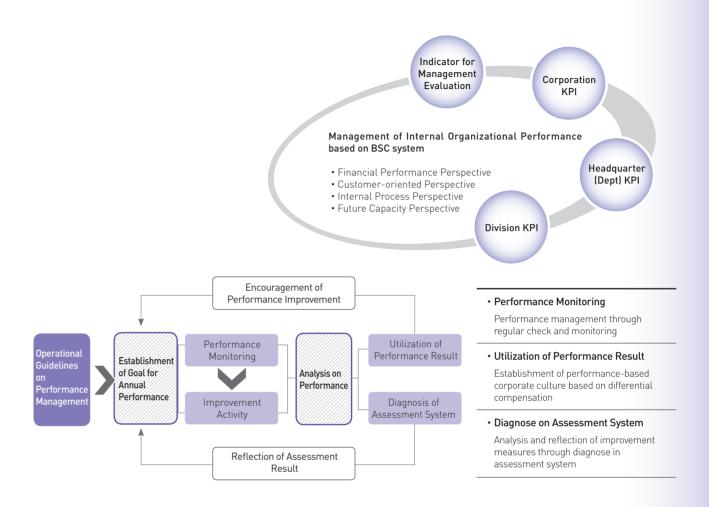
As a result, KEPCO E&C consolidates and manages all evaluation results of firm-wide performance, performs internal organization evaluation, and individual performance. An integrated evaluation of the performance managed is applied to compensation and human resource management in order to enhance the objectivity of human resource management.



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#### **KEPCO E&C Performance Management System**

KEPCO E&C's performance-based evaluation system employs the organization standards of Balanced Score Card (BSC), and the individual performance evaluation system of Management By Objectives (MBO). Through mutual management combining the two systems, KEPCO E&C effectively applies its management objectives in each stage of evaluation and builds a foundation for performance-based evaluation based on monitoring and assessment.



To enhance the fairness of the evaluation process, there is a two-way feedback system incorporated into the evaluation system that allows for evaluation of the organization which is made open to employees and employees can also lodge objections to evaluation results.

In order to increase employee acceptance of the evaluation system, KEPCO E&C operates an evaluation satisfaction survey for all employees and also an internal organization assessment. The results of these assessments are applied to assessment policies the following year, which helps foster ownership in the system.

V. Health, Safety and Environment (HSE)

KEPCO E&C, based on its vision of promoting happiness for mankind through harmonization of Humanity, Environment and Technology and its goal to become a global Power EPC Leader, has identified Health, Safety, and Environment as central to its business practices and is making continous efforts to improve HSE aspects.

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# **HSE Policy**

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KEPCO E&C has set the following principles to embed the commitment to HSE within its corporate culture.

01	Establish, implement, and continuously improve a HSEManagement System in compliance with the OHSAS 180010ccupational Health & Safety Management Systems and ISO 14001 Environmental Management System Requirements
02	Accustom to observance of all of the health, safety and environmental rules and regulations that the company agrees to comply with
03	Exercise for all employees preventive activities that identify andtake a necessary action for risks related to health and safetyand environmental aspects in a volunteer manner
04	Set a target for a goal of achievement, measure performances, and continuously seek for improvement of the HSE policy toensure an advanced health & safety environment.

KEPCO E&C recognizes that an effective HSE management system is crucial to increasing its corporate competitiveness and will make all efforts to advance its HSE culture.

# **HSE Management System**

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KEPCO E&CĐ implements firm-wide HSE practices based on a HSE management system that integrates the Health and Safety Management System with Environment Management System allowing the company to comprehensively identify and manage health and safety risks with environmental effects. Further to this, a Plan.Do.Check. Action (PDCA) cycle is repeated for the HSE Management System in an effort to attain global levels of HSE management.

# **Health and Safety Activities**

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KEPCO E&C's most important resource is its human resources. Therefore, securing employees' safety and health is the company's most basic and important responsibility. In order to strengthen its commitment to and capabilities surrounding health and safety, KEPCO E&C has taken on a wide variety of activities such as enacting Health and Safety Guidelines, operating firm-wide campaigns, offering a variety of education and training elated to HSE, and providing health consultations and emergency equipment.



Health and Safety Guideline for Workers with Overseas Business

**Safety First,** Last and Always

### ///////// Strengthening Health and Safety Capacity

KEPCO E&C continues to increase the number of personnel specialized dedicated to HSE management while also encouraging completion of domestic and overseas HSE training and certification courses as a means of strengthing its HSE capacity.

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In preparation for full-scale entry into the global EPC market, KEPCO E&C has developed HSE manuals for employees traveling abroad for business or to be stationed at an overseas posts along with emergency health manuals and is developing an online firm-wide HSE management system to increase effectiveness of on-site HSE activities. In addition, KEPCO E&C continuously benchmarks international best practices for construction site HSE management in order to improve its HSE management performance.

# ////// Embedding Health and Safety in KEPCO E&C's Corporate Culture

In order to establish a culture in which safety is of the utmost priority, KEPCO E&C provides both general and advanced HSE training courses, plays the safety informational video "Creating a Culture of Safety First, Together," offers seminars conducted by external experts and is implementing and further developing HSE training programs for different levels.

Along with these efforts, a firm-wide safety slogan has been selected along with slogans for each business unit in order to send a strong, relatable message about the importance of safety. This slogan is utilized in internal documents, the company's official letterhead, in marketing merchandise and is posted within headquarters and at project sites.

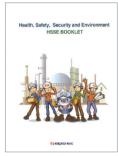
# ///////// Incident and Injury Free (IIF) Program Implementation

KEPCO E&C is enforcing the IIF program to achieve incident and injury-free site management by creating a safe working environment and removing the risk of accident due to human error.

## ///////// Safety Training

KEPCO E&C provides HSE training tailored to job function so that site managers and workers alike may understand the necessity of HSE and act voluntarily and pro-actively. In order to cultivate Global HSE specialists, the company supports opportunities to obtain certification through the National Examination Board in Occupational Safety and Health and gain advanced knowledge.







# //////// HSE Handbook Publication

In order to foster the smooth implementation of HSE management, KEPCO E&C has developed and distributed a HSE Handbook for site managers. The Handbook contains safety regulations, standards for equipment, Work Safety Standards Manual (covering 53 topics) and other information that can assist with HSE implementation.

# //////// Distribution of Safety Booklets for Workers

KEPCO E&C has developed a Safety Booklet with manuals and guidelines specifically for workers in construction sites to help them understand HSE concepts, raise awareness and prevent incidents. The Safety Booklets are of portable size and have been published and distributed in 6 languages.

# //////// Emergency First-Aid Training

In order to increase effective first-response capabilities to workplace medical emergencies, KEPCO E&C conducted firm-wide Emergency First-Aid training using educational videos in order to train internal First-Aid staff. Training was offered in four phases and a total 140 employees completed the series of courses.

Basic first steps for handling a medical emergency, CPR, AED utilization methods were taught during the course enabling the development of quick and effective response capabilities for employees.

KEPCO E&C will continue to offer training in first-aid and use of medical equipment to secure workplace safety.

# //////// Medical Facilities and First-Aid Equipment

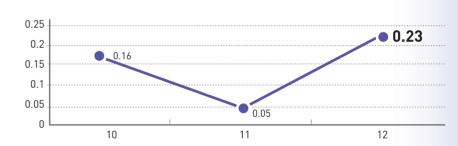
To ensure the health and safety of its employees, KEPCO E&C operates a full-time medical office and supplies its offices and sites with sufficient first-aid equipment.

No. of Medical clinic (Live-in Nurss)	3 (Headquarter and annex building)	
No. of Respirator	13 (Including field offices)	
No. of Automated External Defibrillator(AED)	7	

# Safety Management Accomplishments

# //////// Safety Incidents

Due to KEPCO E&C's strong commitment and activities regarding workplace safety, it was able to achieve zero major incidents.



Category	2010	2011	2012
No. of Accidents	3	1	5
Injury Ratio (%)	0.16	0.05	0.23

# //////// HSE Management System Certification

KEPCO E&C's devotion to bettering the quality of life for all in addition to ensuring safety of its employees and stakeholders in general is displayed in its systematic and well-planned HSE system and activities. KEPCO E&C's HSE Management System has held ISO 14001 certification since 2006, the international standard for environmental management. In 2010 it also obtained OHSAS 18001 HSE certification and has maintained requirements since then.





# **Business Partners**

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I. Structure for implementing Win-Win Growth

KEPCO E&C has established a Win-win Growth system, provides R&D support for business partners, supports talent development, helps secure sales and purchasing channels and provides financial support as part of its Small and Medium-sized Enterprise (SME) support program in order to build sustainable corporate value through win-win growth. KEPCO E&C also works continuously to foster the culture of win-win growth throughout the power industry.

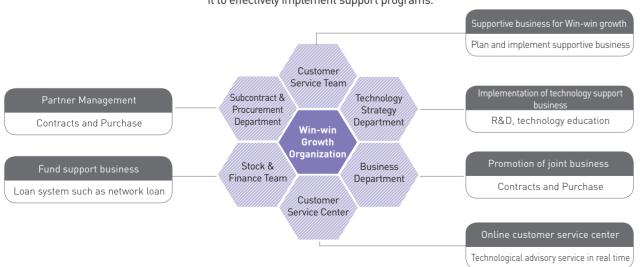
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Vision Realization of Sustainable Corporate Value through Win-win Growth Strategy · Establish institutional base for win-win growth • Enhance mutual competitiveness through win-win growth business . Build a strategic cooperative relationship through the effort of win-win growth culture **Promotion Work** A) Building Institutional Base for B) Promote Win-win Growth C) Form a Win-win Growth Win-win Growth Business Culture • Expansion performance sharing • R&D support business · Open win-win growth • Customer center and CTS Workforce support business conference Settle agreement of fair trade operation in homepage Purchase and Distribution • Web-type design information • Prize giving for win-win growth support business system Finance support business contribution Place of communication Survey 5 Call a Day Satisfaction Research **Evaluation System** · Receive Difficulties and Receive Difficulties survey on requirements Survey on the satisfaction recommendations for the support from level of small business Small business support policy On a daily basis Frequently Frequently On a regular basis

# Win-win Growth Organizational Structure

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KEPCO E&C has operated a dedicated team that leads win-win cooperation with SME business partners since 2005. The Customer Support Team which is responsible for overseeing Win-win Growth has established an integrated cooperation system allowing it to effectively implement support programs.



# II. Selection and Management of Business Partners

KEPCO E&C implements a partnership system under which agreements for cooperation are signed according to different categories of partners. Such categories include design engineering, specialized building construction, manufacturing and purchase. Based on the agreements, KEPCO E&C and its business partners jointly execute projects, provide mutual technical support to each other, exchange information and pursue other collaborative activities.

Engineering and Construction			Manufacturing and Purchasing			Others			
Area	ltem -	Point			Item	Point	Area	Item	Point
		Engineering	Special Construction	Area	item	Point	Area	item	Point
Management	Credit Rating	35	40	Management	Credit Rating	Qualified/ Not-qualifie	Management	Credit Rating	40
	Workforce	35 10 Construction	Technology						
	Business Performance	15	-	[Manufacturing]  Capability  Quality  Assurance Capability	Manufacturing	Qualified/Not-	Execution Capability	Workforce	30
Execution Capability	Construction Capability	-	30		Testing	quanicu		Business Performance	30
	Quality Assurance Capability	20	20		Organization and workforce				
A. Deficiency	Performance of Contract Implementation	3.511	4~-14		surance Quality System Quality	Qualified/ Not-qualified	A. Deficiency Points	Performance of Contract Implementation	3.5~-11
Points	Others	[+2]	[+2]		Education Performance for last 2 years			Others	(+2)
Total	-	100	100		When all areas are qualified	Qualified/ Not-qualified		-	100

<sup>\*\*</sup> Qualifying Criteria: Total Score of 80 points or more, More than 80% points in Quality and Safety/Environment Activity Assessment

## **Business Partner Selection**

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Criteria for business partner selection includes operational status, status of human resources, project performance and delivery track record, and quality. Criteria is evaluated based on the "Business Partner Selection Standards" in a comprehensive, transparent and fair process in lieu of human rights evaluation.

In order to ensure effective execution of KEPCO E&C's projects and gain the highest quality through competition, KEPCO E&C does not limit the number of business partners that can be registered in each category. Business partners are recruited through open announcements for scheduled registration every two or three years. In addition to regularly scheduled registration, KEPCO E&C operates unscheduled selection of business partners as well.

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# **Business Partner Management**

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Business partners are managed and evaluated through annual contract execution performance evaluation regularly and non-regular evaluation at the completion of the project. This process enhances business partners' design quality and competitiveness resulting in more efficient project execution.

# III. Win-win Growth Activities with SME Partners

# **Education and Technology Support**

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KEPCO E&C builds on its expertise as an engineering company and provides SME partners opportunities to develop original technologies and participate in government-funded R&D activities. Through the Customer Technical Support System, technical consultation is provided for SME business partners online through the company website and internal intranet in an effort to build their technical capacity. Moreover, joint R&D is continuously implemented including development of a performance compensation model to provide fair compensation for accomplishments in sustaining cooperation.





KEPCO E&C supports SME partners' intellectual property and technology development through technology transfer, obtaining joint patents and has operated a technology deposit system since 2011 and offers full financial support for all related expenses.

With the purpose of jointly entering the global market with its business partners, KEPCO E&C supports the development of partners' global competitiveness by providing engineering training, joint training with academic institutions, on-site training at power plants and leadership training.





# **Procurement Support and Establisment of Win-win culture**

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KEPCO E&C has made continuous efforts to spread the culture of Win-win cooperation by enacting the Fair Trade Agreement, hosting the Win-win growth Conference and Committee and established an award to recognize contributions made to Win-win Growth.

In order to support the financial stability and promote technology development for SME's, KEPCO E&C allots over 70% of its total purchases for SME products. It also actively supports SME business development by jointly entering international scale expositions.

KEPCO E&C also operates a variety of financial support programs to contribute to SME operational stability. These include manufacturing funding support such as network loans, joint purchase loans; mechanisms to support ventures in the power industry like the Win-win fund; and promotion of liquidity by settling all payments in cash and so on.

Rational adjustment of unit cost of delivery according to price fluctuation and design change in 2012

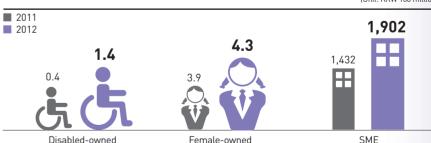
No. of Adjustment of Unit cost of delivery	Increased Amount
161	6,633 (KRW million)

## Vitalizing Fund Operation of Small Partners' through Pre-paid in 2012

No. of Pre-paid	Amount of pre-paid
24	1,909 (KRW million)

#### Preferred Procurement for SME, Female-owned, & Disabled-Owned Companies

(Unit: KRW 100 million)



# **Local Procurement Policies for Overseas EPC Projects**

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Though most of KEPCO E&C's overseas EPC projects take place in Africa, where the manufacturing industry is still developing, KEPCO E&C still places priority on local procurement of materials needed for the efficient performance of its businesses and to foster stronger ties with its host communities and contribute to local economic development.



# **Local Communities**

# I. Activities for Sharing Management

# Vision and Strategy for Social Contribution

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KEPCO E&C is pursuing three main strategies for systematic implementation of social contribution activities bases on its vision of being the "Power EPC Company that provides the wearmthe of energy to the world."

Corporate Core Objective
Characteristics - Global Top 5 Power EPC
Leader



## **Core Capacity**

- Top Level Plant Design engineering Technology
- Network Business Area

Vision for Social Responsibility



Realization of Sustainable Corporate Value through Win-win Growth

Strategy

Work

Building Network in local area and creating business ecosystem

Contributing social innovation based on corporate characteristics

Creating volunteering culture by providing social contribution platform

Operating 'True Love Volunteer Group'
 Linking volunteer activities with local community

Eco-friendly social contribution
 Technical human resources contribution

Implement employee volunteering program

Voluntary fundraising

Organization

Planning & Marketing Volunteer Group KEPCO E&C True Love Volunteer Group Activities

Nuclear Power Volunteer Group

Plant Volunteer Group

Management System (PDCA)

• Planning by year

Action

**Nuclear Reactor Design** 

Volunteer Group

Operating True Love
 Volunteer Group under the
 department

Evaluation

• Evaluating volunteering time and fund execution

 Planning volunteering group operation during the post year.

Evaluation

# Life Sharing

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KEPCO E&C has consistently pursued activities to share life through organ donation. A cooperative agreement with the charitable organization Korean Organ Donor Program has been in place since 2007 as the basis of these activities. KEPCO E&C has carried out large-scale organ donation campaigns at the corporate level and is promoting awareness and participation in organ donation amongst its employees.



In 2012, as part of the organ donation campaign, an event to create "Wish List Albums" was conducted and 50% of the proceeds were donated to support chronic renal failure patients. It also has jointly implemented "Blood Drive of Love" with Gyeonggi Province chapter of the Korean Red Cross Blood Center regularly since 2004 and since then, over 700 employees have participated in activities to share life.

# Love Sharing

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KEPCO E&C operates the "True Love Volunteer Group." This group is funded through a matching fund system in which employees can voluntarily donate a fixed sum from their salary on a monthly basis and KEPCO E&C contributes double the amount contributed by its employees. In addition, the company encourages small volunteer group activities based formed by employees freely to provide The Volunteer Group is comprised of employees wishing to provide community service at welfare centers.

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Category	Performance		
Matching Fund	Participants : 1,269 Raised Fund : 8.8 (KRW 10 million)		
Subunit of Volunteering Group	Participants : 46 Amount of Donation: 0.33 (KRW 10 million)		

# **Knowledge Sharing**

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KEPCO E&C possesses the most advanced engineering technology in the electricity industry and leverages this in its social contribution program through knowledge sharing. It operates the Power Engineering School twice a year to provide training and education in engineering to university students studying sciences and engineering. Participants gain valuable training in 18 subjects including nuclear and thermal power through specialized lectures, special lectures from internal and external industry experts, and site visits to power plants. Students who excel during the program are selected and provided with scholarships.

In 2012, KEPCO E&C signed agreements of cooperation with 7 academic institutions including Kumoh National Institute of Technology to build the foundation for mutual cooperation to develop talent to usher in the next-generation development by sharing talent and resources. This cooperation will contribute to developing human resources in local communities as well as promoting employment.





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# **Eco-friendly Social Contribution Activities**

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KEPCO E&C has been performing energy saving activities through its eco-friendly social contribution program, 'Add to the Envrionment, Divide Love.' As part of this program, KEPCO E&C has donated energy efficient LED lighting to welfare facilities near the company which not only contribute the facilities' efficient electricity consumption but also to the quality of the facilities as well. KEPCO E&C has installed clean, solar energy in Gimcheon City, where KEPCO E&C is building its new headquarters to promote the use of new and renewable energy. Further to these activities, KEPCO E&C hands out pamphlets on energy conservation, folding fans and hand-held heaters to promote energy conservation during peak energy consumption in summer and winter.

Category	Performance
Eco Plus, Love Sharing for Energy Efficiency	<ul> <li>Installation of photovoltaic lighting system for clean energy(KRW 11 million one)</li> <li>Installation of LED at local child care center(KRW 6 million one)</li> </ul>
Energy Sharing in our Lives	Sharing briquette at Gimcheon region Supporting cooling-heating device at the institute for the disabled [KRW 2.6 million one]
Campaign for Energy Saving	Distributing brochure and 'fan' and 'handwarmer' for energy saving

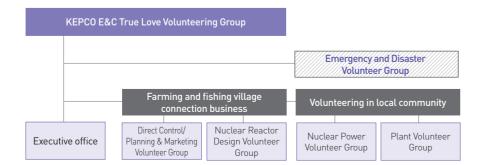
KEPCO E&C also works to purify the environment in local communities. Since April 2012, KEPCO E&C has voluntarily worked to clean Tan-Cheon, the river adjacent to headquarters. It has worked consistently towards improving the water quality of the river and creating and conserving a clean environment in the surrounding areas.

# II. Communication with Local Communities

# **Volunteering in Local Communities**

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KEPCO E&C's True Love Volunteer Group, launched in 2005, leads KEPCO E&C's community service activities. The group is divided into four volunteer sub-groups based on business unit or teams. These groups provide voluntary community service in welfare facilities across 18 communities and have formed affiliations with two rural communities and provides regular volunteer work and sponsorship.



In efforts to help rural farming communities develop and form ties with urban communities, KEPCO E&C has enacted the 1 company 1 village program and has adopted Jaknae village in the Guseong district of Gimcheon city in Gyeongsangbuk province as its sister village and promotes Win-win Growth by increasing exchanges between the village and urban communities and provides volunteer services tailored to requests from the local community to provide tangible benefits.

As part of this program, KEPCO E&C contributed to the local economy by providing labor to harvest onions, the principle product of the area, in June 2012. In December 2012, KEPCO E&C donated heating supplies for 60 underprivileged households within the community and improved their living environment by providing repairs for older houses.

KEPCO E&C works tirelessly to improve the quality of life and contribute to local economic development in the communities where its business activities take place. In order to do so, KEPCO E&C communicates with the community openly and regularly to ascertain their needs and provide substantive benefits.

# Overseas Volunteer Work

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In its pursuit of growing into a global EPC company, KEPCO E&C actively provides community services for communities that need assistance to develop further.

In April 2013, KEPCO E&C dispatched the True Love Volunteer Group to the Gandhi Ashram School established in 1932 by Gandhi for underprivileged children. The Volunteer Group performed repairs on the school's library, stocked it with books, and participated with joint meal time and leisure activities with the children.

In Agra, the Volunteer Group visited the Mother Teresa Orphanage which was founded on Mother Teresa's principles and philosophy and presented the institution with food and clothing which were in shortage, installed removable air conditioning units and played and interacted with the children. The Volunteer Group also participated in careqiving for the disabled children.













As a result of KEPCO E&C's efforts, received official certificates of appreciation from the institutions. The Ashram school also issued a certificate of volunteer work performed.

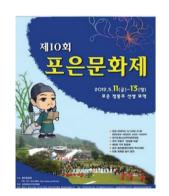
KEPCO E&C will continue to expand its social contributions to communities around the world as it expands its businesses as well.

# **Sponsoring Arts and Culture**

KEPCO-E&C is actively providing support for art and culture organizations local communities throughout the country, especially in light of the difficulties they face due to the economic slowdown, through corporate sponsorship programs.

In 2012, KEPCO E&C sponsored the special exhibition at the Nam June Paik Art Center, located within the community, commemorating the 80th anniversary of his birth. By sponsoring this exhibition local artists were revisited and their global talent highlighted, increasing awareness of local artists within the community. In addition, KEPCO E&C sponsored the largest cultural event in Yong-in City, the Po-Eun Cultural Festival. This festival attracts the most family attendance and offers participants the chance to experience traditional culture and raises awareness of the legacy of the local historic figure Po-Eun Jeong Mong-ju (Po-Eun is Jeong Mong-ju's pen name).

KEPCO E&C also donated 700 books to the Bora Library in Yongin through the municipal government to enrich the local community and improve educational environment. In order to revitalize low-income household economies and the local economy as a whole, KEPCO E&C formed a cooperative sisterhood union with Yongin Central Market and provided support for marketing and promoting products sold in the market and encouraged shopping at the local market leading to an increase in local economic activity.





# **05.1 Sustainable Management Performance**

# Financial Performance

	Unit	2010	2011	2012
Sales		5,801	6,633	7,856
Domestic		4,698	4,423	4,527
Overseas		1,103	2,210	3,329
Contract value		12,585	11,054	7,821
pmestic		3,513	5,681	4,543
Overseas	Hundred	9,072	5,373	3,278
Contract Balance	Million	17,466	20,751	20,334
Operating Profit	KRW ———	1,122	1,365	1,531
Net Profit		962	1,161	1,343
Total Assets		5,710	7,399	8,619
R&D Investment		436	496	566
Dividends		706	813	738
Actual Corporate Tax Expenditure		327	378	415

\* Based on international K-IFRS standard

# **Environmental Performance**

	Unit	2010	2011	2012
Manpower input for Eco-friendly Technology R&D	ММ	167.5	208.1	103.2
Eco-friendly Technology R&D Investment	Hundred Million KRW	26	16	9
GHG emissions	tCO₂eq	3754.08	3,818.85	3,751.49
Direct Emissions	tCO₂eq	856.80	827.86	753.89
Indirect Emissions	tCO₂eq	2897.28	2991.00	2997.60
Municipal Gas Consumption	m³	192,434	166,816	161,367
Electricity Consumption	MWh	6,214	6,416	6,429
Water Consumption	ton	54,900	48,833	49,724
Municipal Waste	ton	162	72	32
Recycled Paper	ton	58.5	78.5	92.5
Recycled Acid	ton	1.0	1.0	1.0

# **Social Performance**

	Unit	2010	2011	2012
No. of Employees	Persons	2,041	2,179	2,223
Regular	Persons	2,004	2,067	2,063
Non-Regular	Persons	37	112	160
Male	Persons	1,889	2,007	2,032
Female	Persons	152	172	191
Ratio of disabled hires	%	3.01%	2.83%	2.54%
No. of New Hires	Persons	229	118	97
No. of Employees Resigned	Persons	31	53	72
No. of Employees Retired	Persons	19	36	39
No. of Employees on Parental Leave	Persons	11	14	10
Male	Persons	-	3	1
Female	Persons	11	11	9
Rate of return to work/ retention after parental leave	%	100%	93%	100%
Male	%	-	67%	100%
Female	%	100%	100%	100%
Per capita annual average training hours	Hours	74	99	103
Number of up-coming retirees provided with training	Persons	32	27	39
Workplace Accidents	Cases	3	1	5
Labor Union Membership	Persons	1,345	1,415	1,511

# [HR5] Right to Exercise Freedom of Association and Collective Bargaining

- KEPCO E&C protects the right to exercise the freedom of association explicitly as stipulated in the relevant articles of the Collective Agreement.
- Article 12 The Company guarantees the right to form labor unions and is prohibited from taking any intervention with the intent to intimidate labor union activities or otherwise imposing influence and discriminating on the basis of Labor Union participation,
- Article 13 Unfair labor actions as defined by the Labor Union And Labor Relations Adjustment Act.
- There are no operations or business processes where the risk of violation of the to exercise freedom of association and collective bargaining.

# APPENDIX

# [LA5] Minimum notice periods specified in collective agreements

• Based on Article 24 of the KEPCO E&C collective agreement, KEPCO E&C complies strictly to its duty of prior notice, and provides immediate notice should issues requiring and ensuring adequate time for consultation. In addition, notifications on material changes to business activities are considered to be 'other issues labor unions are to be aware of and consulted on.'

- · Amendments to the Articles of Incorporation, and enactment or repeal of regulations or codes such as the employment code.
- Results of appointment of or change of assignment of the Company's executives
- Plans for public recruitment announcement
- · Plans for holding personnel committees regarding disciplinary action against a labor union member
- Results of employee promotions, transfer, change of assignment between departments and other personnel changes
- Changes to the Company's department name
- Other issues labor unions are to be aware of and consulted on

# [LA6] Percentage of total workforce represented in formal joint management-worker health and safety committees

• KEPCO E&C does not operate a join management-worker health and safety committee

## [LA9] Health and safety topics covered in formal agreements with trade unions

• KEPCO E&C's collective agreement stipulates articles on health and safety.

# **Concerning Employee Health Examinations**

- A comprehensive health examination including stomach and liver cancer examinations are provided to all employees once every year.
- Selection of medical institute based on management-worker consultation
- If illness detected during medical examination has the possibility of being work-related, the Company will provide further examination at its own expense.

#### Concerning work-related illnesses

- Work-related illnesses are treated in accordance with the industrial accident compensation insurance and Industrial Accident Compensation Insurance Act.
- If illness is determined to be work-related, measures are taken based on management-worker consultation

# 05.2 Membership in Organizations and Associations

KEPCO E&C holds memberships in organizations and associations to 1)comply with relevant regulatory requirements, 2) maintain the Company's industry licenses and certifications, and 3)maintain cooperative ties with the government of Korea and its mother company to promote the export of nuclear power plants

# Membership required by law

- Yongin Chamber of Commerce and Industry Mandatory membership as stipulated by the Chambers of Commerce and Industry Act of the Republic of Korea
- Korea Exchange : Mandatory membership based on listing requirements for securities exchange

### Membership for the maintenance of licenses

Membership necessary for conducting business such as domestic and foreign nuclear power and other power generation
projects for the basis of completing engineering projects, construction industry and construction contract projects, electrical
works projects, management work for new and renewable energy

	Association			
1	Korea Fire Construction Association			
2	Construction Association of Korea, Gyeongki Division			
Korean Association of Environmental Impact Assessment				
4	Korea New & Renewable Energy Association			
5	Korea Association of ESCO			
6	Korea Association of Surveying and Mapping			
7	Korea Fire Safety Association			
8	Korea Plant Industries Association  Korea Fire Facility Association			
9				

	Association		
10	Korea Electric Engineering Association		
Korea Electrical Construction Association  Gyeongki Division			
12	Korea Information & Comm Contractors Association, Incheon/Gyeongki Division		
13	International Contractors Association of Korea		
14	Korea Construction Consulting Engineers Association		
15	Korea Engineering & Consulting Association		
16	Korea Construction Engineers Associatio		
17	Seoul Bar Association		
18	NYS Office of Court Administration		

# • Membership for the export of nuclear power plants

 Korea Nuclear Association for International Cooperation: Collaboration with government Ministries, KEPCO, Korea Hydro and Nuclear Power Co. to develop systematic strategies for export of nuclear power plants and to build a network to obtain the latest industry information.

KEPCO E&C is a member of numerous other associations and organizations to maintain open lines of communication and lead the power industry.

Korea Construction Engineers Association	Earthquake Engineering Society of Korea
Korea Electric Engineers Association	The Geological Society of Korea
Korea Electric Association	Korea water Resources Association
Korea Atomic Industrial	The Korean Society of
Forum	Engineering Geology
Korea Industrial	ACI (American Concrete
Technology Association	Institute)
(AmericanConcreteInstitute)	
Korea Energy Foundation (WEC Korea Committee)	Architecture Institute of Korea
International Electrical	ASTM-D33 Technical
Research Exchange(IERE)	Committee
Korea Electrical Engineering	The Korean Structural
& Science Research Institute	Engineers Association
Korea Forum of Chief	Korean Institute of Landscape
Information Officers	Architecture
Nuclear Energy Institute	Korea Project Management
(NEI)	Association (KPMA)
Korean Nuclear Society	Korean CM Association
The Korean Radioactive	Korean Institute Of Construction
waste Society	Engineering and Management
Korean Association for Radiation Protection	Project Management Institute
WiNK, women in Nuclear- Korea	Korean Society of Pressure vessels & Piping
Korea Academy of Nuclear Society	The Corrosion Science Society of Korea
Korean Society of Mechanical	Korea Institute of Plant
Engineers	Engineering & Construction
Korea Institute of Fire	The Korean Institute of Electrical
Science and Engineering	Engineers - Studies Association
Korea Association of Nuclear Equipment Qualification	Korea Smart Grid Association
Society of Air-conditioning	Computational Structural
and refrigerating engineers of Korea (SAREK)	Engineering Institute of Korea

The Korean Society for Noise and Vibration Engineering	Korean Geotechical Society
ASME	CICIND(International Committee on Industrial Chimneys)
The Korean Institute of Electrical Engineers(Americ anConcreteInstitute)	Korean Association of Environmental Impact Assessment
Power Standard Operating Council	Korea CCS Association (Korea Carbon Dioxide Capture and Storage Association)
International Council of Large Electric Power Network (CIGRE)	Korea wind Energy Industry Association
Institute of Electrical and Electronics Egineers (IEEE)	World Nuclear Association (WNA)
The Korean Institute of Electrical Engineers, Council	Korea Engineering & Consulting Association
The Ergonomics Society of Korea	International Desalination Association
International Systems and Automation (ISA)	The Korean Society For New And Renewable Energy
The Institute of Electronics Engineers of Korea	Korean Standards Association
Korea Instrument and Controls Professional Engineers Association	Korea Institute of Quality Management
Korea Institutes of Information Security and Cryptology	Radioactive Waste Management and Nuclear Facility Decommissioning Technology Center
Korean Society of Civil Engineers	Society for Women in Nuclear Power
Korea Concrete Institute	Korea Atomic Equipment Advancement Association
Korean Society of Steel Construction	Korean Construction Joints Association

# 05.3 Awards & Accolades

Year	Award	Organizer		
2010	Most Outstanding Quality Competitive Enterprise	Ministry of Knowledge Economy (Current Ministry of Trade, Industry and Energy) - Korea Agency for Technology and Standard		
2010	Korea Management Awards 「Most Admired Company」 - Enterprise Category Grand Prize	Korea Management Associations Consultants		
2010	Project of the Year - R&D category grand prize	Korea Project Mangement Association		
2011	Korea Management Awards 「Most Admired Company」 - Overal Grand Prize	Korea Management Associations Consultants		
2011	Most Outstanding Quality Competitive Enterprise	Ministry of Knowledge Economy (Current Ministry of Trade, Industry and Energy) - Korea Agency for Technology and Standards		
2012	Commendation for Efforts Developing Local Technology Talent - Ministry of Knowledge Economy (current Ministry of Trade, Industry and Energy) Minister's commendation	Ministry of Knowledge Economy (current Ministry of Trade, Industry and Energy		
2012	Minister of Gender Equality and Family Minister's Award	Minister of Gender Equality and Family		
2012	2012 Korea Communication Management Awards - Overall Grand Prize	Hankyung Magazine		
2012	Most Outstanding Quality Competitive Enterprise	Ministry of Knowledge Economy (Current Ministry of Trade, Industry and Energy) - Korea Agency for Technology and Standards		
2012	2012 Korea Technology Awards Award of Excellence - Ministry of Knowledge Economy Minister's commendation (Current Ministry of Trade, Industry and Energy)	Korea Institute for Advancement of Technology		

# **05.4 Independent Limited Assurance Report**

We were engaged by KEPCO E&C to provide independent assurance on the information presented in KEPCO E&C 's 2012 Sustainability Report ('the Report'). KEPCO E&C is responsible for preparing the Report, including the identification of stakeholders and material issues. Our responsibility is to provide an opinion on the Report.

# Context and scope

Our engagement was designed to provide limited assurance on whether:

- 1. KEPCO E&C has applied the "AA1000 AccountAbility Principles Standard (2008)";
- 2. The information in the Report is fairly stated in all material respects, based on the reporting criteria set out in 'About This Report'.

The scope of our engagement conforms to the requirements of a Type 2 assurance engagement as set out in the AA1000AS (2008) of AccountAbility, including the aspect of "reliability".

With regard to the financial data stated on pages 86, our procedures were limited to verifying that they were correctly derived from KEPCO E&C's audited financial statements. To obtain a thorough understanding of KEPCO E&C 's financial results and position, the audited financial statements of KEPCO E&C for the fiscal year ended 7 March 2013 should be consulted.

# Criteria

KEPCO E&C applies the criteria of the AA1000APS (2008) for the three principles of inclusivity, materiality and responsiveness. In preparing the report, KEPCO E&C applies the Sustainability Reporting Guidelines (G3.1) of the Global Reporting Initiative (GRI). (Assurance on the 2012 GHG emission data was performed separately)

#### Assurance standards

We conducted our engagement in accordance with the ISAE

3000 and AA1000AS.

Readers should note that limited assurance in ISAE 3000 is consistent with a moderate level of assurance as defined by AA1000AS (2008).

Among other things, these standards contain requirements regarding the independence and competency of the assurance team.

# Independence, impartiality and competence

We conducted our engagement in compliance with the requirements of the IFAC (International Federation of Accountants) Code of Ethics for Professional Accountants which requires, among others, that the members of the assurance team (practitioners) as well as the assurance firm (assurance provider) be independent of the assurance client. The Code also includes detailed requirements for practitioners regarding integrity, objectivity, professional competence, due care, confidentiality and professional behavior. KPMG has systems and processes in place to monitor compliance with the Code and to prevent conflicts regarding independence.

We conducted our engagement with a multidisciplinary team including specialists in stakeholder engagement, auditing, environmental, social and financial aspects, and similar engagements in the related industries.

## Work performed

Our work included the following procedures:

- An evaluation of the results of KEPCO E&C's stakeholder engagement process
- An evaluation of KEPCO E&C's process for determining material issues
- Conducted media analysis and internet search for references to KEPCO E&C during the reporting period
- Interviews with selected managers and site visits to verify financial and nonfinancial data during the reporting period
- · Review of internal documentation and intranet sources,

including the aggregation of data into information as presented in the Report

 With regard to the financial data included in the key figures on pages 86, verified that they were correctly derived from KEPCO E&C's 2012 audited financial statements

During our engagement, we discussed the necessary changes to the Report with KEPCO E&C and verified that these changes were adequately incorporated into the final version.

#### Conclusions

 On the AA1000APS Principles of Inclusivity, Materiality and Responsiveness

#### In relation to the principle of inclusivity:

- KEPCO E&C operates communication channels with customers (clients), senior management, employees, shareholders, investors, creditors, suppliers, dealers, local community and others through the stakeholder participation process.
- OWe are not aware of any key stakeholder group which has been excluded from dialogue in the Report. We recommend stating a more detailed explanation of the stakeholder engagement process and material issues in future reports.

# In relation to the principle of materiality:

- OKEPCO E&C operates a materiality test regularly to determine material issues.
- We are not aware of any material aspects concerning its sustainability performance which have been excluded from the Report. We recommend stating more specifically about the materiality test and material issues in future reports.

# In relation to the principle of responsiveness:

- KEPCO E&C has appropriately responded to the selection of key stakeholder groups involved in management.
- O With the exception of the issues highlighted in the Report in relation to materiality, we are not aware of any additional issues of stakeholder interest that are not currently being managed by KEPCO E&C . We suggest reporting in detail the stakeholder engagement process and performance results in future reports.

# On the content of the Report:

Based on the above work, we conclude that the information in the Report does not appear to be unfairly stated.

### Recommendations

Without prejudice to our conclusions presented above, we believe the following matters can be considered for improved sustainability reporting:

- KEPCO E&C discloses material information to its stakeholders by publishing a sustainability report. In order to improve KEPCO E&C's sustainable management and increase the timeliness of the data provided, we recommend that the sustainability report, which is published once every two years at present, should be published annually.
- Company-wide assessment and management of sustainability performance is essential in sustainability management and stakeholder communication. To accomplish this, KEPCO E&C should consider developing a self-assessment system and a monitoring process that reflects both KEPCO E&C's characteristics and industry standards and disclosing this in the sustainability report.

We have discussed our observations regarding the reporting process and reported outside the scope of our assignment with KEPCO E&C . They were receptive to our comments.

Seoul, June 2013

KPMG SAMJONG Accounting Corp.
CEO Kim, Kyo Tai



<sup>&</sup>lt;sup>1</sup> AA1000 Assurance Standard(2008), issued by AccountAbility

<sup>&</sup>lt;sup>2</sup>International Standard on Assurance Engagements 3000 : Assurance Engagements other than Audits or Reviews of Historical Financial Information, issued by International Auditing and Assurance Standards Board

# APPENDIX

# 05.5 GRI 3.1 Index

GRI ndex	Description	Reported	Page	ISO 26000
1. Stra	ategy and Analysis			
1.1	Statement from the most senior decision-maker of the organization	•	4-5	6.2
1.2	Description of key impacts, risks, and opportunities	•	4-5, 17, 86-87	6.2
2. Org	anizational Profile			
2.1	Name of the organization	•	10	
2.2	Primary brands, products, and/or services	•	11	
2.3	Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures	•	12-13	6.2
2.4	Location of organization's headquarters	•	13	
2.5	Number of countries where the organization operates, and names of countries with either major operations or that are specifically relevant to the substantiality issues covered in the report	•	13-14	
2.6	Nature of ownership and legal form	•	10, 18	
2.7	Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries)	•	11, 13-14, 25-31	
2.8	Scale of the reporting organization	•	12, 14-15	
2.9	Significant changes during the reporting period regarding size, structure, or ownership	•	12, 18-19	
2.10	Awards received in the reporting period	•	91	
3. Rep	oort Parameters			
3.1	Reporting period (e.g., fiscal/calendar year) for information provided	•	About this report	
3.2	Date of most recent previous report (if any)	•	About this report	
3.3	Reporting cycle (annual, biennial, etc.)	•	About this report	
3.4	Contact point for questions regarding the report or its contents	•	About this report	
3.5	Process for defining report content	•	20-22	
3.6	Boundary of the report (e.g., countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers). See GRI Boundary Protocol for further guidance	•	About this report	
3.7	State any specific limitations on the scope or boundary of the report (see completeness principle for explanation of scope)	•	About this report	
3.8	Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations	•	About this report 13	
3.9	Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estimations applied to the compilation of the Indicators and other information in the report. Explain any decisions not to apply, or to substantially diverge from, the GRI Indicator Protocols	•	About this report	
3.10	Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement (e.g.,mergers/acquisitions, change of base years/periods, nature of business, measurement methods)	•	About this report	
3.11	Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report	N/A	-	
3.12	GRI Content Index	•	94-99	-
3.13	Policy and current practice with regard to seeking external assurance for the report	•	92-93	7.5.3

# ● Fully ◆ Partially ○ Not reported **N/A** Not applicable

GRI Index	Description	Reported	Page	ISO 26000
4. Gov	vernance, Commitments, and Engagement			
4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight	•	18-19	6.2
4.2	Indicate whether the Chair of the highest governance body is also an executive officer	•	18	6.2
4.3	For organizations that have a unitary board structure, state the number of members of the highest governance body that are independent and/or non-executive members	•	18	6.2
4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body	0	19	6.2
4.5	Linkage between compensation for members of the highest governance body, senior managers, and executives(including departure arrangements), and the organization's performance (including social and environmental performance)	•	19, 68	6.2
4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided	•	19	6.2
4.7	Process for determining the qualifications and expertise of the members of the highest governance body for guiding the organization's strategy on economic, environmental, and social topics	0	18	6.2
4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation	•	16-17, 65	6.2
4.9	Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles	•	17, 19	6.2
4.10	Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance	0	19	6.2
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization	•	39-40	6.2
4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses	•	5, 48, 75	6.2
4.13	Memberships in associations (such as industry associations) and/or national/ international advocacy organizations in which the organization: *Has positions in governance bodies;  *Participates in projects or committees;  *Provides substantive funding beyond routine membership dues; or *Views membership as strategic	•	89-90	6.2
4.14	List of stakeholder groups engaged by the organization	•	20	6.2
4.15	Basis for identification and selection of stakeholders with whom to engage	•	20	6.2
4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group	•	20-22	6.2
4.17	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting	•	20-22	

GRI Index	Description	Reported	Page	ISO 26000
5. Eco	nomic Disclosure on Management Approach (EC)			
EC1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments	•	14-15, 68-69, 79, 81-82, 86-87	6.8/6.8.3/ 6.8.7/6.8.9
EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	•	11,50-51, 55	6.5.5
EC3	Coverage of the organization's defined benefit plan obligations	•	69	6.4.4/6.8
EC4	Significant financial assistance received from government	N/A	-	
EC5	Range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation.(Additional indicator).	•	68	6.4.4/6.8
EC6	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation	•	79	6.6.6/6.8/ 6.8.5/6.8.7
EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation	•	64	6.8/6.8.5/ 6.8.7
EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro-bono engagement	•	14-28, 80-84	6.3.9/6.8/6.8.3/6.8.4/ 6.8.5/6.8.6/6.8.7/ 6.8.9
EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts	•	14	6.3.9/6.6.6/6.6.7/ 6.7.8/6.8/6.8.5/ 6.8.6/6.8.7/6.8.9
6. Env	rironmental Disclosure on Management Approach (EN)			
EN1	Materials used by weight or volume	N/A	-	6.5/6.5.4
EN2	Percentage of materials used that are recycled input materials	N/A	-	
EN3	Direct energy consumption by primary energy source	•	58	
EN4	Indirect energy consumption by primary source	N/A	58	
EN5	Energy saved due to conservation and efficiency improvements	•	58	
EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives	•	57-58	
EN7	Initiatives to reduce indirect energy consumption and reductions achieved	•	58	
EN8	Total water withdrawal by source	•	59	
EN9	water sources significantly affected by withdrawal of water	•	59	
EN10	Percentage and total volume of water recycled and reused	•	59	
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	N/A	-	6.5/6.5.6
EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	N/A	-	
EN13	biodiversity of offset habitats compared to the biodiversity of the affected areas	•	82	
EN14	Strategies, current actions, and future plans for managing impacts on biodiversity	N/A		
EN15	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	N/A	-	
EN16	Total direct and indirect greenhouse gas emissions by weight	•	58	6.5/6.5.5
EN17	Other relevant indirect greenhouse gas emissions by weight	•	58	_
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved	•	55-57	

# Fully ● Partially ○ Not reported N/A Not applicable

GRI Index	Description	Reported	Page	ISO 26000
EN19	Emissions of ozone-depleting substances by weight	N/A	-	6.5/6.5.3
EN20	NOx, SOx, and other significant air emissions by type and weight	N/A	-	
EN21	Total water discharge by quality and destination	N/A	59	
EN22	Total weight of waste by type and disposal method	•	59	
EN23	Total number and volume of significant spills	N/A	-	
EN24	weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the basel Convention Annex I, II, III, and vIII, and percentage of transported waste shipped internationally	N/A	-	
EN25	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff	N/A	-	6.5/6.5.4/ 6.5.6
EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation	•	50-57	6.5/6.5.4/ 6.6.6/6.7.5
EN27	Percentage of products sold and their packaging materials that are reclaimed by category	N/A	-	6.5/6.5.4/ 6.7.5
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations		-	6.5
EN29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce.	N/A	-	6.5/6.5.4 /6.6.6
EN30	Total environmental protection expenditures and investments by type	•	86	6.5
7. Soci	al_Labor Practices and Decent Work Disclosure on Management Approach (LA)			
LA1	Total workforce by employment type, employment contract, and region	•	63	6.4/6.4.3
LA2	Total number and rate of employee turnover by age group, gender, and region	•	63-64	
LA3	benefits provided to full-time employees that are not provided to temporary or part- time employees, by major operations	•	68	6.4/6.4.3/
LA4	Percentage of employees covered by collective bargaining agreements	•	87	6.4/6.4.3/6.4.4 6.4.5/6.3.10
LA5	Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements	•	88	6.4/6.4.3/ 6.4.4/6.4.5
LA6	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs	•	88	6.4/6.4.6
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region	•	75, 87	
LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases		72	6.4/6.4.6/6.8/ 6.8.3/6.8.4/ 6.8.8
LA9	Health and safety topics covered in formal agreements with trade unions	•	71-75, 88	6.4/6.4.6
LA10	Average hours of training per year per employee by employee category  66-67, 87		66-67, 87	6.4/6.4.7
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	•	64	6.4/6.4.7/

GRI Index	Description	Reported	Page	ISO 26000
LA12	Percentage of employees receiving regular performance and career development reviews	•	70-71	6.4/6.4.7
LA13	Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity	•	12, 18, 63	6.3.7/6.3.10/ 6.4/6.4.3
LA14	Ratio of basic salary of men to women by employee category	•	63	6.3.7/6.3.10/ 6.4/6.4.3/ 6.4.4
LA15	Return to work and retention rates after parental leave, by gender.	•	64	6.4.3/6.4.4
8. Soc	ial_Human Rights Disclosure on Management Approach (HR)			
HR1			-	6.3/6.33/ 6.3.5/6.6.6
HR2	Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken	•	77	6.3/6.3.3/ 6.3.5/6.4.3/ 6.6.6
HR3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained	•	42	6.3/6.3.5
HR4	Total number of incidents of discrimination and actions taken	•	63	6.3/6.3.6/ 6.3.7/6.3.10/6.4.3
HR5	Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights	•	87	6.3/6.3.3/6.3.4/ 6.3.5/ 6.3.8/6.3.10 6.4.3/ 6.4.5
HR6	Operations identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor	•	41, 100	6.3/6.3.3/ 6.3.4/6.3.5/
HR7	Operations identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of forced or compulsory labor	•	41, 100	6.3.7/6.3.10
HR8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations	•	42	6.3/6.3.5/ 6.4.3/6.6.6
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken	N/A	-	6.3/6.3.6/ 6.3.7/6.3.8/6.6.7
HR10	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments.	N/A	-	
HR11	Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms	•	43	
9. Soc	ial_Society Disclosure on Management Approach (SO)			
S01	Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting	0	80-84	6.3.9/6.8/ 6.8.5/6.8.7/6.6.7
S02	Percentage and total number of business units analyzed for risks related to corruption	•	41-44	6.6/6.6.3
S03	Percentage of employees trained in organization's anti-corruption policies and procedures	•	42	
S04	Actions taken in response to incidents of corruption	•	44	
S05	Public policy positions and participation in public policy development and lobbying	N/A	-	6.6/6.6.4/
S06	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country	N/A	-	6.8.3



GRI Index	Description	Reported	Page	ISO 26000
S07	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	•	44	6.6/6.6.5
S08	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations		-	6.6/6.6.5/ 6.6.76.6.7
S09	Operations with significant potential or actual negative impacts on local communities	N/A	-	6.6/6.6.7/ 6.8.7
S010	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities		-	
10. So	cial_Product Responsibility Disclosure on Management Approach (PR)			
PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures	•	35-38	6.3.9/6.6.6/ 6.7/6.7.4/ 6.7.5
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes	N/A	-	
PR3	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements	•	50-52	6.7/6.7.3/ 6.7.4/6.7.5/
PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.	N/A	-	6.7.6/6.7.9
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction	•	61-62	6.7/6.7.4/ 6.7.5/6.7.6/ 6.7.8/6.7.9
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship	•	98	6.7/6.7.3/ 6.7.6/6.7.9
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes	N/A	-	
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data		62	6.7/6.7.7
PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	N/A	-	6.7/6.7.6

# **05.6 UNGC**

With the KEPC0 E&C's ideology to harmonize humanity  $\cdot$  the environment  $\cdot$  and engineering, KEPC0 E&C joined UNGC(United Nations Global Compact) on July 17, 2007, to fulfill its corporate social responsibilities. UNGC has ten universally accepted principles in the four areas of human rights, labour, environment, and anti-corruption. KEPC0 E&C is in full compliance with the UNGC principles throughout the whole business activities and supports to build the transparent and stable labor-management relations. This report shows the ten Principles of UNGC and KEPC0 E&C's supporting rules and regulations as follows.

UNGC Principles	UNGC Principles	Supporting Rules and Regulations at KEPCO E&C	GRI	Page
Human Rights	we support and respect the protection of internationally proclaimed human rights	Code of Ethics / Collective Agreement, Article 99/ Employment Rules, Article 4	HR1/HR2/HR3/HR4/ HR5/HR6/HR7/HR8/ HR9	41-42, 63, 77, 87
	2. we make sure that we are not complicit in human rights abuses	Code of Ethics / Code of Conduct for ethics management, Article 31 / Collective Agreement, Article 99 / Employment Rules, Article 5	HR1/HR2/HR8	42, 77
Labor Standards	3. we uphold the freedom of association and the effective recognition of the right to collective bargaining	Code of Ethics / Collective Agreement, Article 2, 5 and 6	HR5/LA4/LA5	87-88
	4. we eliminate all forms of forced and compulsory labor	Code of Ethics / Collective Agreement, Article 34, 35 and 37, Employment Rules, Article 16	HR7	41
	5. we effectively abolish child labor	The 10 Principles of UN Global Compact	HR6	41
	6. we eliminate discrimination in respect of employment and occupation	Code of Ethics / Code of Conduct for ethics management, Article 5 and 11 / Collective Agreement, Article 25 / Employment Rules, Article 4	HR4/LA2/LA10/LA13/ LA14	63-64, 66-67, 87
Enviro- nment	7. we support a precautionary approach to environmental challenges	Environmental Policy / IS014001 Certification/ Environmental Management Manual	4.11	50-57
	8. we undertake initiatives to promote greater environmental responsibility	Environmental Policy / Environmental Management Manual	EN2/EN5/EN6/EN7/ EN10/EN13/EN14/ EN18/EN21/EN22/ EN26/EN27/EN30	57-59, 86
	9. we encourage the development and diffusion of environ- mentally friendly technologies	Environmental Policy / Management Policy	EN2/EN5/EN6/EN7/ EN10/EN18/EN26/ EN27	50-58,
Anti- corruption	10. we work against corruption in all its forms, including extortion and bribery	Code of Ethics / Code of Conduct for ethics management, Article 5, 6, 7, 17, 18 and 19 / Collective Agreement, Article 99 / Employment Rules, Article 9 / Pledge of Moral Management Forum of CEOs	S02/S03/S04	41-44