



TAKUMA

Corporate Profile & CSR Report 2012

**Value Technology,
Value People,
Value the Earth**



● Company Motto

Value Technology, Value People, Value the Earth

● Management Principles

Takuma will strive for social contribution, corporate value enhancement, long-term corporate development and the satisfaction of all stakeholders by providing goods and services that are needed and recognized as valuable in society.

The founding spirit of Takuma was “Service to the nation through boiler manufacturing”* which in present-day language means “contribution to society by supplying goods and services that we yield”. This spirit can also be applied to the concept of Corporate Social Responsibility (CSR) that in recent years has become a vital issue for corporate management. The management principles of the Takuma group companies are all based on the said founding spirit.

* Service to the nation through boiler manufacturing
It was the mission statement of Takuma, then Takuma Boiler Manufacturing Co., Ltd., founded by Mr. Tsunekichi Takuma, one of the ten great inventors of Japan during the period of Meiji and Taisho (1868–1926).

● Takuma Group Ethics Charter

Takuma and the Takuma Group companies believe that it is essential for the sound development of the group that all of the directors and employees remain aware of our social responsibilities and the circumstances surrounding us as well as act in response to social ethics complying with applicable related laws and ordinances. Bearing the above in mind, we have established and will promote this ethics charter as our code of conduct, aiming to realize our management principles.

1. We shall strive for proactive social contribution while establishing a harmonious coexistence with the global environment as good corporate citizens.
2. We shall act in good faith in accordance with sound business custom, while complying with applicable laws and regulations and committing ourselves to fair, transparent and free competition, as well as conducting lawful business activities.
3. We shall never have any relationship with antisocial forces or organizations, which may pose a threat to the social order and security of civil society.
4. We shall respect fundamental human rights and never practice discrimination.
5. We shall strive to provide high quality products and services, based on our advanced technologies, to attain high acclaim and confidence from our customers.
6. We shall strive to disclose corporate information to shareholders and investors through investor relations (IR) and other activities on a timely and equitable basis.
7. We shall strive to protect corporate properties as well as information, while never using either for improprieties or any unjustifiable purpose other than normal business operations.

● Takuma Group Code of Conduct

Harmony with society

1. Coexistence with the global environment
2. Coexistence with international society
3. Practice of social contribution activities

Practice of compliance with laws and ordinances as well as sound economic activities

4. Free competition and fair trade
5. Relationship with politics and public administration
6. Policies concerning business entertainment and gift-giving
7. Prohibition of involvement in anti-social activities
8. Appropriate export and import transactions

Respect for basic human rights

9. Prohibition of discriminatory actions
10. Respect for individuality, personal quality, and privacy
11. Safe work environment

Practice of customer satisfaction

12. Safety of products and services as well as ensuring reliability
13. Policies concerning advertising

Making appropriate disclosure of information

14. Transmission of corporate information
15. Ensuring reliability of financial report
16. Prohibition of insider trading

Protection of corporate properties and information

17. Management and proper use of corporate properties
18. Handling of confidential information
19. Intellectual property protection

Message from Top Management



Towards spreading and establishing compliance and CSR management

Foreword

The Great East Japan Earthquake that struck in March of 2011 brought about devastating destruction centered on areas along the coast of the Tohoku and Kanto regions, with some of our Group's customers also suffering serious damage. In addition to the scale of that damage, there were the effects from the accident at the nuclear power plant, and recovery and revival has been slow. Though almost 16 months will have passed since that disaster, there are still many people who are forced to live in difficult circumstances. While we pray anew for those whose lives were lost, we continue to offer our heartfelt sympathies to everyone who has suffered during this time.

From all of us in the Takuma Group, it is our desire to contribute to the earliest possible recovery and revival of that stricken area through restoration work for and in cooperation with our customers who experienced damage, through the installation and operation of temporary incinerators, and through the consigned handling of disaster waste within our waste treatment businesses.

The conclusion of the 9th Mid-Term Management Plan

Our 9th Mid-Term Management Plan ended in March 2012. In that Plan, we aimed at extricating ourselves from the adverse situation caused by the past several

years of worsening performance, and the Group worked as a whole towards an early return to results and a stable profit. While concentrating management resources on our core businesses and reinforcing that competitive strength, we became more thoroughly involved in risk management and cost control, strove for even greater cost reductions, and continued to simultaneously implement a reduction in fixed costs while aiming at improvements in profitability. As a result of these measures, profits have expanded steadily since the beginning of the 9th Mid-Term Management Plan in fiscal 2009, with the targeted ordinary income of more than 5 billion yen attained in fiscal 2011, the final year of the Plan.

The 10th Mid-Term Management Plan

Our 10th Mid-Term Management Plan commenced in April 2012. In formulating the basic policy for this new plan, we once again reviewed our Group's medium-to-long term corporate vision, and have taken up “TAKUMA aims to maintain its role of being an indispensable presence in society as a leading company in the field of renewable energy utilization and environmental protection. Our target is to make an ordinary profit of JPY 10 billion in FY 2020.” as the new Corporate Vision.

In response to the paradigm shift in the supply and demand of energy that was ignited by the nuclear power plant disaster, expectations for the exploitation of

renewable energy and energy savings are growing rapidly. We have made it our vision to position this field anew as the core business domain of our Group, to concentrate management resources on this field, and to continue to be an indispensable presence in society, both inside and outside Japan.

We have also set an increase in ordinary income of 10 billion yen by fiscal 2020 as the level at which we should simultaneously aim for. We will continue implementing measures towards achieving this Corporate Vision with this new Mid-Term Management Plan as the first step.

The 3 years of this new Mid-Term Management Plan is being positioned as a period for solidifying the current business recovery, for strengthening our operating base to maintain stable profits, and for making preparations towards the next profit increase. The target for total ordinary profit over the next three years was set to 15 billion yen, and four basic policies were defined.

■ Establishment of a firm business foundation

The first policy is to “Establishment of a firm business foundation.” Although we are seeing signs of recovery, our financial affairs base, such as the consolidated interest-bearing debt, exceeds consolidated net assets and, therefore, cannot yet be said to be rock solid. On the other hand, on the business side, although a certain amount of things have improved, such as in an increase in the percentage of orders received at newly established waste incineration plants, increased profits in our maintenance business, and a steady acquisition of orders in Asia, fiscal 2011 brought harsh results in our newly established businesses in domestic waste and energy in term of the volume of orders.

Even in our maintenance business, where profits are indeed expanding, business conditions are becoming more difficult every year, such as with reduced customer budgets and an increase in the number of competitors. In order for our Group to aim at continuously remaining an indispensable presence in society while also aiming at future development, no matter what the business conditions are, each enterprise must surely establish a firm operating base that leads to stable profits.

Focusing on strengthening our proposal capabilities, our cost capabilities, and our quality control organization, we shall work at continuing as well as strengthening the measures of the 9th Mid-Term Management Plan, at maintaining and expanding market share in our core businesses, at maintaining and improving maintenance profits, and at establishing a firm sales and revenue base during this current Mid-Term Management Plan. And, in order to obtain the resources required to accomplish this, we need to aim at fostering and securing talented human resources that match our business strategy and at promoting the positioning of “the right person in the right place”.

■ Preparation for a stage of profit expansion

The second policy is to “Preparation for a stage of



profit expansion.” We are focusing mainly on two themes in this Mid-Term Management Plan as measures for concentrating on future profit increase. The first is to “Develop competitive technology, products and services.” Since the company has been in difficult circumstances the past few years, budgets for development have been suppressed to the minimum. But from here on we plan to aggressively apportion funds for the needed development. Focusing on differentiation with the competition in existing markets, such as in reducing life cycle costs, improving power generation efficiency, in the practical use of unused energy and low carbonization, as well as on development that leads to a competitive advantage, we are striving to develop the technology, products, and services that correspond to the true needs of the market prior to our competitors and thus aim at earlier market entry. We will look to closer cooperation between the sales and development departments in order to further even more effective development.

The other theme is to “Construct the optimal business scheme for advancing overseas.” In particular, we will be concentrating on advancing business in the Southeast Asia market. Although the entry of low-priced local manufacturers and manufacturers from China and India into Thailand’s boiler plant market meant that we didn’t receive orders for a period of time, by thoroughly investigating market demands and, based on that, optimizing design specifications and expanding local content and overseas procurement, we have recovered our competitive strength to the point of receiving constant orders once again. Demand is high, and, towards a further expansion in orders, our aim is at functionally enhancing Siam Takuma Co., Ltd., an overseas subsidiary, as well as enhancing the function of our other overseas businesses. Due to abundant biomass resources and high economic growth, expanding demand for biomass boilers is expected in emerging countries of Southeast Asia like Thailand. Thus, centering on Thailand, Indonesia, and Vietnam, we will conduct sufficient market research and risk assessment, examine the propriety of market entry, build the optimal business scheme for each region and each customer in those markets we plan to enter, and advance the preparation of support organizations.

■ Transmission of know-how and development of human resources

The third policy is to “Transmission of know-how and development of human resources.” Although business know-how acquired through both success and failure is an important company asset and the fountainhead of our competitive strength, there is a prevailing tendency for such knowledge to remain inside an individual’s head and, in extreme cases, results in a situation in which it may even be lost if the person is no longer here. In order to make us a very strong company, it is important that all business know-how be shared and handed down as knowledge, rather than of any individual, of the company as a whole, i.e., as “organizational knowledge”, and I would like to build a structure wherein such know-how is surely perpetuated as organizational knowledge in that way.

We also recognize that raising the standard of training for personnel and continuously producing the human resources who will bring the next step in business deployment are subjects to be tackled from here on. While striving to foster a business make-up and a business culture that can improve each individual’s fundamental abilities and independence and can demonstrate those aptitudes to the utmost, I want to work on training talented personnel with a spirit of challenge who do not fear “good failure”, and talented personnel with imagination and ability. I want to be able to surely and continuously produce the human resources who will shoulder our future.

■ Permeation and establishment of compliance

The fourth and final policy is to “Promotion and Establishment of compliance.” I want “Compliance”, i.e., obeying laws and regulations and observing corporate ethics, to be something where that consciousness permeates throughout the company via educational activity

and training. A violation of compliance can, in an instant, completely disintegrate the trust and assets that have been built through years of effort. Even a moment’s lack of focus or lull in alertness can lead to a serious violation, and something you did that you thought was “for the company”, “for our customers”, can also end up causing fatal damage to both the company and those customers. I would like all of you to take this to heart once again when involved in your daily work.

■ In conclusion

Takuma has participated in and supported the principle of the United Nations “global compact” initiative since 2006. And from here on as well, we will continue to develop our business as we tackle the issues of “human rights”, “labor”, “environment”, and “anti-corruption”.

If each and every employee pulls together toward the same objective and each one of us tackles each issue responsibly, I believe that those goals can surely be achieved. I would like all executives and employees to work together and tackle this next year towards a bright future.

For a corporation to fulfill its social responsibilities, communication with diverse stakeholders is crucial. I believe that this report will be an effective tool for this purpose. Since I want to give closer attention to your feedback in order to prepare CSR reports that are even easier to understand in the future, I would be very grateful to receive your honest opinions and advice.

June 2012

Hajime Tejima
President and CEO
Takuma Co., Ltd.

Participation in the UN Global Compact

On November 10, 2006, the Takuma Group joined the United Nations Global Compact, pledging to adhere to universal principles covering human right, labor right, the environment and anti-Corruption. The Global Compact is a voluntary corporate citizenship initiative proposed by U.N. Secretary-General Kofi Annan in 1999 at the world Economic Forum. Our company practices a social contribution through the active conduct of business in support of the ten principles.



The ten principals of the UN Global Compact

Human Rights

- Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and
- Principle 2: make sure they are not complicit in human rights abuses.

Labor Standards

- Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
- Principle 4: the elimination of all forms of forced and compulsory labor;
- Principle 5: the effective abolition of child labor; and
- Principle 6: the elimination of discrimination in respect of employment and occupation.

Environment

- Principle 7: Businesses should support a precautionary approach to environmental challenges;
- Principle 8: undertake initiatives to promote greater environmental responsibility; and
- Principle 9: encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption

- Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

10th Mid-Term Management Plan – An Overview (FY 2012–2014)

1. Corporate Vision

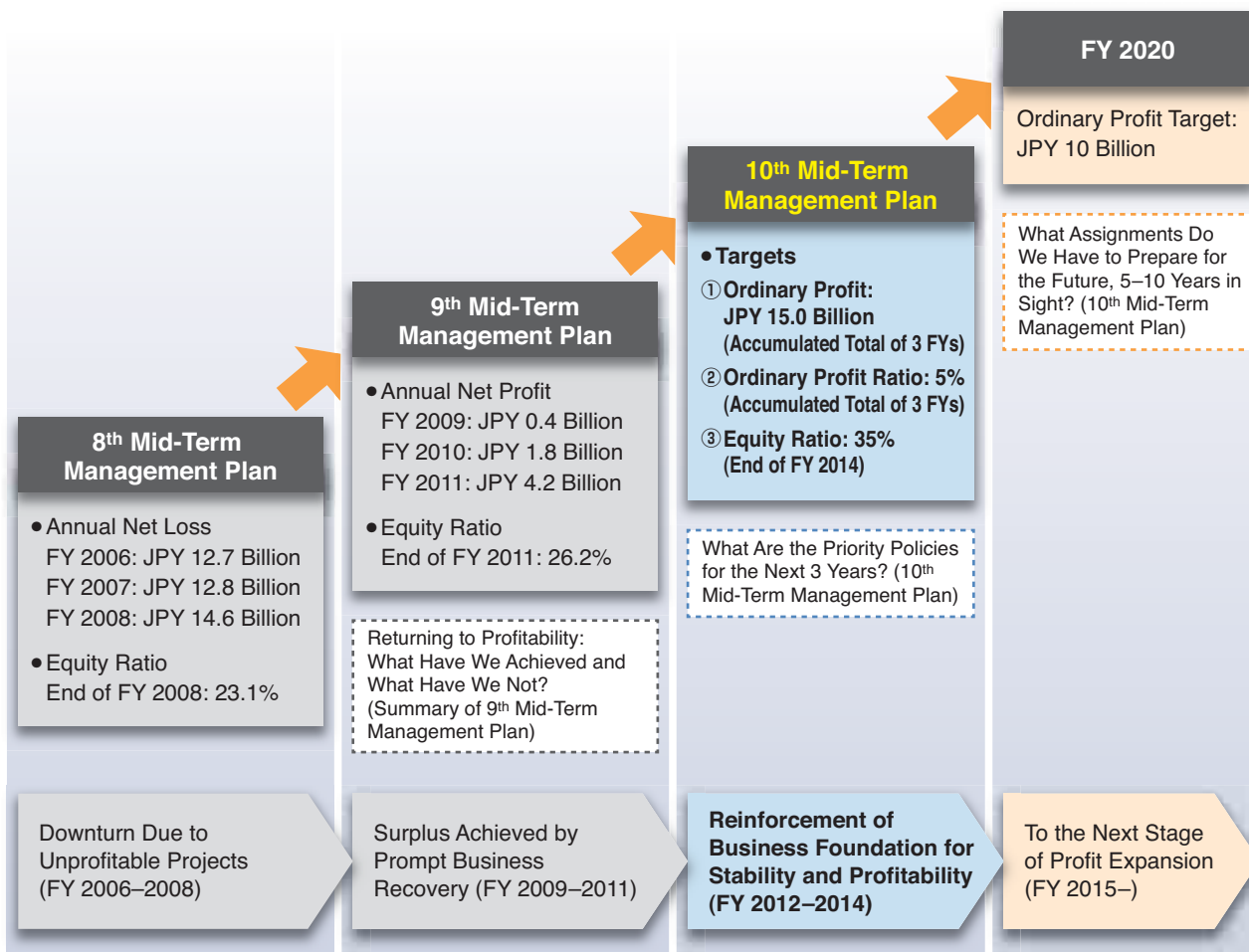
TAKUMA aims to maintain its role of being an indispensable presence in society as a leading company in the field of renewable energy utilization and environmental protection. Our target is to make an ordinary profit of JPY 10 billion in FY 2020.

Although the volume of waste requiring treatment is declining steadily as a result of ongoing efforts to transform a social system once based on mass production, mass consumption, and mass disposal, into a sustainable recycle-based society, there is no doubt that our high-performance waste treatment plants will continue to play an essential role as key infrastructure required to maintain a safe and comfortable living environment. Moreover, as a component of efforts to realize a low-carbon society and from the standpoint of underutilized energy, Energy from Waste (EfW) continues to enjoy active promotion, and amidst the urgent need for a new energy policy, expectations run high for the use of EfW as electricity supply infrastructure.

Energy recovery from renewable resources such as biomass or underutilized fuels such as waste plastic have caught public attention as a social concern from the view point of constructing a society less dependent on nuclear energy of fossil fuels, and thus we believe that the demand for our incineration technology and heat recovery technology will still increase further.

Within such a business environment and from a mid to long term point of view, we hereby confirm our corporate vision to win recognition as an indispensable leading company in society by redirecting management resources to renewable energy utilization and environmental protection, which are what we place as our core business units.

2. Recent achievements and positioning of the 10th Mid-Term Management Plan



3. Summary of the 9th Mid-Term Management Plan

(1) Basic policy measures

| | |
|--|--|
| Redirect Management Resources to Core Business Units <ul style="list-style-type: none"> Most of the selection and concentration of resources was completed during the 9th Mid-Term Management Plan. Obtained orders in core business units.* | Undertake Risk Management/Cost Management <ul style="list-style-type: none"> Undertook project risk management and cost management. Improved profitability in general. |
| Reconstruct Mid to Long Term Strategy for Business in Europe <ul style="list-style-type: none"> Downscaled local subsidiaries in Europe as a result of the examination of market conditions, competitiveness, and synergy. Reduced losses incurred by businesses in Europe. | Execute Reform of Personnel Affairs in Order to Activate Human Resources <ul style="list-style-type: none"> Improved personnel systems. Comprehensive improvement through continuous development of human resources remains to be achieved. |
| Strengthen Financial Base <ul style="list-style-type: none"> Restrained investment and lending and reduced fixed expenses. Improvement of equity ratio remains to be achieved (23.1% at the end of FY 2008 → 26.2% at the end of FY 2012). | Undertake Compliance and Strengthen Risk Management <ul style="list-style-type: none"> Sense of compliance has been infiltrated through enlightenment and educational programs. |

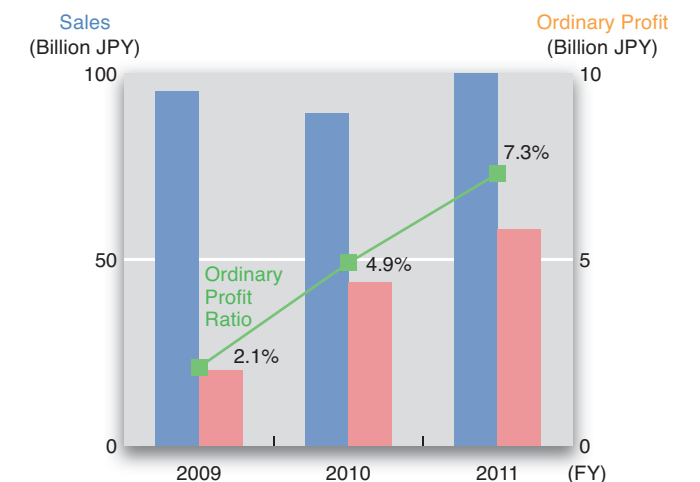
* Core business units are: municipal solid waste treatment plant business, boiler and industrial waste treatment plant business (Japan), operation and maintenance business, boiler plant business (Asia), and package boiler business.

(2) Financial achievements

Targets set in the 9th Mid-Term Management Plan



| | FY2009 | FY2010 | FY2011 |
|-----------------------|--------|--------|---------|
| Sales | 95,134 | 89,140 | 101,014 |
| Ordinary Profit | 2,013 | 4,396 | 7,336 |
| Annual Net Profit | 435 | 1,821 | 4,211 |
| Ordinary Profit Ratio | 2.1% | 4.9% | 7.3% |
| Equity Ratio | 23.6% | 23.5% | 26.2% |



Stable Sustainment of Profit Level of FY 2011 and Improvement of Equity Ratio → Required

4. Policy for the 10th Mid-Term Management Plan

Establishment of a firm business foundation

Establish a firm business foundation in order to assure the certainty of business recovery and sustain stable profitability by: (1) securing personnel by promoting the strategic allocation of human resources in accordance with our business policy, (2) continuation and strengthening of the measures in the 9th Mid-Term Management Plan, mainly with development of attractive proposals, cost competitiveness, and quality control, and (3) maintaining and expanding the market share in our core business units as well as the profitability of our maintenance business.

Preparation for a stage of profit expansion

① Development of Competitive Technologies, Products, and Services

Differentiate from competitors and gain competitive advantages by developing technologies, products and services to meet the expectations of society in the context of great change in market conditions such as the establishment of Japan's Feed-In Tariff Law for Renewable Electricity and energy policy transition. (e.g. reduction of LCC, underutilized energy, high efficiency power generation, low-carbonization, etc.)

② **Optimization of Business Scheme within Global Reach**
Construct a business scheme optimized for regions and/or clients and corresponding structure to prepare for a full-scale global reach with sufficient market research and risk evaluation, mainly in Asian markets in which increased demand is expected. (e.g. Thailand, Indonesia, Vietnam, China, etc.)

Continue monitoring and researching to consider the possibility of re-entry into European markets.

Proceed with construction of a corresponding structure, including examination and consideration for establishment of local procurement bases, as well as developing suppliers in preparation for increased levels of overseas procurement.

Transmission of know-how and development of human resources

① Development of Know-How Transmission System

Develop cyclical system to accumulate business know-how, transmitted as "organizational knowledge" and create new knowledge in order to elevate corporate competitiveness.

② Development of Human Resources to Lead the Next Business Expansion

- Form corporate constitution and climate that allow individual personnel to reinforce ability and responsibility and maximize performance.
- Raise personnel with a challenging spirit not to be afraid of making "good mistakes".
- Raise personnel with designing ability and vitality through OJT.
- Raise personnel with ability to create new knowledge through utilization of inherited business know-how.

Permeation and establishment of compliance

- Regard compliance as an action to create a sound corporate climate and reinforce its infiltration and establishment program throughout the TAKUMA group.
- Hold internal educational activities on a regular basis to provide the opportunity for personnel to reinforce their understanding of relevant rules, regulations and internal policy, primarily with but not limited to the Corporate Group Ethics Charter and Code of Behavior.

5. Financial targets

Financial targets in consolidated accounts for the 10th Mid-Term Management Plan

- ① **Ordinary Profit:** **JPY 15.0 Billion**
(Accumulated Total of 3 Financial Years)
- ② **Ordinary Profit Ratio:** **5%**
(Accumulated Total of 3 Financial Years)
- ③ **Equity Ratio:** **35%** (End of FY 2014)

Lay a Stable Foundation of Revenue Aiming for JPY 10 Billion of Ordinary Profit in FY 2020.

| | 9 th Mid-Term Management Plan | | | 10 th Mid-Term Management Plan | | | FY 2020 |
|-----------------------|--|---------|---------|--|---------|---------|---------|
| | FY 2009 | FY 2010 | FY 2011 | FY 2012 | FY 2013 | FY 2014 | |
| Ordinary Profit | 2,013 | 4,396 | 7,336 | Accumulated Total of 3 FYs: above JPY 15.0 Billion | | | 10,000 |
| Ordinary Profit Ratio | 2.1% | 4.9% | 7.3% | Accumulated Total of 3 FYs: above 5% | | | 7.0% |
| Equity Ratio | 23.6% | 23.5% | 26.2% | above 35% | | | 40% |

(Million JPY)

6. Core business units and emphasis of future activities

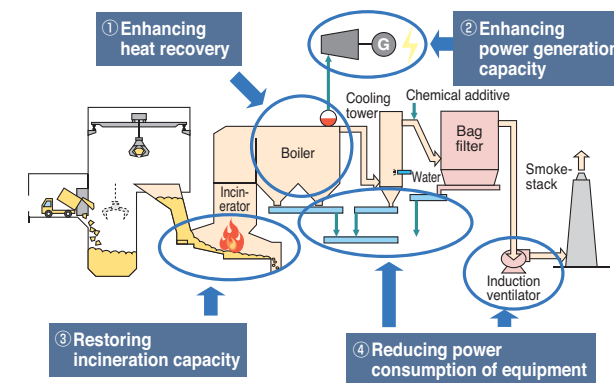
(1) Municipal solid waste treatment plant business

Business environment

- Existing waste treatment plants are aging.
- Demands of clients have diversified as a result of environmental and electricity supply issues.

Emphasis of future activities

- Prolong the lives of existing plants.
- Strengthen the ability to undertake comprehensive evaluation method and DBO.



Examples of municipal solid waste treatment plant life prolongation/CO₂ emissions reduction measures

(2) Boiler and industrial waste treatment plant business (Japan)

Business environment

- Expectations of biomass and underutilized fuels are growing and support from new industrial policy is anticipated.

Emphasis of future activities

- Secure and expand orders mainly for boilers fired by special fuels such as RPF, biomass, etc.



Biomass power plant (wood chip)

(3) Boiler plant business (Asia)

Business environment

- Demand for bagasse boilers in Thailand is increasing.
- Increased demand for biomass boilers outside Thailand is also expected.

Emphasis of future activities

- Enrich operational execution functions of local subsidiary (SIAM TAKUMA).
- Develop optimized business scheme in anticipation of business expansion.



Biomass power plant (bagasse)

(4) Package boiler business

Business environment

- There is a certain level of demand primarily with renewal orders despite the downturn of the market due to its maturity and slump in investments.

Emphasis of future activities

- Strengthen efforts to secure renewal orders.
- Strengthen the maintenance business.



Super Eqs/Super Vacotin heaters

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■ Editorial Policy

We have prepared this document as a combined Corporate Profile and CSR Report, with both a guide to our corporation and a report on our CSR activities.

■ Publisher

General Affairs Department, Corporate Service Division
CSR Department, Compliance & CSR Promotion Division
Takuma Co., Ltd.

■ Data Collection Period

From April 1, 2011 to March 31, 2012 in principle. In addition, some activities in fiscal 2012 are included.

■ Coverage

Takuma Head Office, Business institutions, Harima Factory, and some group companies (Nippon Thermoener Co., Ltd., Takuma Technos Co., Ltd., Hokkaido Sanitary Maintenance Co., Ltd., Takuma Technos Hokkaido Co., Ltd., Sun Plant Co., Ltd., Takuma Engineering Co., Ltd., Takuma System Control Co., Ltd., Dan-Takuma Technologies Inc., Kyoritsu Setsubi Co., Ltd., Kankyo Sol-Tech Co., Ltd., Takuma Plant Services Co., Ltd., KAB Takuma GmbH, Bioener ApS, Taiden Environtech Co., Ltd., and SIAM Takuma Co., Ltd.)

■ Time of Issue:

Current issue: June 2012
Next issue: scheduled for June 2013
Last issue: June 2011

Corporate Profile

Corporate Information

Business Summary

The Takuma Group Network

Company outline

Company name: Takuma Co., Ltd.
 Head office location: 2-2-33 Kinrakuji-cho, Amagasaki, Hyogo 660-0806 Japan
 TEL +81-6-6483-2609 FAX +81-6-6483-2751
 Representative Director: Hajime Tejima, President and CEO
 Date established: June 10, 1938
 Capital: 13,367,457,968 yen (as of March 31, 2012)
 Main business areas: Design, construction and superintendence of a wide variety of boilers, plant machineries, pollution prevention plants, environmental equipment plants, and heating and cooling equipment and feed-water/drainage sanitation equipment and facilities
 Design, construction and superintendence of civil, architecture and other works
 Number of employees (non-consolidated): 775 (as of March 31, 2012)
 Number of employees (consolidated): 3,187 (as of March 31, 2012)

Permits and registrations

Head Office, branch offices and other business offices

Construction license (Minister of Land, Infrastructure, Transport and Tourism license, Special 22-6129)
 Construction consultant registration (Minister of Land, Infrastructure, Transport and Tourism registration, Construction 21-9335)
 First-class architect office registration (Governor of Hyogo Prefecture, 201793)
 ISO 9001 quality management system certification

Harima Factory

ISO 9001 quality management system certification
 ISO 14001 environmental management systems certification
 Manufacture of thermal equipment for power generation (Ministry of Economy, Trade and Industry)
 Permission to manufacture boilers and pressure vessels, permission to manufacture cranes (Ministry of Health, Labour and Welfare)
 Certification for the manufacture of boilers and first-class pressure vessels (Nippon Kaiji Kyokai)
 Manufacture of specific high-pressure gas facilities (High Pressure Gas Safety Institute of Japan)

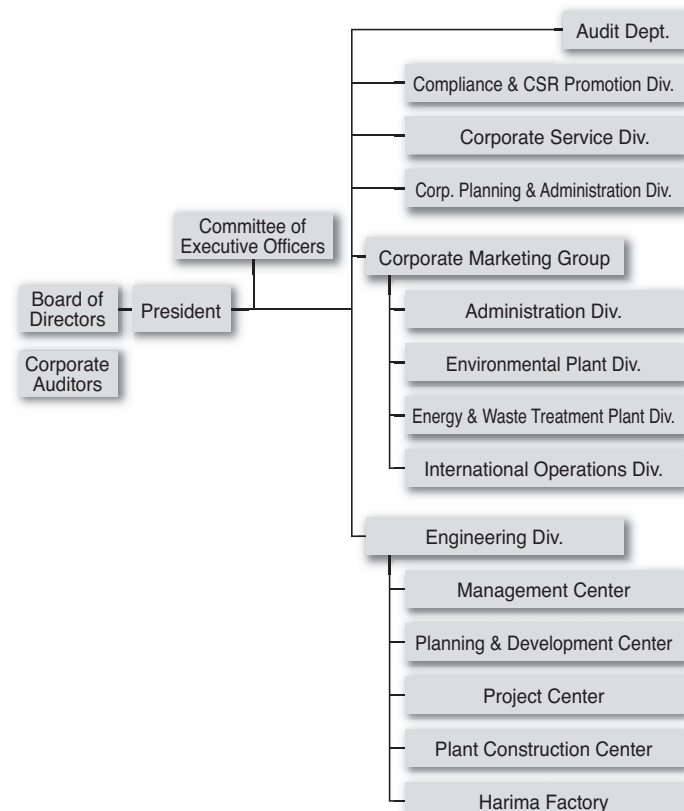


JQA-1952
ISO 9001
certification

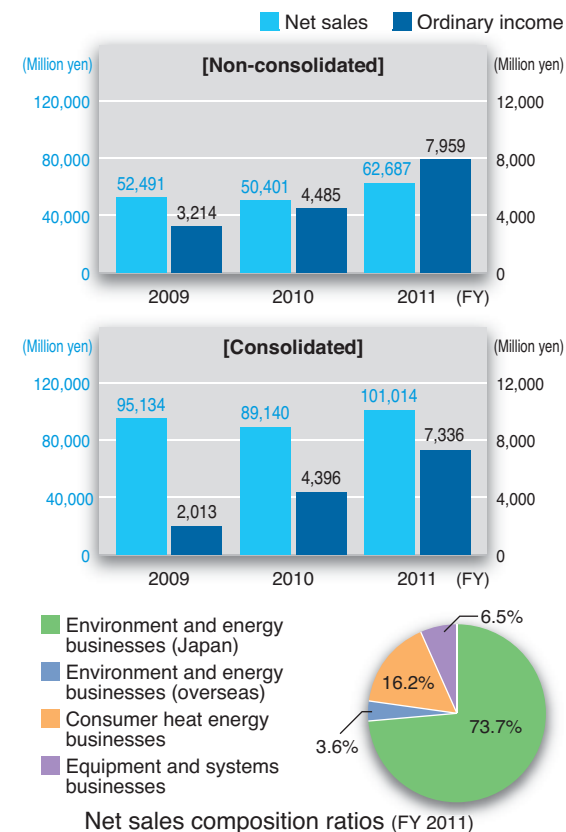


JQA-EM0313
ISO 14001
certification
Harima Factory






Corporate structure



Balance sheet overview and net sales composition ratios



The History of Takuma

| | | | |
|---|--|--|---|
| | 1912 | 1912 The first "Takuma boiler" introduced by our founder, Tsunekichi Takuma |  |
| | 1920 | | Tsunekichi Takuma |
| 1938 Takuma Boiler Manufacturing Co., Ltd. founded Company motto instituted: "Service to the nation through boiler manufacturing" | 1930 | 1930 Tsunekichi Takuma commended as one of the ten great inventors of Japan during the Meiji and Taisho periods (1868-1926) |  |
|  | 1940 | 1942 Operation begins at Harima Factory 1949 Company listed on the Osaka and Tokyo stock exchanges | |
| 1953 Head Offices moved to Osaka's Kita-ku District | 1950 For the environment of Japan and the world | 1958 Business expanded into the environmental facility sectors, including waste incineration and water treatment plants | |
| | 1960 | 1963 Japan's first waste incineration plant delivered Sewerage treatment facility delivered Japan's first waste incineration plant |  |
| 1972 Company renamed Takuma Co., Ltd. | 1970 | 1975 Bulk production begins on "vacotin heater", the world's first vacuum-type hot water heater |  |
| | 1980 | 1986 The first overseas delivery of a waste treatment facility completed (U.S.A.) | |
| 1992 New company motto instituted: "Value Technology, Value People, Value the Earth" | 1990 | 1998 Japan's largest waste incineration plant delivered (Tokyo Shinkoto Waste Treatment Plant capacity: 1,800 t/day) | |
| 1995 Amagasaki Head Office Building completed | | | |
| 1997 ISO9001 certification obtained | | | |
| 1999 ISO14001 certification obtained for our Harima Factory | | | |
| 2004 Takuma's first "Environmental Report" issued The "Takuma Group Code of Conduct" instituted | 2000 Into the age of CSR | 2004 KAB Takuma GmbH established in Germany towards involvement in the construction of waste and biomass power plants in Europe | |
| 2005 The "Takuma Environmental Policy" instituted The "Personal Information Protection Policy" instituted | | 2005 Takuma Hanyokikai Co., Ltd., a subsidiary involved in the manufacture and sale of small boilers, and Ebara Boiler Co., Ltd. merged and renamed Nippon Thermoener Co., Ltd. | |
| 2006 The "Compliance Declaration" instituted The "Takuma Group Ethics Charter" instituted Takuma participates in the UN Global Compact | | | |
| 2007 Takuma's first "CSR Report" issued | | | |
| | 2010 | 2010 Waste power generation plant delivered in Europe (U.K.) | |

Environmental Technologies

We contribute to society through the recovery of valuable resources and energies as well as the promotion of safe/clean waste treatment.

■ Pioneer in waste treatment technologies

Since completion of the first large ordinary waste treatment facility in Japan in 1963 using its unique proprietary technologies, Takuma has constructed over 340 waste treatment facilities. While pursuing the most efficient incineration, we have striven to develop optimal technologies that match various forms of waste, which change along with the times. It is no exaggeration to say that the history of waste treatment in Japan means the history of advancements in our company's waste treatment technologies.

■ Helping prevent global warming with proprietary technologies

Coinciding with increased promotion of the 3Rs (Reduce, Reuse and Recycle) in recent years, we work on material recycling and thermal recovery of waste (the third "R"). Since ordinary waste generated from our daily life holds high energy, generating power from such energy helps prevent global warming. We build waste treatment facilities utilizing our unique technologies for incineration, heat recovery, exhaust gas treatment and waste water treatment, and contribute to preventing global warming by reducing CO₂ emissions through environmental preservation and thermal recovery/power generation.

■ Variety of facilities and abundant delivery experience

The types of facilities that Takuma has delivered include: "high efficiency waste treatment plant," which performs high-efficiency power generation by forming

high temperature/high pressure steam; "pyrolysis gasification and melting plant," which incinerates pyrolysis gas and carbon generated through thermal decomposition of waste at high temperature to form slag, while generating electricity; "ash melting plant," which melts ash left after incineration of waste to form slag to be used as a road material; "recycling plant," which collects iron, aluminum and glass from waste; and "biogas power generation plant," which extracts methane gas from hard-to-burn wastes such as kitchen waste to generate power.

In the field of industrial waste treatment, we have delivered "industrial waste treatment plants," which combine nonflammable wastes generated from business activities with wastes with high calorific value to perform safe treatment and collect energy, and "hydrogen and methane fermentation plants," which generate hydrogen and methane from food waste and use these outputs as fuels for boilers.

In the field of water treatment, we have delivered "advanced processing plants" to purify treated water at water reclamation centers (sewage plants) and, in the field of sludge treatment, "sewage sludge incinerators" to control greenhouse gas emissions during incineration. In particular, we boast the largest share in delivery of advanced processing plants in Japan.

Incineration plants for the waste generated by the Great East Japan Earthquake disaster were delivered to Iwate and Miyagi prefectures and one is also scheduled to be supplied to Fukushima Prefecture.

Energy Technologies

Valuing people and the earth, we promote effective use of diverse energies.

■ Utilizing energy technologies to reduce CO₂

Takuma, not only being a pioneer in boilers, also has a long history of possessing, modifying and improving incineration technologies in the field of utilizing various wastes and biomass.

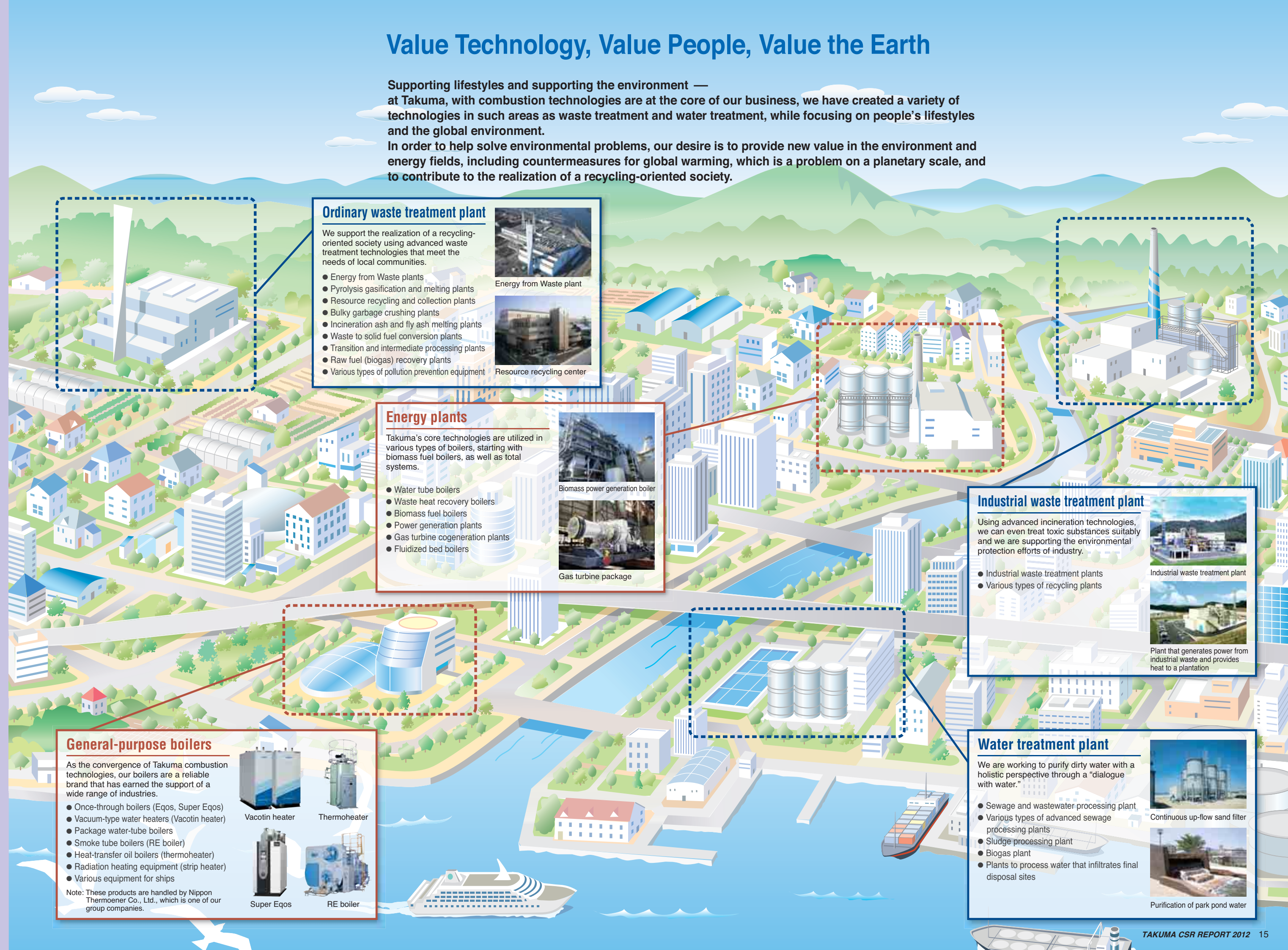
Energies, which serve as sources of heat and power, are used in a wide range of industries. Not only oil, coal and natural gas-based fuels, but also various carbon-neutral and renewable energies from various agricultural/forest waste, as well as heat from various plants, can all be used effectively. Our technologies that enable effective use of diverse energies contribute to securing energy sources for the future and preventing global warming by reducing CO₂ emissions.

■ Actively promoting development of new energy technologies

In recent years, in response to the growing anti-global warming sentiment, we construct "animal manure incineration power plants" based on our new technologies, in addition to woody chip incineration power plants and RPF incineration power plants, with which we have abundant experience. Paying attention to effective use of natural gas, which generates much less CO₂ and can help prevent global warming, we also added to our product lineup gas incineration boilers and high-efficiency gas turbine power plants. We will continue to actively develop new technologies to utilize energies that are friendly to people and the earth while responding to our customers' needs.

Value Technology, Value People, Value the Earth

Supporting lifestyles and supporting the environment — at Takuma, with combustion technologies are at the core of our business, we have created a variety of technologies in such areas as waste treatment and water treatment, while focusing on people's lifestyles and the global environment. In order to help solve environmental problems, our desire is to provide new value in the environment and energy fields, including countermeasures for global warming, which is a problem on a planetary scale, and to contribute to the realization of a recycling-oriented society.



Ordinary waste treatment plant

We support the realization of a recycling-oriented society using advanced waste treatment technologies that meet the needs of local communities.

- Energy from Waste plants
- Pyrolysis gasification and melting plants
- Resource recycling and collection plants
- Bulky garbage crushing plants
- Incineration ash and fly ash melting plants
- Waste to solid fuel conversion plants
- Transition and intermediate processing plants
- Raw fuel (biogas) recovery plants
- Various types of pollution prevention equipment



Energy from Waste plant



Resource recycling center

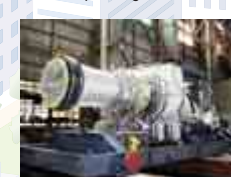
Energy plants

Takuma's core technologies are utilized in various types of boilers, starting with biomass fuel boilers, as well as total systems.

- Water tube boilers
- Waste heat recovery boilers
- Biomass fuel boilers
- Power generation plants
- Gas turbine cogeneration plants
- Fluidized bed boilers



Biomass power generation boiler



Gas turbine package

Industrial waste treatment plant

Using advanced incineration technologies, we can even treat toxic substances suitably and we are supporting the environmental protection efforts of industry.

- Industrial waste treatment plants
- Various types of recycling plants



Industrial waste treatment plant



Plant that generates power from industrial waste and provides heat to a plantation

Water treatment plant

We are working to purify dirty water with a holistic perspective through a "dialogue with water."

- Sewage and wastewater processing plant
- Various types of advanced sewage processing plants
- Sludge processing plant
- Biogas plant
- Plants to process water that infiltrates final disposal sites



Continuous up-flow sand filter



Purification of park pond water

General-purpose boilers

As the convergence of Takuma combustion technologies, our boilers are a reliable brand that has earned the support of a wide range of industries.

- Once-through boilers (Eqos, Super Eqos)
- Vacuum-type water heaters (Vacotin heater)
- Package water-tube boilers
- Smoke tube boilers (RE boiler)
- Heat-transfer oil boilers (thermoheater)
- Radiation heating equipment (strip heater)
- Various equipment for ships

Note: These products are handled by Nippon Thermoener Co., Ltd., which is one of our group companies.



Vacotin heater



Thermoheater



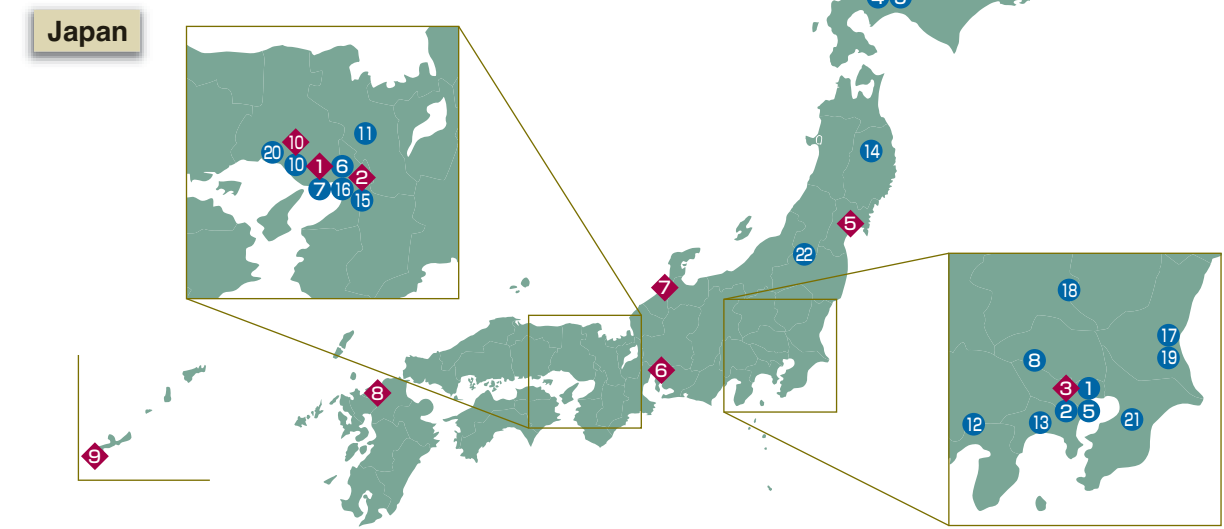
Super Eqos



RE boiler

The Takuma Group Network

Takuma technology is spreading worldwide.

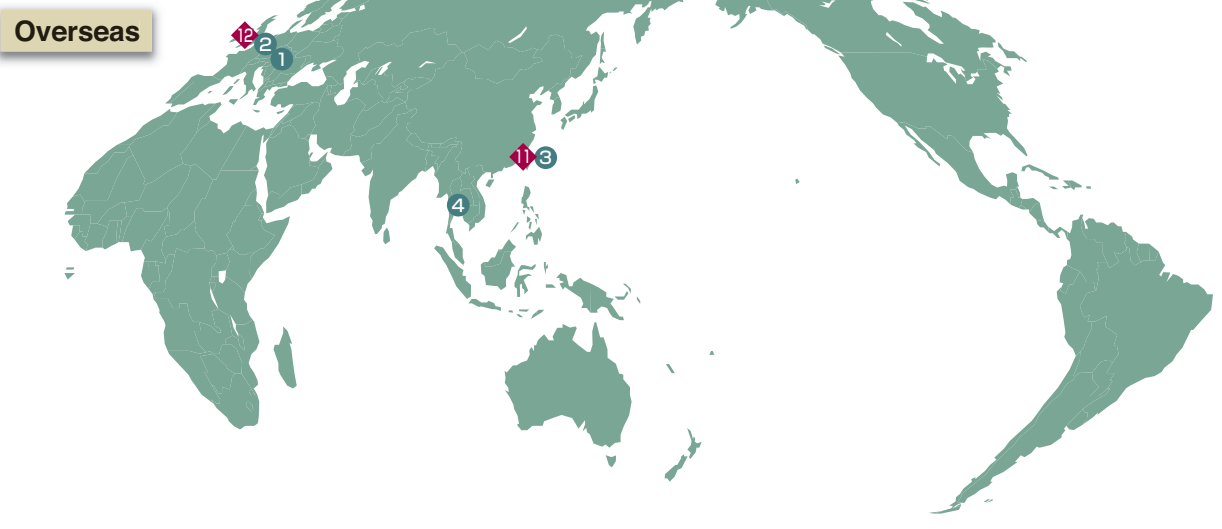


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TEL +81-6-6483-2609 FAX +81-6-6483-2751
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- ◆ Osaka Office**
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Nomura Higashi-nihonbashi Bldg., 1-1-7 Higashi-nihonbashi, Chuo-ku, Tokyo 103-0004, Japan
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Daigo Bldg., 5-11, Ohdori Nishi, Chuo-ku, Sapporo 060-0042, Japan
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NOF Sendai Aoba-dori Bldg., 2-1-2 Ichibancho, Aoba-ku, Sendai 980-0811, Japan
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Daitokai Bldg., 3-22-8, Meieki, Nakamura-ku, Nagoya 450-0002, Japan
TEL +81-52-571-5211 FAX +81-52-581-3005
- ◆ Hokuriku Branch**
Asahi Seimei Kanazawa Daini Bldg., 1-2-20 Kohrinboh, Kanazawa, Ishikawa 920-0961, Japan
TEL +81-76-262-5380 FAX +81-76-263-2394
- ◆ Kyushu Branch**
Yakuin Business Garden, 1-1-1 Yakuin, Chuo-ku, Fukuoka 810-0022, Japan
TEL +81-92-717-2828 FAX +81-92-717-2830
- ◆ Okinawa Branch**
1-11-12 Mashiki, Ginowan 901-2224, Japan
TEL +81-98-898-6650 FAX +81-98-898-6657
- ◆ Harima Factory**
1-2-1 Shinhama, Arai-cho, Takasago 676-8540, Japan
TEL +81-79-443-6511 FAX +81-79-443-6599
- ◆ Taipei Branch**
7F., No.16, Lane 35, Jihu Rd., Neihs District, Taipei 114-92, Taiwan
TEL +886-2-8752-3838 FAX +886-2-2656-0584
- ◆ London Branch**
56 Greyhound Hill, London, NW4 4JB, UK
TEL +44-(0)20-8457-9333 FAX +44-(0)20-8202-0798

Group companies in Japan

- ① Nippon Thermoener Co., Ltd.**
Sales of a wide range of boilers and related equipment
Shibahosoda Bldg., 1-3-2 Shibadaimon, Minato-ku, Tokyo 103-0023, Japan
TEL +81-3-5777-3400 FAX +81-3-5777-3444
<http://www.n-thermo.co.jp/>
- ② Takuma Technos Co., Ltd.**
Maintenance, management and operation of waste treatment facilities, excreta processing facilities and other facilities, as well as the design, installation and management of various types of boilers, environmental equipment and other equipment
10th Chuo Bldg., 1-5-6 Nihonbashi, Chuo-ku, Tokyo 103-0023, Japan
TEL +81-3-3231-2911 FAX +81-3-3231-2917
<http://www.takumatechnos.co.jp/>
- ③ Hokkaido Sanitary Maintenance Co., Ltd.**
Operation and maintenance of sewage treatment facilities
Daigo Bldg., 5-11, Ohdori Nishi, Chuo-ku, Sapporo 060-0042, Japan
TEL +81-11-221-8398 FAX +81-11-221-8542
- ④ Takuma Technos Hokkaido Co., Ltd.**
Operation and maintenance of waste treatment facilities
Daigo Bldg., 5-11, Ohdori Nishi, Chuo-ku, Sapporo 060-0042, Japan
TEL +81-11-221-4128 FAX +81-11-221-1030
- ⑤ Sun Plant Co., Ltd.**
Design, construction and superintendence of air-conditioning equipment, feedwater/drainage sanitation equipment, electrical equipment and environmental sanitation equipment
Nomura Higashi-nihonbashi Bldg., 1-1-7 Higashi-nihonbashi, Chuo-ku, Tokyo 103-0004, Japan
TEL +81-3-5825-0921 FAX +81-3-5825-1631
<http://www.sunplant.co.jp/>
- ⑥ Takuma Engineering Co., Ltd.**
Design of environmental equipment plants and energy plants
Takuma Bldg., 2-2-23 Kinrakuji-cho, Amagasaki, Hyogo 660-0806, Japan
TEL +81-6-6487-4820 FAX +81-6-6487-4829
- ⑦ Takuma System Control Co., Ltd.**
Design of electrical instrumentation equipment, including environmental equipment plants and energy plants
Takuma Bldg., 2-2-23 Kinrakuji-cho, Amagasaki, Hyogo 660-0806, Japan
TEL +81-6-6487-4830 FAX +81-6-6487-4839
<http://www.takuma-sc.co.jp/>
- ⑧ Dan-Takuma Technologies Inc.**
Manufacture and sale of clean equipment, cleaning equipment, chemical filters, clean rooms, drying equipment and thermal chambers
3-12-16 Iwadokita, Komae, Tokyo 201-0004, Japan
TEL +81-3-3488-1111 FAX +81-3-3488-1118
<http://www.dan-net.com/>



Overseas group companies

- ⑨ Kyoritsu Setsubi Co., Ltd.**
Design, construction and superintendence of Energy from Waste plants, mechanical equipment of sewage treatment facilities, boiler plants for general industries
5-1-38 Yurigahara, Kita-ku, Sapporo 002-8081, Japan
TEL +81-11-770-2811 FAX +81-11-770-2822
<http://www.k-soltech.co.jp/>
- ⑩ Kankyo Sol-Tech Co., Ltd.**
Analyzing and measurement for environmental related issues, including water quality, exhaust gas and soil pollution
1-2-1 Shinhama, Arai-cho, Takasago, Hyogo 676-8540, Japan
TEL +81-79-443-6508 FAX +81-79-443-6510
<http://www.k-soltech.co.jp/>
- ⑪ Campo Recycle Plaza Co., Ltd.**
General and industrial waste treatment service
1 Takayanishitani, Sonobe-cho, Nantan, Kyoto 622-0032, Japan
TEL +81-771-68-3636 FAX +81-771-68-3639
<http://www.c-rp.co.jp/>
- ⑫ Nagaizumi High Trust Co., Ltd.**
Facility upgrading, operation and maintenance for general waste final disposal sites
374-12 Higashino, Nagaizumi-cho, Suntou-gun, Shizuoka 411-0931, Japan
TEL +81-55-989-2268 FAX +81-55-987-9935
<http://www.nagaizumi-ht.jp/>
- ⑬ Fujisawa High Trust Co., Ltd.**
Operation and maintenance management of general waste treatment facilities
2168 Ishikawa, Fujisawa, Kanagawa 252-0815, Japan
TEL +81-466-45-5411 FAX +81-466-45-5454
- ⑭ Iwate-Kenpoku Clean Co., Ltd.**
Industrial and general waste treatment service
48-34, Dai 20 Chiwari, Esashika, Kunohe-mura, Kunohe-gun, Iwate 028-6505, Japan
TEL +81-195-42-4085 FAX +81-195-42-4550
<http://www.iwate2cln.co.jp/index.html>
- ⑮ Energy Mate Co., Ltd.**
Sale of cogeneration systems and systems for the generation equipment of the same and total service for onsite energy systems for consumer use
Honmachi Bldg., 2-2-7 Honmachi, Chuo-ku, Osaka 541-0053, Japan
TEL +81-6-6125-2001 FAX +81-6-6125-2002
<http://www.energy-mate.co.jp/>
- ⑯ Takuma Plant Service Co., Ltd.**
Maintenance of a wide variety of boilers and environmental facilities
2-2-27 Kinrakuji-cho, Amagasaki, Hyogo 660-0806, Japan
TEL +81-6-6488-8434 FAX +81-6-6488-0300
<http://www.takuma-ps.com/index.html>
- ⑰ Biopower Katsuta Co., Ltd.**
Electric power selling using biomass energy from wood fuel chips
1974-1 Koya, Hitachinaka, Ibaraki 312-0002, Japan
TEL +81-29-270-3341 FAX +81-29-270-3343
- ⑱ Tochigi High Trust Co., Ltd.**
Industrial waste treatment service
18-3 Kinugaoka, Moka, Tochigi 321-4367, Japan
TEL +81-285-83-3966 FAX +81-285-83-6500
<http://www.t-hitrust.co.jp/>
- ⑲ Katsuta Co., Ltd.**
Industrial and general waste treatment service
1968-2 Koya, Hitachinaka, Ibaraki 312-0002, Japan
TEL +81-29-270-3711 FAX +81-29-270-3712
<http://www.eco-katsuta.com/>
- ⑳ R.B.N. Co., Ltd.**
General waste, including waste home appliances and office automation equipment, and industrial waste treatment service
3059-20 Nakajima, Shikama-ku, Himeji, Hyogo 672-8035, Japan
TEL +81-79-243-1200 FAX +81-79-243-1202
- ㉑ Ichihara New Energy Co., Ltd.**
Industrial waste treatment service
733 Mandano, Ichihara, Chiba 290-0549, Japan
TEL +81-436-50-8300 FAX +81-436-50-8400
- ㉒ Ecos Yonezawa Co., Ltd.**
Final disposal of industrial wastes
7028-1 Yanazawa, Yonezawa, Yamagata 992-0077, Japan
TEL +81-238-39-4050 FAX +81-238-39-4051
<http://www.ecos-y.co.jp/>

Overseas group companies

- ① KAB Takuma GmbH (Germany)**
Möllendorffstraße 52 D-10367 Berlin, Germany
TEL +49-30-5465-0 FAX +49-30-5465-2113
<http://www.kab-takuma.com/>
- ② Bioener Aps (Denmark)**
Banemarksvej 50 C.2. DK-2605 Brøndby, Denmark
TEL +45-2528-6345 FAX +45-4375-7272
- ③ Taiden Environtech Co., Ltd. (Taiwan)**
Design, installation and superintendence of waste treatment facilities and a wide variety of industrial machinery and equipment
7F., No. 16, Lane 35, Jihu Rd., Neihs District, Taipei 114-92, Taiwan
TEL +886-2-2659-7137 FAX +886-2-2656-0584
- ④ SIAM TAKUMA Co., Ltd. (Thailand)**
Sale of energy and environmental related plants, parts sale for plants of the same and after-sales service
18th Floor, Sinn Sathorn Tower, 77/69 Krungdhonburi Rd., Klongtonsai, Klongsarn, Bangkok 10600, Thailand
TEL +66-2-4385616 FAX +66-2-4400114

CSR Report 2012

| Deployment of Businesses |
|--|
| Topics |
| CSR Activities for the Future |
| Corporate Governance |
| Human Rights and Labor Practices |
| The Environment |
| Fair Business Practices |
| Consumer Issues |
| Participation in the Community / Activities That Contribute to Society |
| Outside Expert Opinion |

1 Efforts for DBO Projects

Targeting safe, stable and reliable DBO (Design, Build, Operate) business

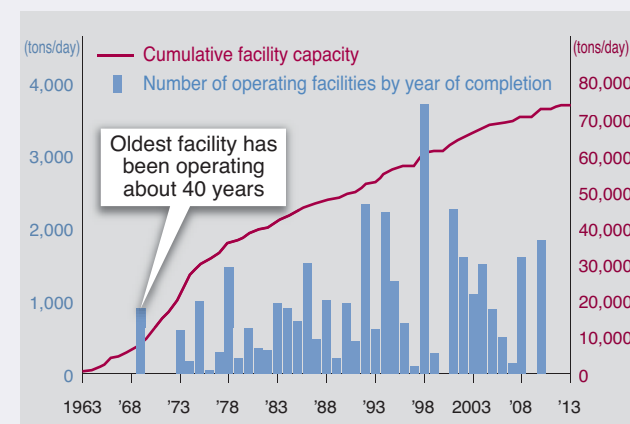
Building achievements

Takuma boasts the No. 1 track record in Japan in general waste treatment facilities (more than 340 orders received) and is engaged in the maintenance and management of facilities that have been in operation for more than 20 years now. Through this, we have accumulated an abundance of knowledge in regard to general waste treatment facilities.

The Takuma Group has delivered and operated many facilities on consignment based upon our DBO approach.



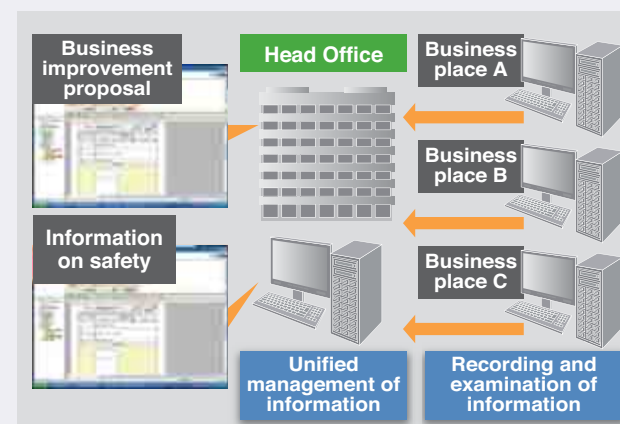
We apply our abundant experience and know-how in constructing and operating “safe, stable, and reliable” facilities, and thus offer local residents and the local environment safety and peace of mind.



Takuma's history in constructing general waste treatment facilities

Operating achievements

Our extensive know-how on general waste treatment management has been accrued through experience in operating more than 60 facilities, and we have a large number of engineers well versed in plant operation.

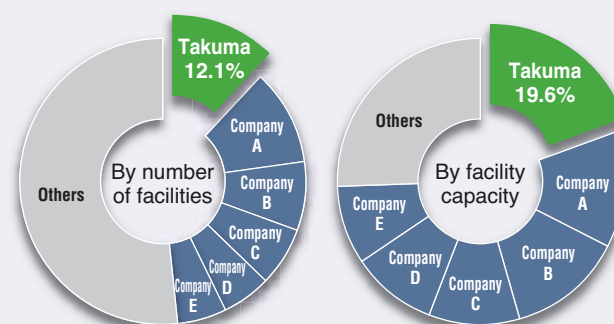


Technical information network

Takuma endeavors to raise daily operation and management work standards by utilizing a technological information network that connects our operation sites at 60 facilities around Japan.

Operation Support Center

We have constructed a comprehensive operation support system that remotely monitors the operating conditions of facilities via the Internet.



Our share of general waste treatment facilities

Management policy for project operation

Placing the highest priority on safe operation of facilities, we operate projects in cooperation with operation management companies.

Uniting operation with our Company Motto “Value **Technology**, Value **People**, Value **the Earth**”



Technology Build and operate safe, stable, reliable facilities

- We build **safe, reliable facilities** based on the optimal technology supported by experience.
- We **operate safe, stable, reliable facilities** based on our extensive experience and results.

People Build and operate facilities appreciated by residents

- Each employee should recognize that acceptance by local communities is crucial for public projects/public facilities and actively participate in activities that contribute to improving environmental awareness in the community, thereby creating facilities that value **connections with local communities** and **working together with them**.
- We promote information disclosure up to the level that fits the public nature of this project, and realize a **high level of transparency in project operations**.
- To ensure that each employee understands the importance of fulfilling this Management Policy, we encourage our employees to acquire up-to-date knowledge and technologies through educational trainings and self-enlightenment programs.

The Earth Build and operate facilities considerate of the environment

- We actively participate in activities that contribute to **preserving and improving the surrounding environment**.
- We strive for **environmental preservation** through the realization of a low-carbon society and a reduction in the environmental load.
- We continually aim at constructing waste treatment systems that can **contribute to the formation of a recycling-oriented society**.
- We play the role as a center for environmental information transmission, with the aim of helping raise the environmental awareness of local communities and realize a recycling-oriented society.

2 Measures for Improving Core Businesses

Aiming at general waste treatment facilities that contribute to the formation of a recycling-oriented society

Today, more than half of the general waste treatment facilities in Japan have been in operation for more than 20 years. The importance of countermeasures to aging that aim at extending service life by preserving function and maintaining quality is increasing every year. In the government's "Basic Plan to Promote Formation of a Recycling-Oriented Society", they have changed the direction of their policy for general waste treatment facilities from "improve public health and resolve pollution problems" towards placing more weight on the "formation of a recycling-oriented society". Starting from fiscal 2010, they have added a new menu item to their "Subsidies to promote formation of a recycling-oriented society" program: "Support upgrades to primary equipment that contributes to extending the service life of general waste treatment facilities and to the fight against global warming".

Under such global circumstances, a change to measures that target extending the service life of waste treatment facilities is being called for. From what used to be only the preservation of function and the maintenance of quality, the need is now shifting toward the consideration of energy conservation activities that contribute to global warming countermeasures and promote the effective use of the energy that is generated during the incineration of waste.

With a track record of delivering more than 340 facilities, Takuma is able to propose and implement high-precision measures to extend service life based on the maintenance information data we have obtained from those units. By also incorporating energy conservation measures and the technology on heat use that we have cultivated over many years as a boiler and environmental plant manufacturer to the actions taken to extend service life, we are assisting in the spread of general waste treatment facilities that contribute to the formation of a recycling-oriented society.

● Measures (functional preservation and quality maintenance) to extend service life that utilized our plant information database

Effective measures to extend service life (preserving of function and maintaining quality) can be said to include predicting the rate of deterioration of equipment and devices, planning the range of and time for repair, etc., in advance, and aiming at extending service life before equipment performance falls below the pre-established control level.

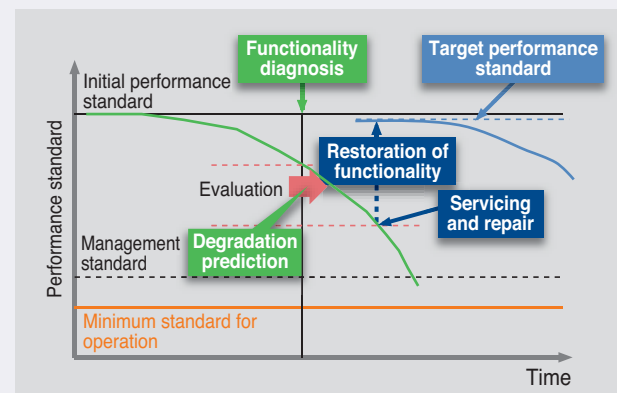
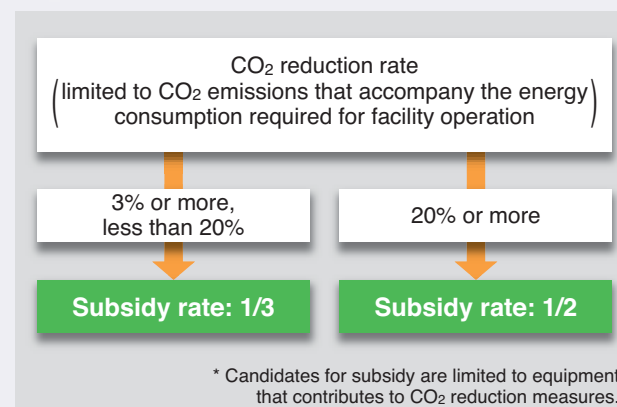


Diagram of functional diagnosis and measures to extend service life

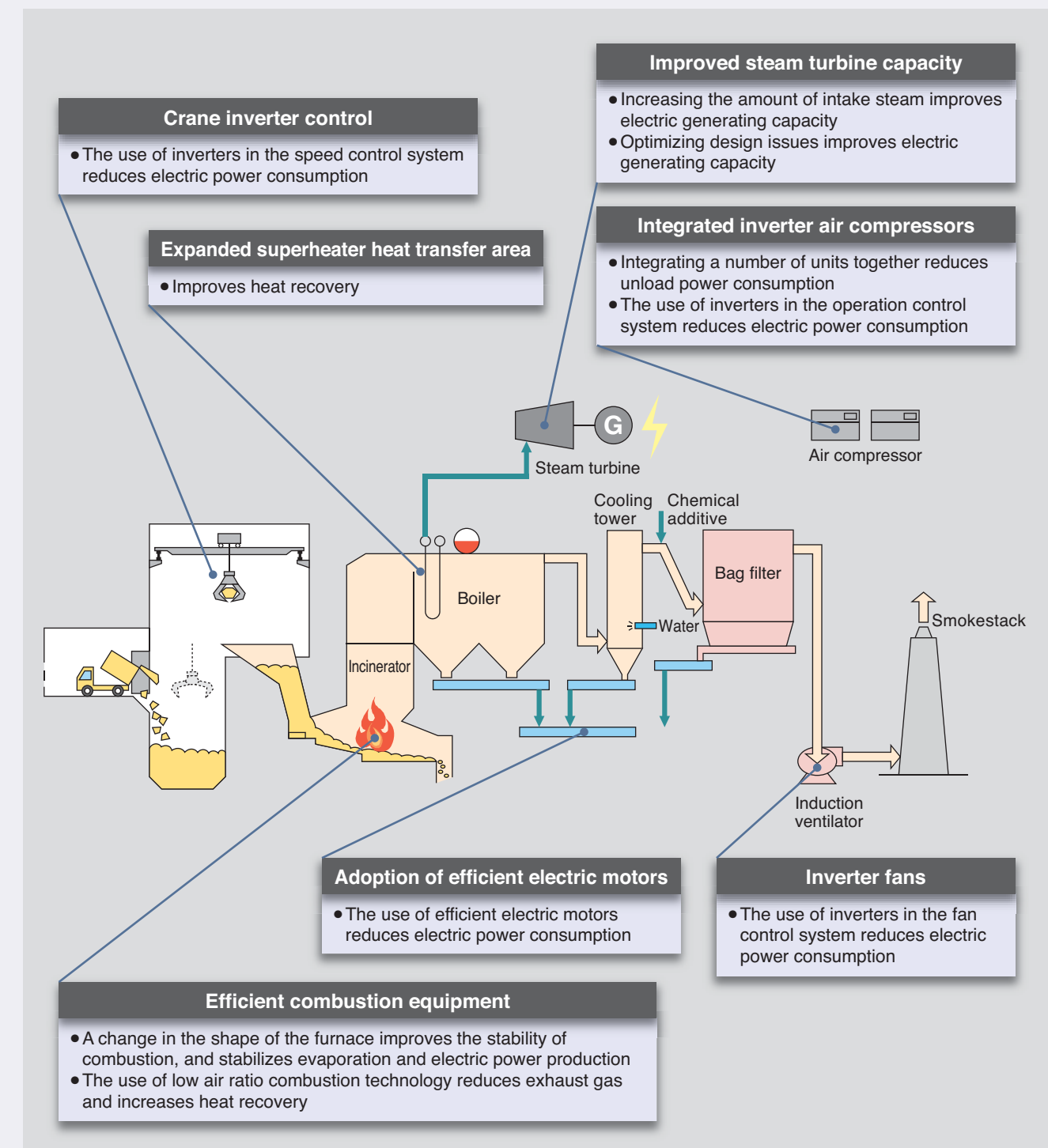
● Subsidies to promote formation of a recycling-oriented society

"Support upgrades to primary equipment that contributes to extending the service life of general waste treatment facilities and to the fight against global warming" is as item that was added in fiscal 2010 to the government's "Subsidies to promote formation of a recycling-oriented society" program. That item involves appropriating subsidies according to the effect of measures to extend service life that can reduce the CO₂ emissions of the energy source discharged during operation of a general waste treatment facility. When CO₂ reduction rates are above 3% but less than 20%, a subsidy rate of 1/3 is adopted and, when the reduction rate is 20% or more, that subsidy rate climbs to 1/2.



● Measures to extend service life that contribute to forming a recycling-oriented society

Takuma carries out detailed investigation on the operation status of all facilities targeted in our proposals on extending service life. We then adopt the energy conservation and heat use technology that is most suitable for that facility and offer customers ways to mitigate the financial burden through subsidies to promote formation of a recycling-oriented society and towards the positive formation of a recycling-oriented society (reduction of CO₂ emissions and prevention of global warming).



3 Activities of Our Maintenance Business

Aiming at a maintenance organization that satisfies customers

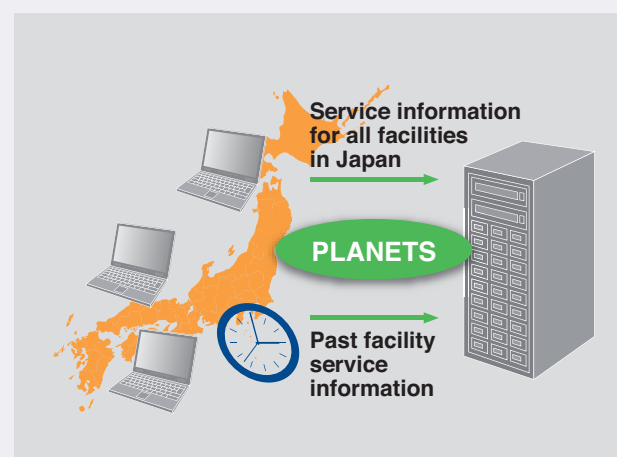
Along with holding one of the top shares in delivery of general waste treatment facilities, Takuma continues to observe environmental preservation even after delivery in cooperation with each of the local governments who are our customer. Aiming at safe, stable and reliable operation of those facilities, and based on our 40 some odd years of accumulated experience and technical know-how, we inspect, maintain, repair and overhaul each piece of equipment in order to preserve its function, and strive to communicate daily with customers and delivery an ever higher quality of maintenance so that the service life of each facility can be extended as long as possible.

We currently have about 140 plants under operation, with operation and management of 60 of those carried out by Takuma Technos, one of our group companies. They are also increasing their O&M business, which unites “operation” and “maintenance”, in order to ensure even greater customer satisfaction.

● The importance of maintenance

■ Maintenance plans

Takuma has dedicated offices for our maintenance business situated throughout Japan. We utilize the know-how compiled in our proprietary plant maintenance information database (PLANETS) in integrating management of each facility's maintenance repair history, and we provide overall development solutions up to the drafting and implementation of maintenance plans on a nationwide scale.



Our plant maintenance information database

■ Preventive maintenance on plant equipment

With our “facility maintenance and diagnostic system”, which predicts the rate of deterioration of each equipment in a plant, we are able to performing maintenance and repairs even before that deterioration advances and thus aim at both extending that facility's service life as well as ensure its safe and stable operation.

■ Safe and stable facilities

Aiming at further improving the safety and stability at the facilities we deliver, Takuma proposes and implements the optimum and most efficient maintenance with customer satisfaction as our top priority.



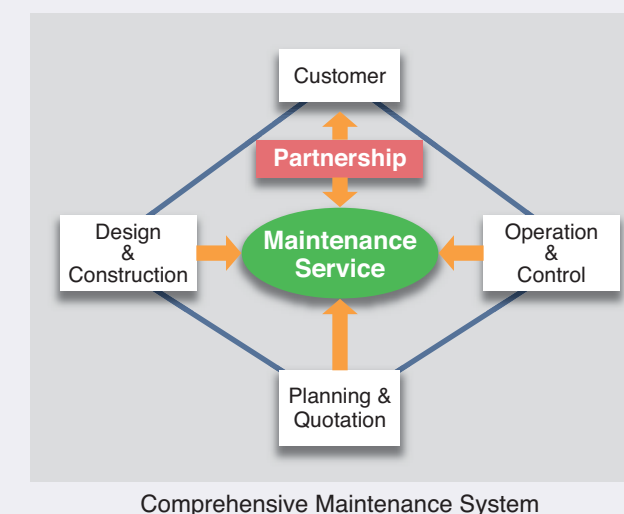
In-furnace fire-resistance repair work

● Continuity in maintenance management

Many waste treatment facilities have been in operation for 20 to 40 years now and the age of their equipment is advancing each and every day. While further extending the service life of such public facilities is something being focused on, the investment required to merely continue their stable operation becomes an additional maintenance cost that is imperative in order to meet customer needs for labor-saving and rationalization. At Takuma, we are improving the value of our maintenance service by constructing new maintenance and management technologies and promoting business that provides greater continuity.

■ Technical support

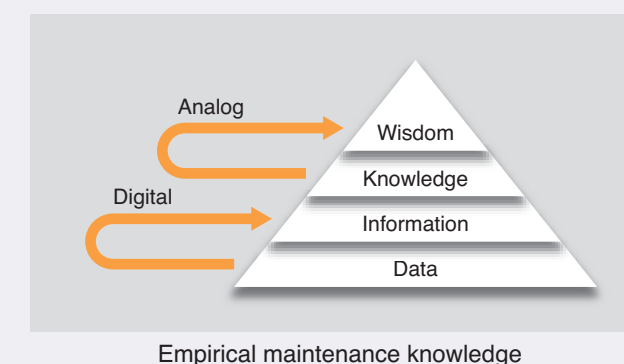
In order to provide our customers with the optimal solution to the continually more complex and diverse needs of managing waste treatment facilities, we are enriching our technical support and implementing an even deeper approach to each category of our comprehensive maintenance service: “Planning & Quotation”, “Design & Construction” and “Operation & Control”.



Comprehensive Maintenance System

■ Construction new maintenance and management technologies

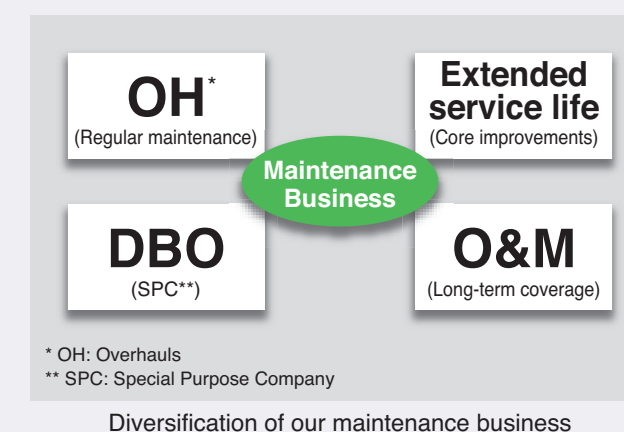
Although the data that is acquired during maintenance can be comprehensively arranged as digital information, any actual on-site information that is not entered into the system becomes an element of empirical knowledge peculiar to that site, and remains analog information. So that we can offer the appropriate solution to each customer's needs, Takuma has built an organization in which such knowledge develops into wisdom and supports the perpetuation of that technology even in domains that are unable to respond under the current system.



Empirical maintenance knowledge

■ A growing maintenance business

In recent years, the maintenance industry has been witnessing a diversification of businesses in accordance with customer needs. In response to such business deployment, Takuma and all our group companies are united in our efforts at becoming an organization that can better satisfy our customers as we improve and progress in our day-to-day business.



* OH: Overhauls

** SPC: Special Purpose Company

Diversification of our maintenance business

4 Activities of Our Water Treatment Business

Aiming at preserving our precious water environments

● Preservation of our water environments

Water is indispensable to life on Earth. Although, compared with other countries, Japan is relatively blessed with water, we too have to use our limited water resources carefully. It is necessary for us to purify the water that becomes polluted in our daily life and to return it to Nature, and purification technology that not only delivers high performance but also at low cost and with excellent efficiency and energy savings is highly sought after.

On the basis of “preserving our water environments”, and “reducing greenhouse gases”, Takuma is developing our water treatment business so that we may contribute to the conversion to a recycling-oriented society and the construction of a low-carbon society.

Wastewater contains various “contaminants”. In order to purify, reuse and/or discharge wastewater into the environment, it is necessary to decompose and remove those contaminants. In addition, the kinds of contaminants found in wastewater have changed in recent years, with difficult-to-decompose substances like agricultural chemicals and organic solvents, and nutritive salts (nitrogen, phosphorous) that lead to algae bloom and red tide, etc., posing a serious problem. The needs from water treatment technology are thus also changing every day. Following are some typical Takuma water environment technologies.

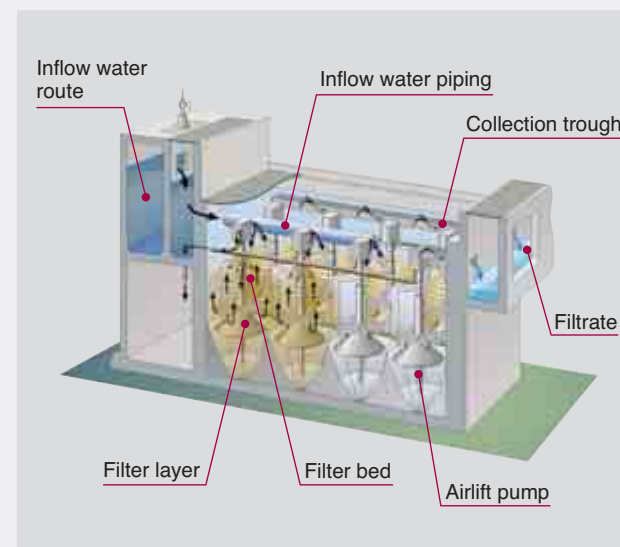
■ Contaminant removal

● Upflow moving-bed sand filters (equipment)

These sand filters efficiently remove the impurities (SS particles) in water.

The “high-speed sand filters” that have been introduced in recent years serve to further accelerate the conventional filtration rate. By increasing the filtration rate, equipment installation space can be reduced, and, since the amount of electricity used also decreases, it is also possible to cut the emission of greenhouse gases.

A function to remove the nitrogen and phosphorous that lead to eutrophication can also be added to this sand separator.



Outline of upflow moving-bed sand filters

● Membrane separation technology

Although membranes come in various pore sizes, all of them separate microscopic particles of several microns or less. Takuma has adopted this membrane separation technology for recycling water in its waste incineration plants, etc.

● Advanced oxidation process

The sources of color and COD fractions (an index that indicates contaminants and organic matter content) in wastewater are often substances that are hard to break down using standard biological processes. With advanced oxidation process, those sources of color and COD fractions can be decomposed and removed through the effect of powerful oxidants like ozone and HO radicals.

■ Removal of nutritive salts:

A measure against eutrophication

In closed water environments like lakes and enclosed bays, measures targeting the removal of nitrogen and phosphorous, causative agents of eutrophication, are called for. Takuma sand separators not only remove contaminants but the function to remove nitrogen and phosphorous can also be added.

The so-called “anammox process” is one of the newest nitrogen removal technologies available. This process efficiently removes nitrogen efficiently through the action of denitrifying bacteria (anammox bacteria), and we are presently recommending its use.



Anammox bacteria applied to a carrier

● Reduction of greenhouse gases

■ Sludge incineration

Waste (= sludge) is generated during the water treatment process and Takuma offers a sludge incineration solution that efficiently incorporates a core thermal field technology.

Sludge incinerators include a circulating fluidized-bed incinerator that processes sludge most efficiently and a step grate stoker furnace that adds a heat recovery function to the sludge treatment. The high combustion temperatures used in the step grate stoker furnace mean there is very little emission of N₂O with its high greenhouse effect, thus contributing to the prevention of global warming.



Installed sewage sludge incineration plant

■ Energy-saving equipment

Purification technology that saves energy and requires less power has been sought after in recent years, and, to that end, Takuma offers a variety of energy-saving equipment.

Our low power type agitator is a simple mixer installed in bioreactors, and it agitates the whole tank using just a small amount of power.

Our rotating-drum type thickener is a compact mechanical unit with low power requirements that can condense raw sludge efficiently and is easy to maintain.



Installed rotating-drum thickener



Low power agitator

Takuma has also delivered plants that turn the sludge from sewage disposal plants into energy.

In this way, we provide a range of treatment technologies and plant engineering in our endeavor to be of benefit towards the goal of conserving our natural environment.

5 Activities of Our Energy Business

Strengthening our ability to respond to a variety of biomass fuels

● The technology and experience to respond to a variety of biomass fuels

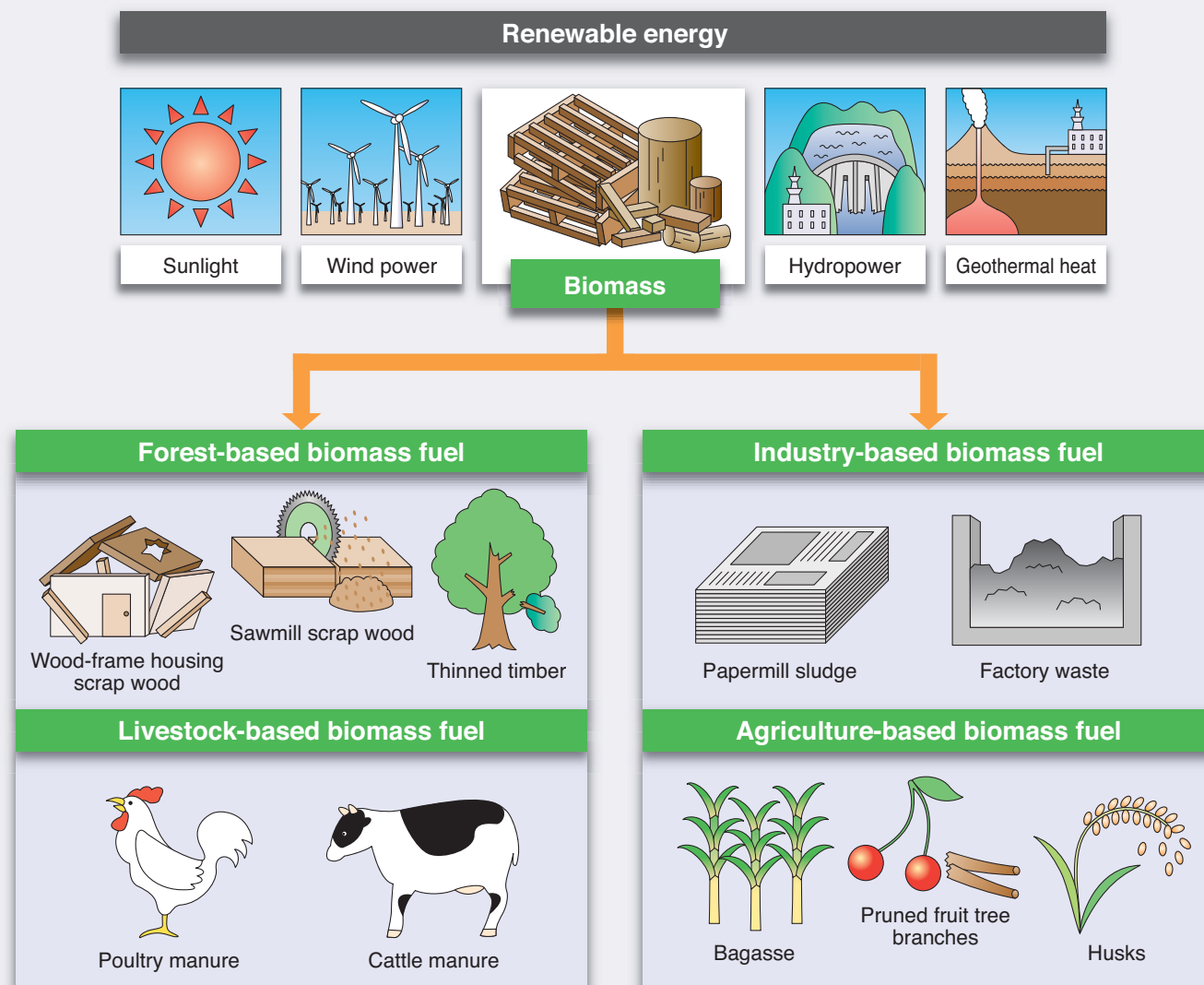
Since our foundation, Takuma has possessed the combustion technology for dealing with a variety of biomass fuels and, through constant improvement and refinement, we have achieved top class results both inside and outside Japan.

While continuing to answer our customers' needs, we will aggressively tackle the development of energy-use technologies that value the Earth and value people.

Social circumstances

At the United Nations Summit on Climate Change in 2009, Japan clarified its medium term goal of reducing greenhouse gas by 2020 to 25% of 1990 levels. As energy that contributes to the battle against global warming, great hope is held for such renewable energy as sunlight, wind power, biomass, hydropower, and geothermal energy, since they result in minimal emission of carbon dioxide. In addition, the importance of renewable energy is increasing yet further due to the Japanese Cabinet's decision on the New Growth Strategy in 2010.

Under such social circumstances, Japan is advancing an expansion in the introduction of renewable energy through the fixed-price purchasing system that went into effect in July of 2012, which makes it mandatory for all electric power generated through renewable energy to be purchased by electric power companies for a fixed period and at a fixed price.

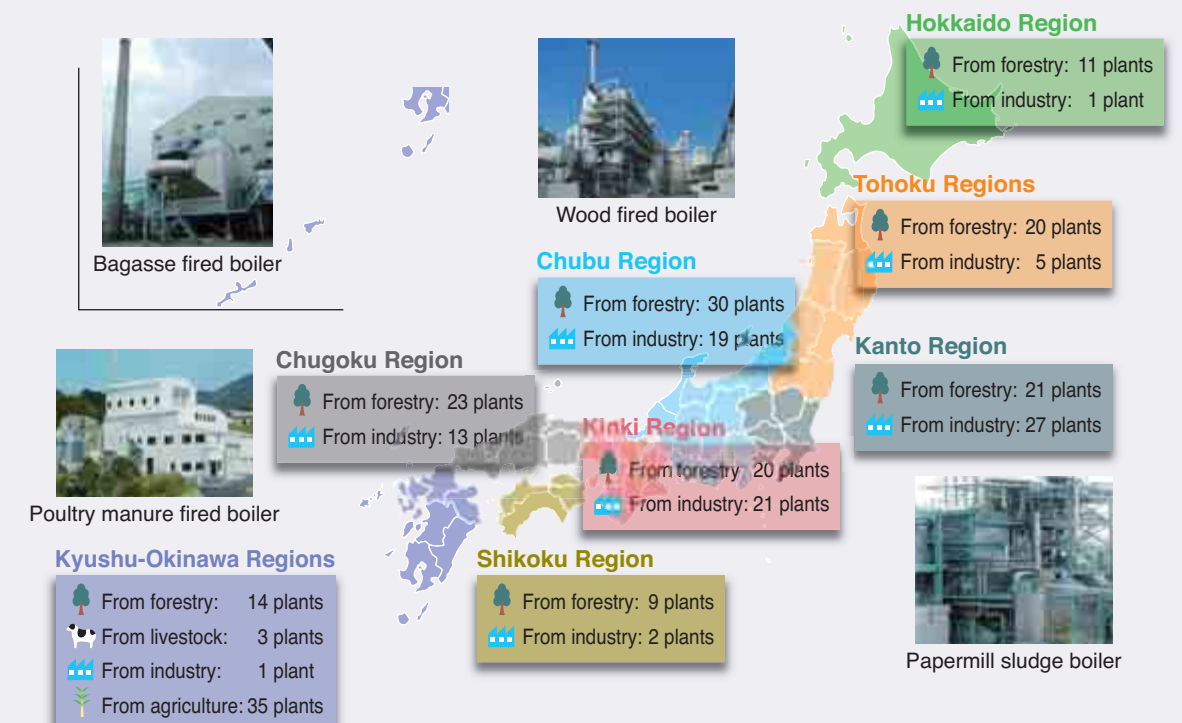


● Installed biomass fuel equipment by region

Equipment utilizing the biomass fuel that Takuma works with is located throughout Japan.

Since forest-based biomass fuel from thinned timber, sawmill scrap wood, etc., and industry-based biomass fuel from the waste and sludge, etc., generated at factories are generated nationwide, Takuma supplies a broad range of equipment for use with these fuels.

To-date, we have also supplied facilities that use livestock-based biomass fuel like poultry and cattle manure, etc., and agriculture-based biomass fuel like bagasse (sugarcane lees), etc., to the areas of Kyushu and Okinawa.



● Wood-based biomass fuel-fired power-generation boiler equipment

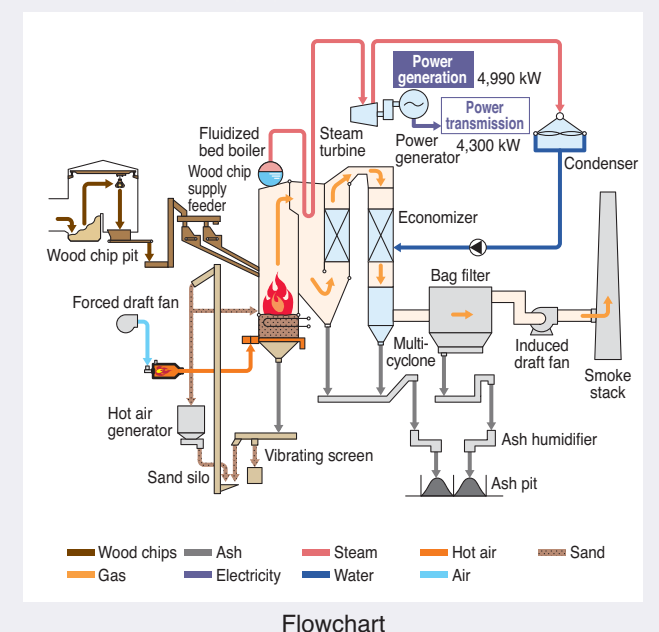
With Japan's new fixed-price purchasing system for renewal energy, there is a greater hope than ever before for biomass power generation.

At Takuma, we are taking the initiative in this field and have not only introduced many biomass power-generation equipment, but are also establishing numerous business entities, procuring locally-generated biomass fuel, and operating, maintaining and managing our biomass power-generation equipment.

Introducing one of our business companies

A Takuma business company, Biopower Katsuta Co., Ltd., is biomass power-generation plant with its place of business established in Hitachinaka City, Ibaraki Prefecture.

The biomass fuel utilized in their facility is forest-based wood fuel generated from that area, and, except for the power required to operate the plant, all of the electricity the power-generation equipment produces is sold outside the plant.



6 Our Involvements in Southeast Asia

Towards establishing low-carbon societies in Southeast Asia

Biomass grows through the blessings of the sun. The practical use of the energy produced from biomass is attracting attention for its great ability to contribute to a reduction in CO₂, which is considered the cause of global warming. Southeast Asia is blessed with an abundance of biomass resources, and its practical use is also highly anticipated as an alternative energy to fossil fuel.

Founded as a manufacturing and distributor of proprietary developed boilers in 1938, from early on Takuma has been involved in the development, manufacture, and supply of boilers that utilize not only fossil fuels such as oil, coal, and natural gas, but can also use factory-oriented waste (bagasse) from sugarcane. We have also delivered biomass power-generation plants that use various types of residue from agriculture and forestry processes as fuel. In addition to bagasse, biomass fuels include wood chips, coconut waste, rice husks and corn cores, etc.

The flourishing economic growth of Southeast Asia is giving traction to the world economy of today. This is supported in part by their high rate of practical use of renewable energy. In these regions, the demand from power-selling electrical generation plants using abundantly available biomass resources is increasingly expanding, and the market is calling for the supply of environmentally-friendly, highly efficient, high quality, and highly reliable plants on a competitive price level.

Takuma looks at things from the users' perspective in order to truly grasp customer needs and market demand. By then uniting that information with the technology we have amassed, we aim at the realization of a competitive product structure.



Rubber Wood Fired Plant with 23MW Power Generation (Thailand)



Wood chip yard



Rubber tree wood



Biomass (bagasse) power plant



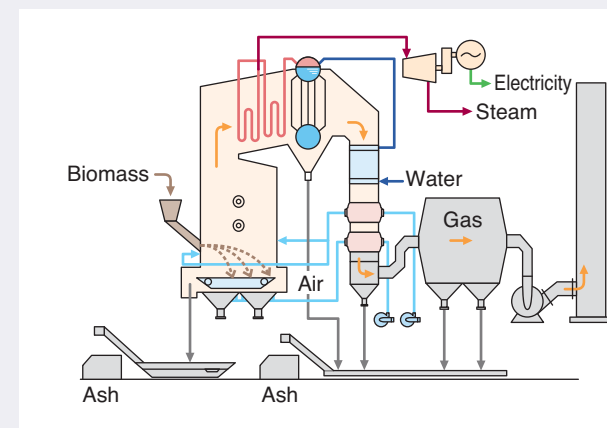
Transporting sugarcane



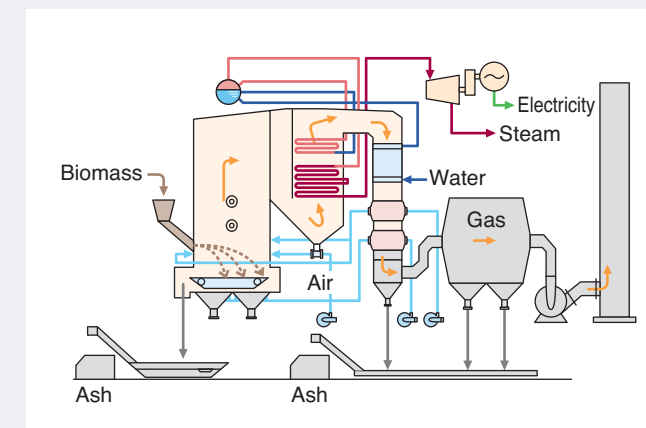
Bagasse yard

In the sugar manufacturing market of Thailand, the jump in the price of sugar has resulted in the serious consideration of plans to install bagasse combustion boilers in line with factory expansion. Due to the rapid actualization of a market demand that has gradually changed over the past several years, bagasse combustion boilers are being transformed from the conventional need for industrial use, in-factory application specification of comparatively low-pressure large capacity use (steam generation: 200 to 300 ton/hr, pressure 2.0 to 3.0 MPaG, steam temperature: 300 to 400°C) to the adoption of more compact, efficient boilers (steam generation: 120 to 170 ton/hr, pressure: 4.0 to 11.0 MPaG, steam temperature: 450 to 520°C). This is because the trend in the products called for in the marketplace has moved towards plants in the energy supply business that sell off any surplus electric power, over and above that which the sugar factories use, to power utilities.

In addition to manufacturers in Europe, Australia, and locally in Southeast Asia, competitive manufacturers from India and China are quickly gaining ground. In this market, which is becoming more and more competitive year-by-year, Takuma is working in close cooperation with Siam Takuma, our company in Bangkok. On the foundation of our extensive results in planning, design, manufacture, construction and operation that is supported by years of experience, together with our overall accumulated know-how, we are supplying updated state-of-the-art, compact, high efficiency, high reliability, renewable energy plants to a wide range of countries in Southeast Asia, centering on Thailand. By delivering simple, rational and reliable biomass power-generation plants that truly satisfy the demands of the market, we are enabling the coexistence of global environment preservation and effective energy utilization, and thus contributing to further economic development.



Medium temperature/medium pressure biomass boiler



High temperature/high pressure biomass boiler

Contributing to the Recovery and Revival from the Great East Japan Earthquake

① Installation and operation of temporary incinerators

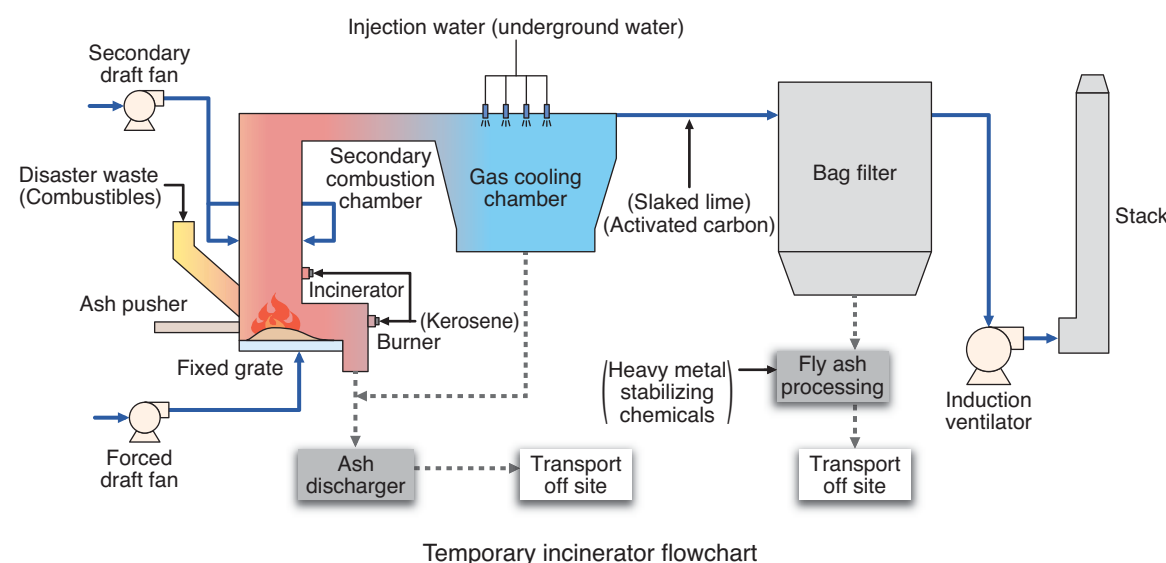
From plant design and construction to dismantling and demolition after the end of operation, Takuma will have been involved in all phases of the temporary incinerators that were installed in Iwate Prefecture (Miyako district) and Miyagi Prefecture (Iwanuma processing district) in order to process the disaster waste that was generated by the Great East Japan Earthquake.

In the unit installed in the Miyako district (shown in the photo above), incineration of a little more than 58,000 tons of combustibles generated throughout that area, such as wood and plastic, is due to be completed by March 2014.

Along with utilizing the strengths of the Takuma Group as a whole, we are maximizing our track record and knowledge in waste treatment towards implementing the most appropriate processing of disaster waste and contributing to the earliest possible restoration and recovery of each stricken area.

Project outline

| | |
|----------------------|--|
| 1. Name | Lease of temporary incinerator in the Miyako district |
| 2. Location | Miyako District Integrated Administrative Region Association (inside the Miyako Cleaning Center grounds) |
| 3. Duration of Lease | March 1, 2012 to March 31, 2014 |
| 4. Plant Outline | ① Material processed Disaster waste (waste wood, inflammable bulk waste, waste plastic, <i>tatami</i> mats, etc.) ② Capacity 95 tons per 24 hrs (47.5 tons per 24 hrs × 2 furnaces) ③ Furnace type Fixed bed stoker |



Disaster waste

Report for 2012

Order received in fiscal 2012 for construction of a temporary incinerator (Shinchi-machi, Soma City) to handle government-approved processing of the disaster waste resulting from the Great East Japan Earthquake

This project was for the installation of a temporary incinerator in Soma City (Fukushima Pref.) in order to incinerate the disaster waste generated by the Great East Japan Earthquake, with Takuma implementing the design, construction and management of the plant during the present fiscal year.

| | |
|--------------------|---|
| Time to completion | May 7, 2012 to March 31, 2013 |
| Equipment outline | ① Material processed Disaster waste (crushed and sorted combustibles) ② Authorized capacity Nominal capacity, step grate stoker: 300 tons per 24 hrs (150 tons per 24 hrs × 2 furnace) Rotary grate stoker: 270 tons per 24 hrs (270 tons per 24 hrs × 1 furnace) |

② Handling disaster waste: Biopower Katsuta

A Takuma Group company, Biopower Katsuta Co., Ltd. (hereinafter referred to as "BPK") is welcoming its 8th year in operation. Though affected by the Great East Japan Earthquake last year, they escaped actual breakage of the boiler itself and of their primary equipment. However, they did experience a cave-in to part of the factory site, the breakage of flue ducts and piping, etc., and they were obliged to the shut down operation for about two weeks.

The majority of the biomass fuel used at this plant is normally received from wood chip recycling facilities, and they also turn construction-based scrap wood that is unsuitable as recycled material, etc., into wood chips for use as power generation fuel. After the earthquake, however, they began mainly to receive residential scrap wood, etc., from the stricken shoreline in Ibaraki Prefecture.

BPK is contributing in this way to the early restoration and revival from the earthquake devastation through processing of the disaster waste and through biomass power generation.



Company name: Biopower Katsuta Co., Ltd.

| | |
|---------------------|--|
| Type of facility | Wood-based biomass power generation plant |
| Steam capacity | 25.5 t/hr (6.08 MPa) |
| Facility capacity | 4,990 kW at power generation ends (at power transmission end: max. of 4,300 kW) |
| Fuel | Wood-based biomass 150 t/day |
| Operation commenced | July 2005 |

Main Installations

The following are the main facilities supplied by Takuma during fiscal 2011.

General waste treatment plants

Kanazawa Seibu Environmental Energy Center



| | |
|--------------|---|
| Project name | Construction of Kanazawa Seibu Environmental Energy Center |
| Capacity | Facility: 340 t/day (170 t/day × 2 furnaces)/day, Power generation capacity: 7,000 kW |
| Location | Ishikawa Prefecture |

Hamamatsu City Nanbu Waste Incineration Plant



| | |
|--------------|---|
| Project name | Repair of Hamamatsu City Nanbu Waste Incineration Plant |
| Capacity | Facility: 450 t/day (150 t/day × 3 furnaces)/day, Power generation capacity: 2,800 kW |
| Location | Shizuoka Prefecture |

Energy plants

Rengo Co., Ltd. Tonegawa Converting Plant



| | |
|---------------------|---|
| Project name | Installation of biomass incineration system |
| Type of fuel used | Paper manufacturing waste |
| Processing capacity | 117 t/day |
| Steam conditions | 8.6 t/hr × 0.98 MPaG × 183°C |
| Location | Ibaraki Prefecture |

Kumeshima Sugar Co., Ltd.



| | |
|---------------------------|--|
| Project name | Construction of full boiler facilities |
| Type of fuel used | Bagasse |
| Steam conditions | 25 t/hr × 1.9 MPaG × 355°C |
| Power generation capacity | 1,100 kW |
| Location | Okinawa Prefecture |

Water treatment plants

Yahagigawa Sewage Treatment Plant



| | |
|--------------------------|--|
| Project name | Installation of water treatment facility at Yahagigawa Purification Center (No.19) |
| Equipment capacity | Sand filter basin: M60 × 6 tanks/pond × 2 ponds |
| Water treatment capacity | 20,000 m³/day |
| Location | Aichi Prefecture |

Kuse Sewage Treatment Plant



| | |
|--------------------------|---|
| Project name | Installation of water treatment facility at Maniwa City Kuse Purification Center (No.3) |
| Equipment capacity | Sand filter basin: M50 × 2 tanks/pond × 2 ponds |
| Water treatment capacity | 5,030 m³/day |
| Location | Okayama Prefecture |

Overseas energy plants

Kampangpetch Sugar Co., Ltd.



| | |
|-------------------|------------------------------|
| Project name | N-5700H Bagasse-fired boiler |
| Type of fuel used | Bagasse |
| Steam conditions | 170 t/hr × 2.35 MPaG × 360°C |
| Location | Kampangpetch, Thailand |

Thai Tokai Carbon Product Co., Ltd.



| | |
|---------------------------|---|
| Project name | 6MW Tail gas firing co-generation plant |
| Type of fuel used | Carbon gas |
| Power generation capacity | 6,000 kW |
| Steam conditions | 46.5t/hr × 2 MPaG × 345°C |
| Location | Chonburi, Thailand |

Awards Received from Outside Organizations

① Takuma's "High-efficiency heat-use system using a high-temperature dust collector (ceramic filter)" awarded the "Minister of Economy, Trade and Industry Prize" at the 37th Excellent Environmental Equipment Commendations

Takuma's "High-efficiency heat-use system using a high-temperature dust collector (ceramic filter)" was jointly awarded the Minister of Economy, Trade and Industry Prize along with KYOCERA Corporation at the 37th Excellent Environmental Equipment Commendations sponsored by the Japan Society of Industrial Machinery Manufacturers. As a leader in waste treatment, Takuma is proposing this system for its potential contribution to reducing environmental loads in the future.

● Background of development

At waste incineration plants, such corrosive acidic gases as hydrogen chloride (HCl) and sulfur oxides (SOx) are generated along with the incineration of waste. In order to control corrosion in the boiler's heat recovery equipment, waste incineration plants usually operation by limiting the boiler's steam temperature (superheater tube temperature) to 400°C or less, and its feedwater temperature (economizer tube temperature) to about 140°C. Then, in order to remove those acidic gases as well as dioxins, heat is first recovered from the boiler, the exhaust gas temperature is then lowered to 200°C or below by spraying in water, the dust is collected with a bag filter, and a system is adopted that re-heats the gas in order to control degradation of the downstream NOx removal catalyst. Using this process, power generation efficiency in waste incineration plants has peaked at about 20%.

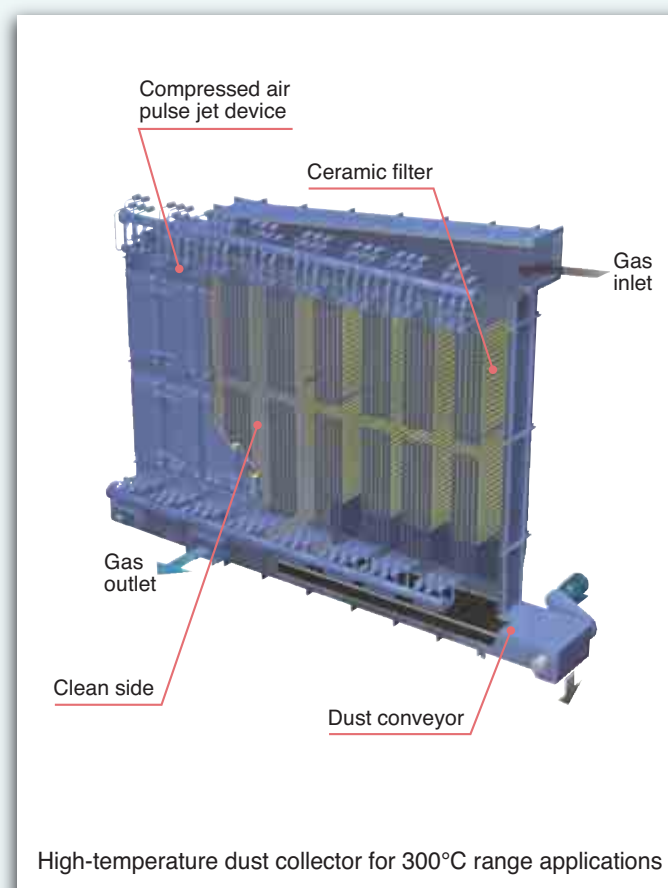
Thus, in order to answer the needs of a low-carbon society and enable the high efficient use of the heat that occurs during waste incineration, Takuma has developed dust collectors in collaboration with KYOCERA Corporation that are applicable in the 250 to 900°C temperature range — not possible with conventional filter-type dust collectors (bag filter). These collectors also excel in heat- and HCl-resistance and deliver a dust removal performance equivalent to the conventional low-temperature bag filter.



Filter element



Cross-sectional SEM photograph



● System features

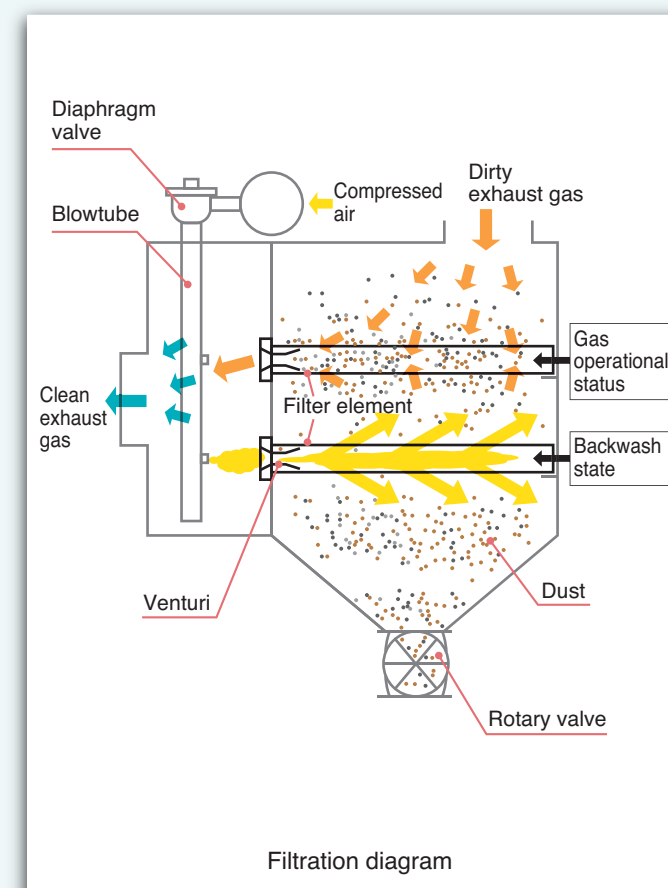
Features of the filter element in this system's high-temperature dust collector include: ① the use of carefully selected cordierite sintering materials that excel in resistance to thermal shock, corrosion, and high temperature as the element material, ② the adoption of a dual-layer structure, composed of a dust collection layer and a support layer, thus enabling the simultaneous achievement of high dust collection performance, high temperature strength, and low ventilation resistance, and ③ durability and the ability for reuse after flushing with water if clogged.

Features of the high-temperature dust collector itself include: ① the adoption of a horizontal attachment and dual-end support structure as a measure against breakage caused by the shock of earthquakes, etc., ② the adoption of the same compressed-air pulsejet system that is used with conventional low-temperature bag filters to remove dust, and ③ the downstream flow of in-equipment gas as well as improvement to the sedimentation of dust.

● Results of development and future deployment

Takuma develops high-temperature dust collectors that can handle the 250 to 900°C temperature range — not possible with conventional bag filters — in order to enable the high efficient use of the heat that occurs during waste incineration. In September of 2005, we completed the first 23,700 m³/hr gas-volume, high-temperature dust collector in a general waste treatment plant (kiln-type, thermal cracking, gasification melting system) for the Kakegawa and Kikugawa Cities Sanitation Control Association. In recognition of those results, our "High-efficiency heat-use system using a high-temperature dust collector (ceramic filter)", developed in collaboration with KYOCERA Corporation, won the Minister of Economy, Trade and Industry Prize in the 37th Excellent Environmental Equipment Commendations sponsored by the Japan Society of Industrial Machinery Manufacturers.

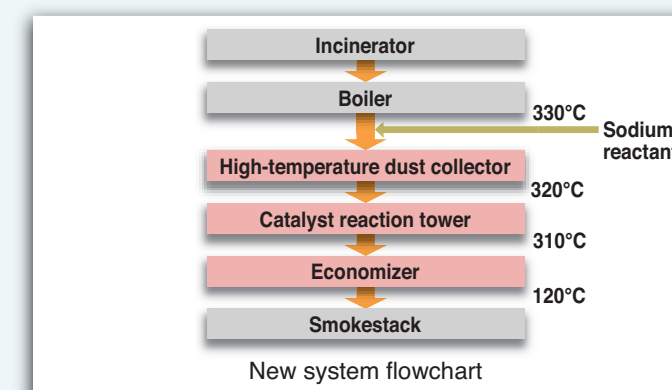
For stoker-type waste treatment plants and energy recovery plants with exhaust gas temperatures in the range of 300 to 400°C, this new system incorporates a high-temperature dust collector to remove acidic gas using a sodium reactant, then adds a catalyzer downstream of that. This can improve power generation efficiency another 4% in comparison with conventional systems, and there are high hopes for this system due to its excellent ability in reducing the environmental load (CO₂ reduction) and in its ease of maintenance and control. Takuma is satisfying the future demands of society through positive proposals of this system.



Filtration diagram



The 37th Excellent Environmental Equipment Commendations
Minister of Economy, Trade and Industry Prize
Japan Society of Industrial Machinery Manufacturers



New system flowchart

② Takuma's "Gasification and Methanol Synthesis from Biomass" wins the 24th Japan Society of Energy and Resources Technology Award

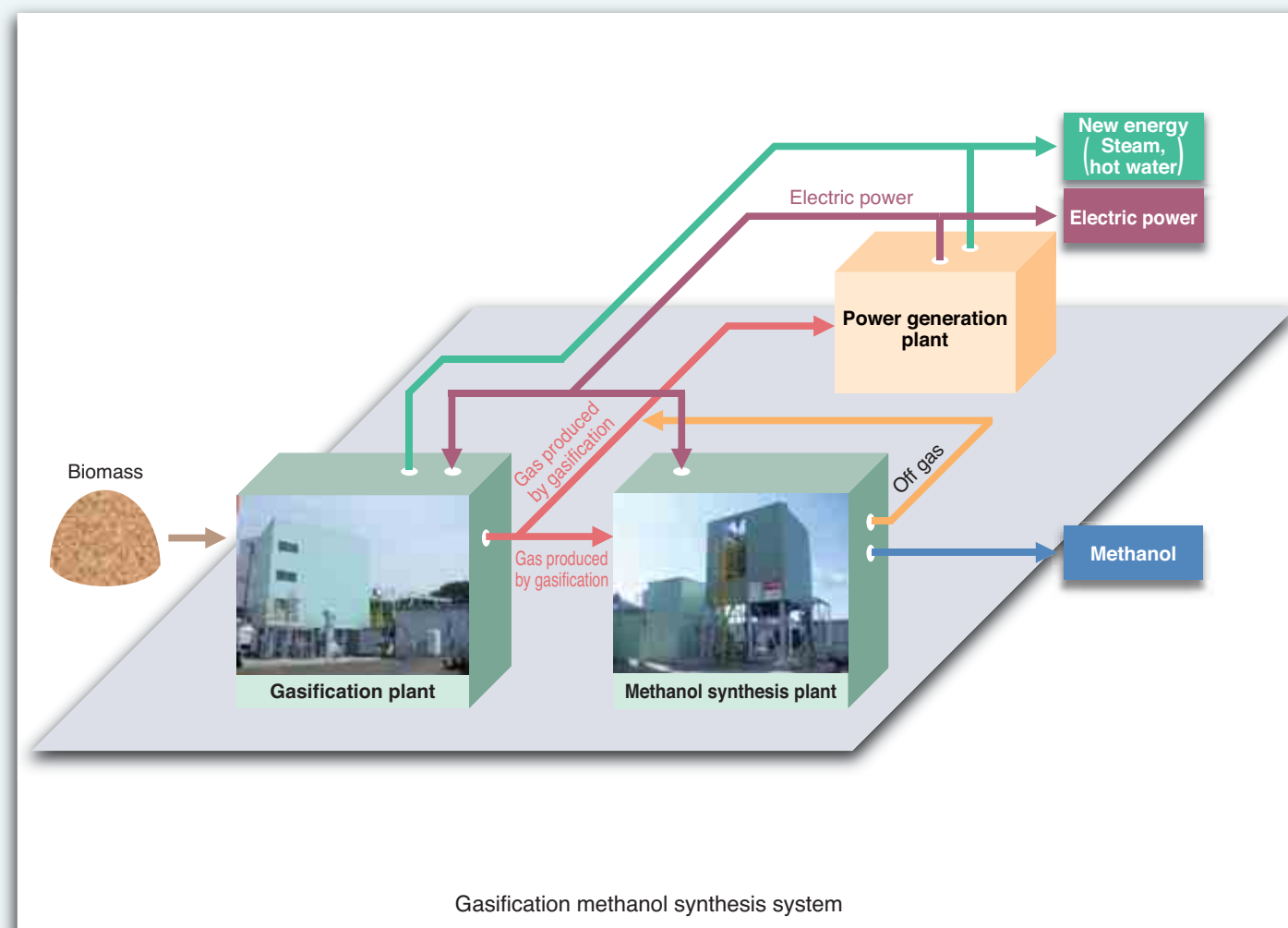
Takuma wins the 24th Japan Society of Energy and Resources Technology Award in recognition of our technology for manufacturing methanol from biomass.

Methanol, which is used extensively as a raw material in the chemical industry, is also used in the environmental field for sewage plants and bio-diesel fuel production facilities. It is also used for small fuel cells of mobile devices such as laptop PCs.

Methanol is generally produced from natural gas, a fossil fuel. By producing methanol, an important industrial material indispensable for our lives, from biomass, we are able to reduce consumption of fossil fuels and emissions of CO₂.

Takuma has promoted development of a gasification technology to efficiently produce gas fuel from biomass and a methanol synthesis technology to effectively produce methanol from this gas fuel. As part of a project commissioned by the Ministry of the Environment to develop anti-global warming technologies, Takuma conducted a demonstration test of gasification methanol synthesis for three years from fiscal 2007 to 2009. The methanol that was produced was a big success and is already in use as a reaction assistant in the manufacture of biodiesel fuel.

In recognition of these results, Takuma won the Technology Award from The Society of Chemical Engineers, Japan in fiscal 2010, followed by the 24th Japan Society of Energy and Resources Technology Award. We are now using this technology to contribute to the prevention of global warming as well as to the construction of a sustainable society.



③ Takuma's "Small gas-fired once-through boiler with low air ratio combustion by jet-film flame (Super Eqos EQi-2000/2500)" wins the Technology Award from the Combustion Society of Japan in fiscal 2012

Together with Nippon Thermoener Co., Ltd., a group company, Takuma received the 2011 Technology Award from the Combustion Society of Japan for our small gas-fired once-through boiler with low air ratio combustion by jet-film flame (Super Eqos EQi-2000/2500).

Super Eqos EQi-2000/2500 forms a film-like flame through a newly developed, vertical high-speed injection gas burner that promotes cooling of that flame and a self-recirculation gas flow inside the boiler combustion chamber. This is the industry's first small gas-fired once-through boiler with a low air ratio ($\lambda = 1.17$) that is capable of reducing both CO and NO_x simultaneously and improving boiler efficiency. Jointly developed by Takuma and Nippon Thermoener Co., Ltd., it is manufactured and sold by Nippon Thermoener.

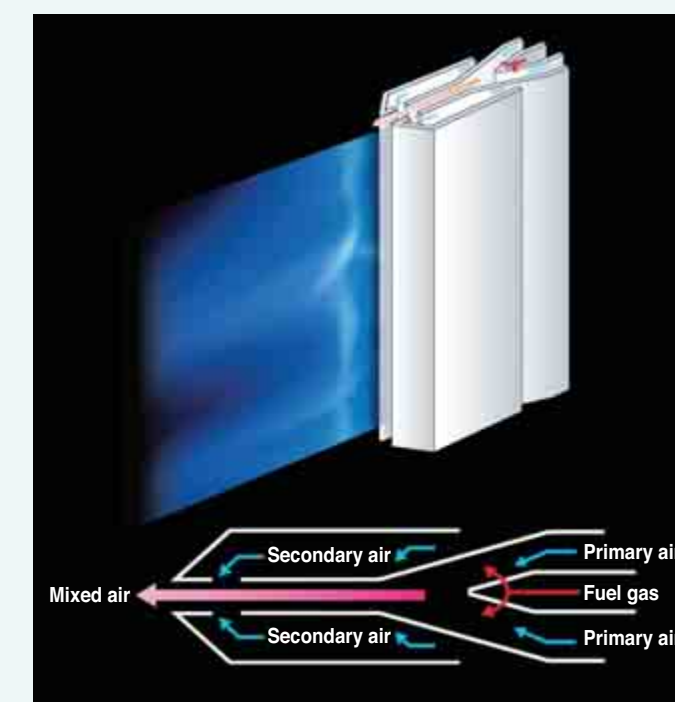
In order to achieve low air ratio combustion, we applied Takuma-patented, high-speed injection nozzle technology to improve the directivity of the injection gas, and developed a jet-film burner (patent acquired) that forms a thin, length-wise flame. Through this film-like flame, localized hot sections can be controlled and flame cooling promoted, thus reducing the generation of thermal NO_x. At the same time, by premixing fuel and air inside the burner just prior to injection, and then injecting it into the combustion chamber at high speed, a large self-recirculation flow is formed inside the chamber, thus encouraging self-stirring of the gas and controlling CO.

This low air ratio of $\lambda = 1.17$ (exhaust gas O₂ = 3%) has made it possible to achieve levels like NO_x = 25 ppm (O₂ = 0% conversion) and CO = 30 ppm, something that was not available with conventional combustion technology. Boiler efficiency is also improved by 1.5% and power consumption by the fans can be reduced by 22 to 45%, making this an epoch-making combustion technology that simultaneously raises boiler efficiency while reducing CO, NO_x and electrical consumption.

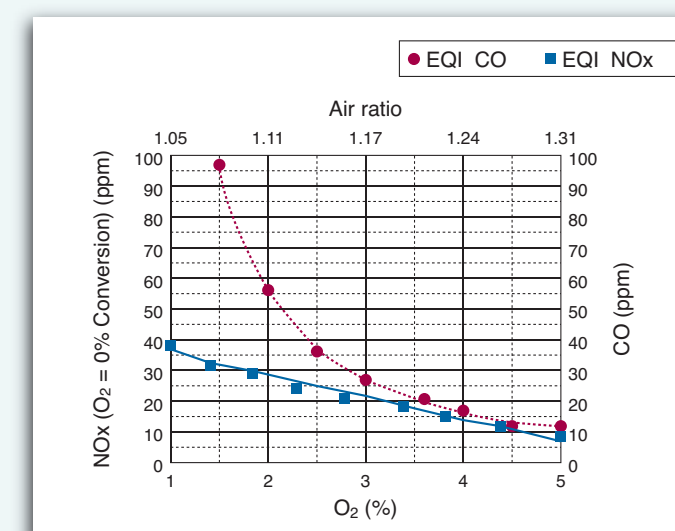


EQi-2000/2500: A 3-unit installation

At Takuma, we will continue to seek out combustion technology and strive to develop products that can contribute to reducing the environmental load.



Burner structure



EQi-2000/2500 combustion characteristics

CSR Activities for the Future

Progress Report on a Roadmap and Plans for the Future

Ever since our Compliance & CSR Promotion Division was inaugurated in fiscal 2006, Takuma has implemented a variety of integrated CSR activities, such as those related to compliance, risk management, and environmental issues. At the same time, independent priority issues have been handled through in-house organizations and we have continued to constantly evaluate current conditions.

In order to aim at a sustainable company into the future, and towards development and expansion of a wider range of CSR activities, from here on we will create a stronger roadmap for our CSR activities, put that into practice, and continue to improve on it.

● Activity report for FY2011

Phase 1: Taking stock of compliance and CSR activities since fiscal 2006

Laws and ordinances that are related to Takuma main businesses of “the environment and energy” reach far and wide. The social environment that surrounds our company also continues to change daily according to trends around the world and in Japan. In working to resolve social issues, Takuma thus looks not only at trends in legal revisions but at the future ideal. In line with that, we have continued to implement CSR management with priority placed on “compliance” and “risk management”.

Based on these current conditions, we took stock during the last fiscal year of our past compliance and CSR activities. Referring to the various guidelines available on CSR, like Environmental Report guidelines and ISO26000, and obtaining the cooperation of an external CSR/NGO organization, we focused on the track record of our CSR activities to select 21 issues of extreme-to-moderate importance to include in a survey distributed to all related sections and departments throughout the company.

■ Survey results

The results of that survey include items that can be evaluated quantitatively and those evaluated qualitatively. In summarizing those results, we specifically arranged the important points out of those initial 21 items as “Issues to be inherited and continued”, and “Issues for improvement”.

The following diagram is an outline of that arrangement.



This evaluation involved taking stock of select items from out of the past measures implemented at Takuma. In selecting the issues that are important to CSR, which will be the next phase, we considered the important items and elements targeted during the last fiscal year, as well as social issues and the needs and expectations of society, and it is our goal to put them into action as the “important issues” at Takuma.

● Activities scheduled for FY2012—Responding to the evaluation of the issues

Phase 2: Selecting the important issues

We evaluated our activities during fiscal 2011 in order to determine the content of our activities in fiscal 2012.

Activities concretely scheduled for FY2012

1. Based on the results of the survey conducted in fiscal 2011, we will categorize the short-term issues and the medium-term and long-term social issues for Takuma, and choose the “important issues” that we feel should be continued, the issues that require improvement, and newly adopted issues.
2. During this fiscal year, we will decide upon an index to measure performance that enables a PDCA* cycle to be implemented in future CSR activity.
3. In order to realize effective CSR activities and to accelerate the permeation and awareness of company-wide CSR activities, we will utilize previous company-wide training, CSR reports, and in-house newsletters.
4. During the second half of the term, we will conduct an in-company survey once again. The questions supplied to each section and department should be based on the “Important Issues”, and improvements and revisions made to those questions.

* P (Plan: strategy, plan, goal) D (Do: implement, execute, record) C (Check: monitor, check, evaluate) A (Act: improve, reexamine)

■ “Compliance”: the foundation of important issues

There are many legal regulations and issues related to our business activities. Those that are especially likely to have a significant impact on the company as a whole need to be addressed under a company-wide framework. Each section and department must take the appropriate action regarding each and every one of the other laws and regulations that cover a variety of subjects.

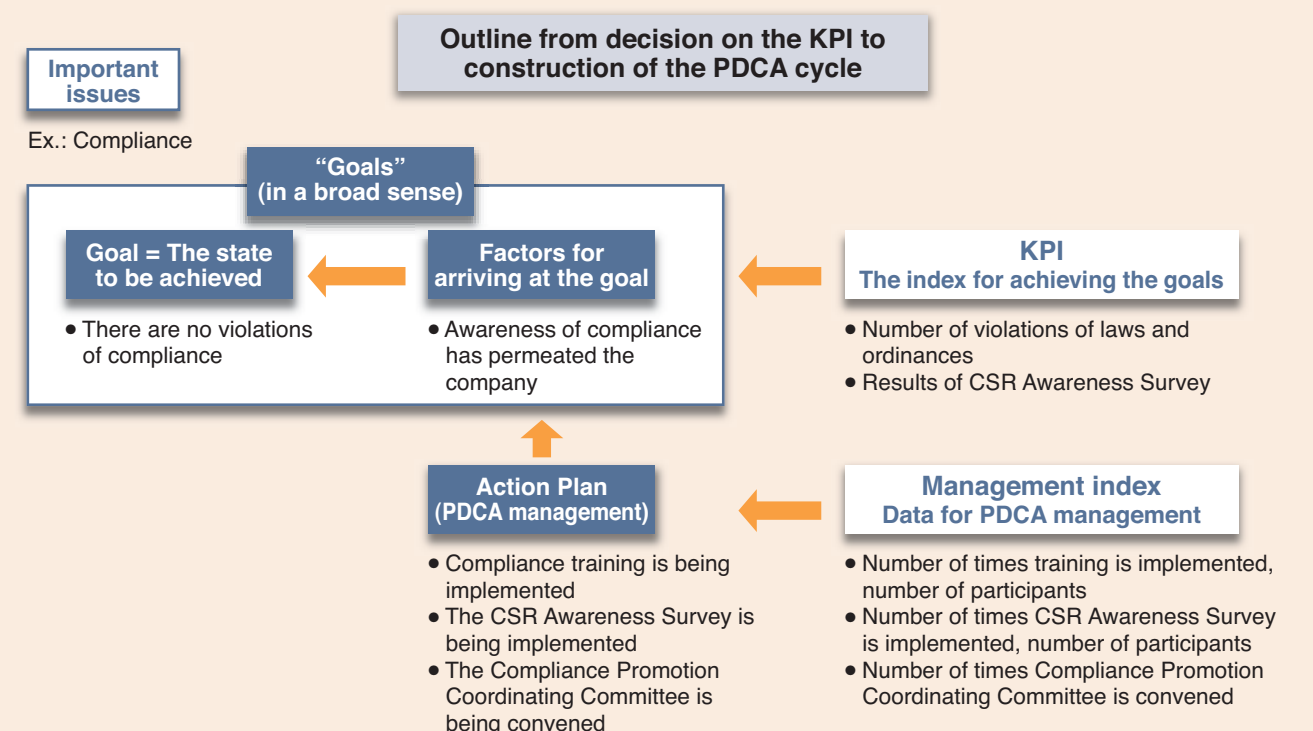
■ Deciding on the index (“KPI”) to measures performance

In the selection of the important issues in Phase 2, it is necessary to decide on an index (KPI: Key Performance Indicator) that measures performance (i.e., was the goal attained or not?). During that decision process, ISO26000, GRI, etc., should be referenced.

■ Selecting the important issues

We think that the important tasks that evolve our CSR activities must be periodically reexamined and improved even during their continuous implementation.

Survey results should be evaluated and summarized, and the appropriateness of the selected important issues continuously examined.



● Towards medium-to-long term activities (targets from fiscal 2013 to fiscal 2015)

Phase 3 to Phase 5 will be implemented from fiscal 2013 to fiscal 2015 based on the results of Phase 2. External relations is an important keyword, especially in those activities that incorporate external perspectives, as well as both internal and external communication activities, etc. From here on, we will be duly considering the effective and concrete actions to be implemented for each phase.

Phase 3: Improving the “important issues” that incorporate external perspectives

Incorporate external perspectives into the selected “important issues” and reexamine, improve, and evolve them.

Phase 4: Executing and evaluating improved “important issues”

Obtain management level approval for improved “important issues”, express intentions for the Action Plan both inside and outside the company, and carry out that plan.

Phase 5: Developing both internal and external communication

Develop both internal and external communication further through the improvements made in Phase 3 to the “important issues” that incorporate external perspectives, and by following up on the execution and evaluation specified in Phase 4.

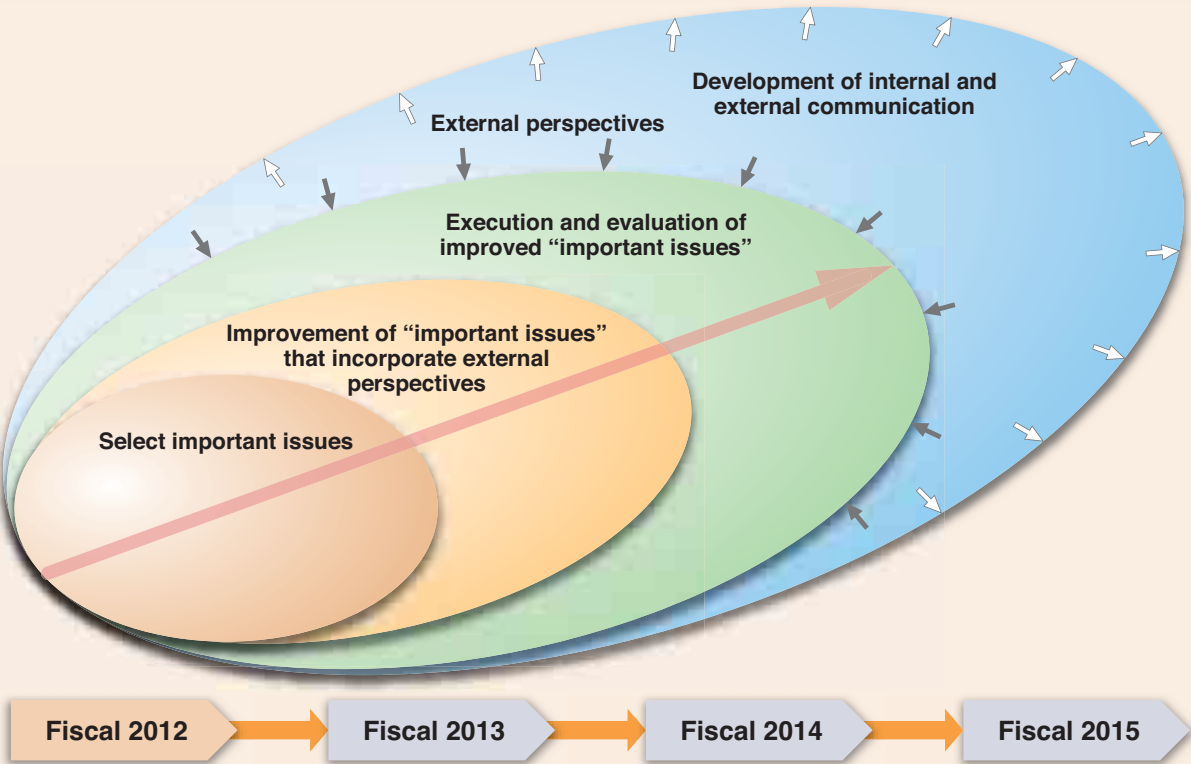
■ CSR issues for the future

Each phase, from Phase 1 to Phase 5, need not be carried out in chronological order; they should be considered as part of a multi-layered, organically-related system. External perspectives must always be taken into consideration, the overall image be continuously examined, including the setting of goals for the important issues, for the KPI, etc., and each phase must be flexibly developed.

Furthermore, when taking external perspectives into consideration, it is necessary to listen to the concrete opinions of not only customers but also other external stakeholders, etc., as well, and to take in various external factors. In the future, we must consider implementing the flexible and adaptive deployment of positive CSR activities that lend an ear to social expectations, like community cooperation and development, and that respond to social and global issues, etc., and we must incorporate that into our business activities as well.

CSR activities should be conducted persistently over the long term. While following our roadmap on the one hand, we feel it important not to neglect continuity and improvement at the same time, to always progress steadily wherever possible, step-by-step, and to continuously carry on those CSR activities.

Cherishing our core competencies, Takuma will continue to contribute to society through employees working together as one to implement candid and sincere CSR activities.

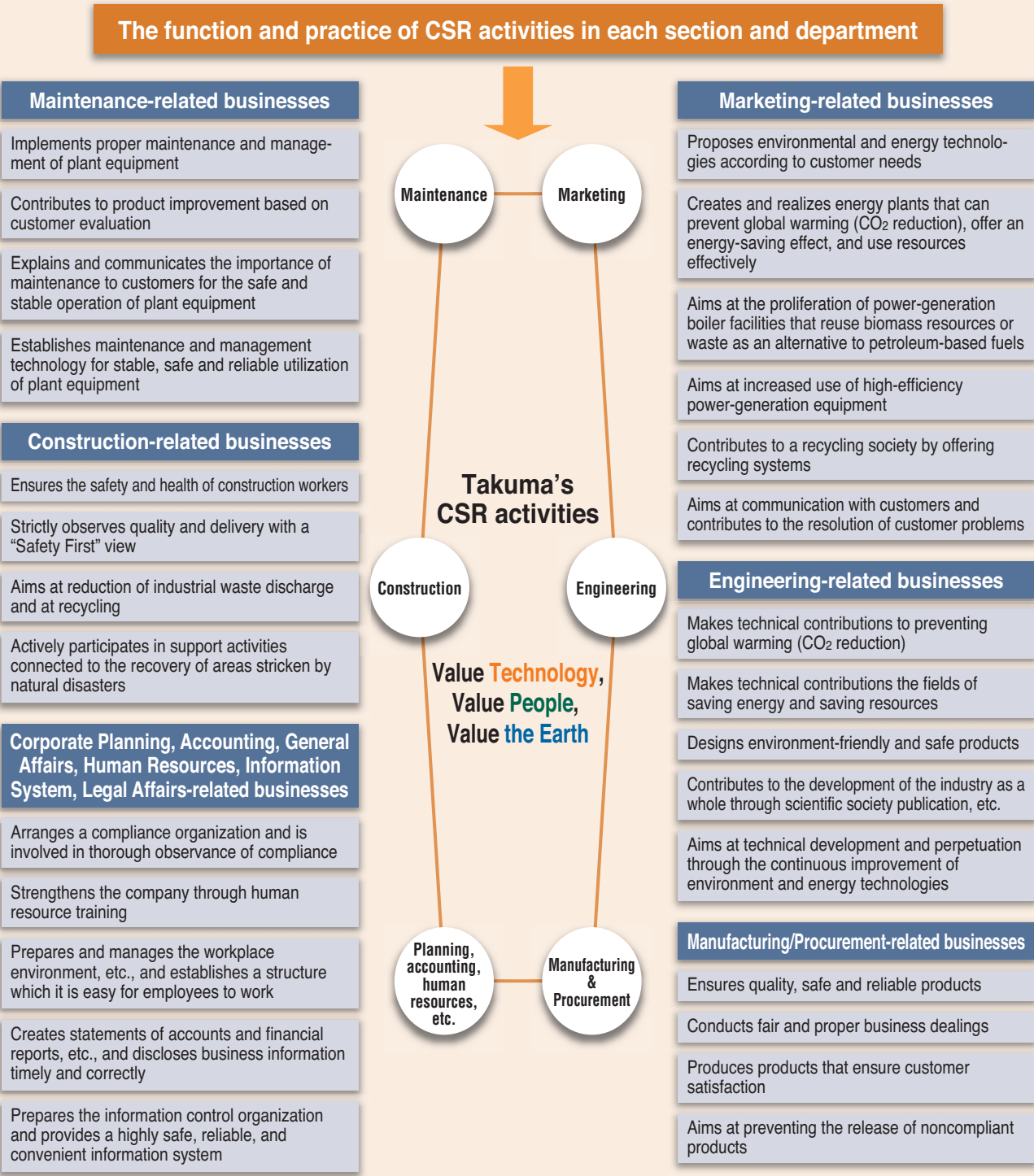


How We View CSR Activities

“Takuma will strive for social contribution, corporate value enhancement, long-term corporate development and the satisfaction of all stakeholders by providing goods and services that are needed and recognized as valuable in society,” is our Management Principles.

We recently discussed the act of providing what is “recognized as valuable in society” in each workplace. The result of that discussion is summarized here for each division.

Takuma contributes to society through the use of **environmental technology** to recover valuables and energy during safe and sanitary processing. We also value the Earth and people through the use of **energy technology** to effectively utilize a diversity of energy sources.



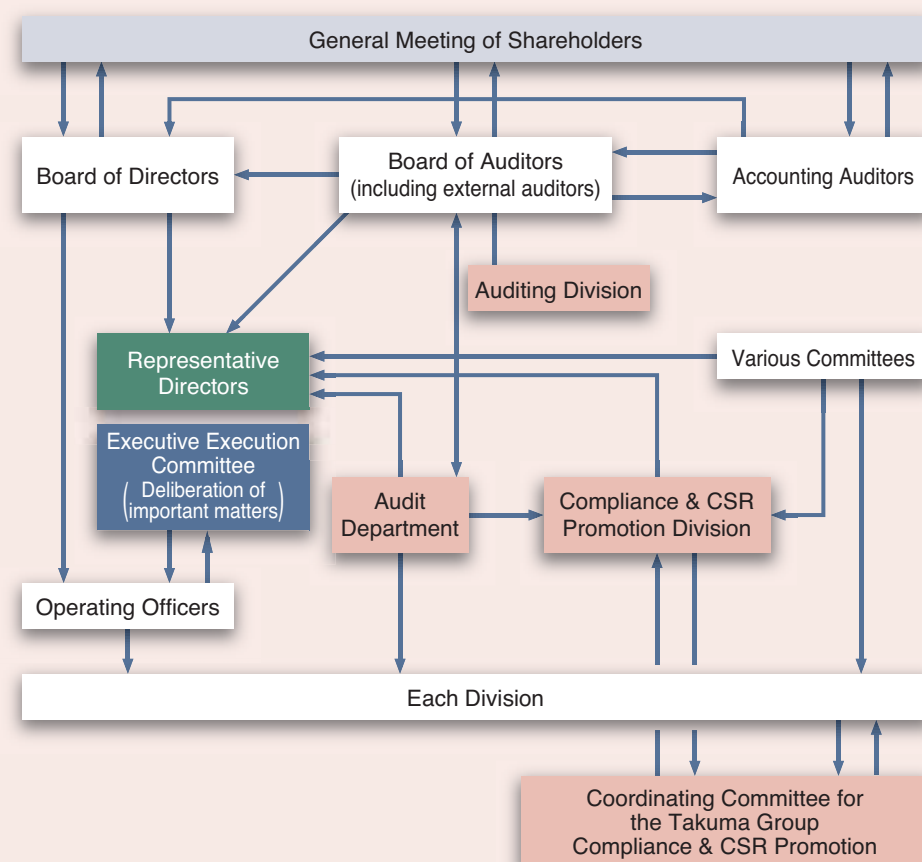
Corporate Governance

Corporate Governance

In order to accelerate management decision-making and clarify where management responsibilities are placed, we have adopted an operating officer system in which we appoint operating officers who are entrusted with the responsibility to execute our business activities. The Board of Directors meets regularly once a month as a rule and whenever else it is necessary to make decisions about important issues related to business management and issues established by law, as well as to oversee the execution of the directors' duties. Moreover, we have also established an Executive Execution Committee, which is chaired by the president/chief operating officer, as an organization that deliberates matters that are brought up at meetings of the Board of Directors and other important issues related to the execution of our business activities. This committee communicates and provides direction about items decided by the Board of Directors and other important items related to the execution of our business activities appropriately to the divisions that are to execute them.

As of March 31, 2012, the Board of Directors was comprised of 7 members, and 16 operating officers (including some who are also directors) had also been appointed.

For corporate auditing, we have adopted an auditor system, and our Board of Auditors, which comprises of four auditors, including two auditors from outside the company, is in charge of it. Auditors attend important meetings, including those of the Board of Directors and the Executive Execution Committee, and they strive to understand and observe the status of business execution in a timely and appropriate manner. They express their opinions as necessary, and they conduct strict auditing of the business execution performed by the directors. This includes conducting self-assessments and evaluations related to the internal control system by operating officers at the end of each term. Furthermore, they receive reports from accounting auditors and the Audit Department about auditing plans, the status of auditing and other issues and otherwise conduct regular information exchanges. They cooperate together as they do this and undertake auditing of every business place, division and subsidiary company in accordance with the auditing policies, divisions of work and other stipulations established by the Board of Auditors.



Compliance & CSR Promotion Structure

Led by the department in charge of compliance and CSR promotion (CSR Department), Takuma aims at encouraging that activity through the "Compliance and CSR Promotion Organization" that was installed for the purpose of enabling compliance and CSR to concretely permeate company-wide through an in-house organization.

This organization is composed of Chairman (the General Manager Compliance & CSR Promotion Division), the Secretariat (positioned in the CSR Department), and an executing organization in each headquarter and department.

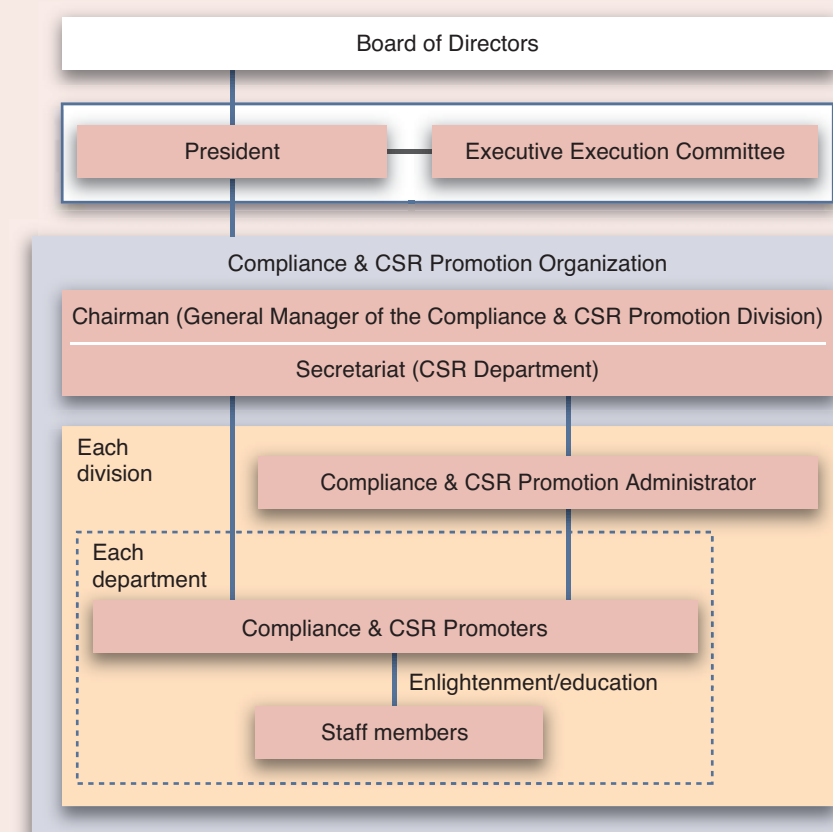
As the person in charge of promoting compliance and CSR in their division, each division manager is appointed as a "Compliance and CSR Promotion Administrator". As persons who implement awareness and education in compliance and CSR in their respective department, each department manager is appointed as a "Compliance and CSR Promoter".

The meetings conducted within this mechanism include "regular meetings" and "departmental meetings".

Regular meetings are held once a year. The person in charge of promotion receives reports on the status of compliance and CSR promotion company-wide, as well as on the status of the implementation of compliance and CSR promotion education for the past year, etc., and they deliberate on a promotion plan of the current fiscal year.

Promotion members convene departmental meetings about once a quarter, with explanations and educational training aiming at the permeation of compliance and CSR in each department carried out. After departmental meetings, promotion members implement compliance and CSR promotion education in their respective department using training materials or in-house educational materials, and report the result to the Secretariat.

(Details of the compliance and CSR promotion education implemented in fiscal 2011 are on page 55.)

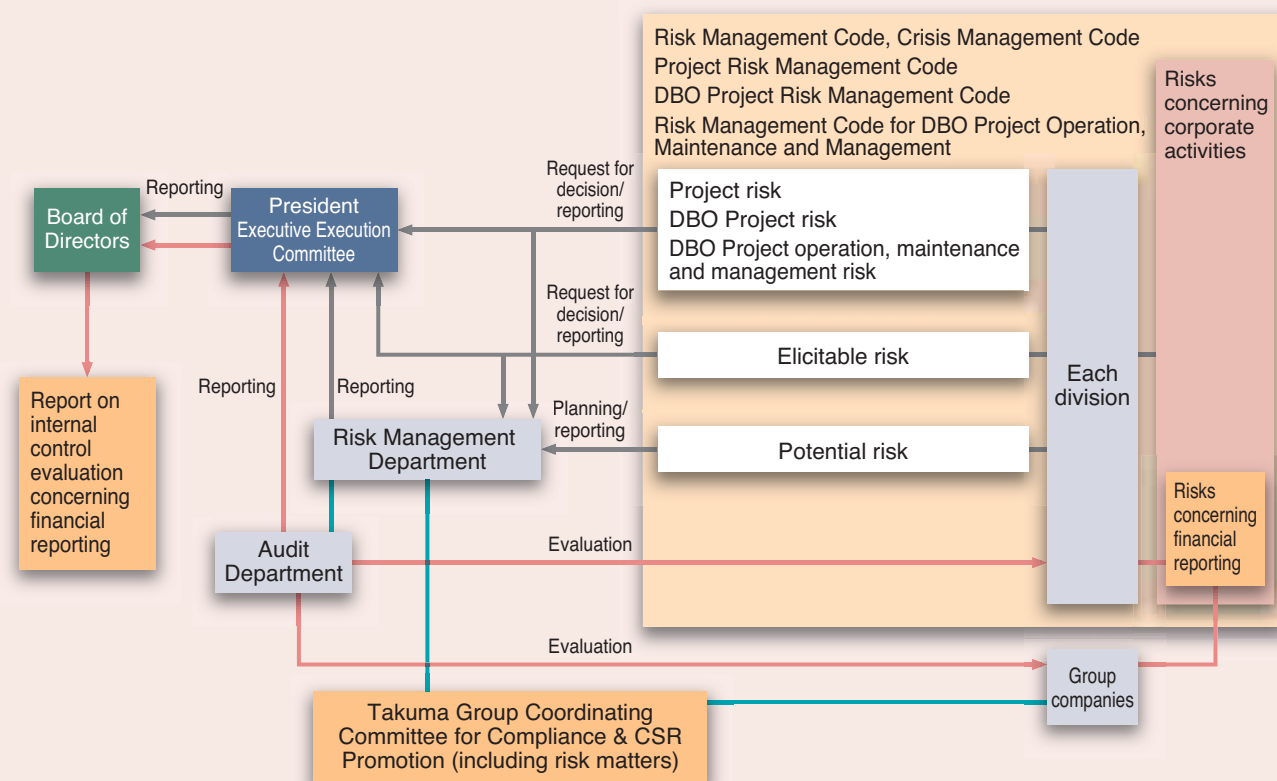


Compliance & CSR promotion structure diagram

Risk Management Structure

Takuma follows a “Risk Management Policy” that connects company-wide risks and separately classifies them into “project risks” related to our core business, i.e., plant construction, “DBO project risks” and “DBO project operation, maintenance and management risks” related to our DBO business, and “potential risks”, “actualized risks”, and “financial reporting risks” related to other corporate business activities.

We are also building the risk management organization shown below and constructing a system of risk management and promoting the strengthening of management for group companies as well through our “Takuma Group Coordinating Committee for Compliance and CSR Promotion”.



Internal Control

In accordance with the Companies Act, the Basic Policy for Establishment of an Internal Control System (full text is available on the Web) was adopted at the Board of Directors' meeting in May 2006. Based on this policy, we have enhanced and utilized our internal control system.

Working towards thorough compliance, Takuma built a compliance promotion organization in fiscal 2006 in order to continuously implement enlightenment and educational activities that make corporate ethics, related laws and ordinances, and internal rules fully understood. To control the danger of loss, we have also prepared a "Risk Management Code" that determines the person in charge of each risk, and we set up our risk management organization according to that Code. When the unexpected occurs, emergency headquarters are established with the company president as the Director in charge of

risk management, and an organization is put in place in order to minimize and prevent further damage through prompt action.

In this way, we are practicing compliance and carrying out business properly and efficiently while also strengthening risk management.

We also strive for awareness and education in each Group company through our “Takuma Group Coordinating Committee for Compliance and CSR Promotion”, so that management of both compliance and promotion is realized throughout the whole of the Takuma Group.

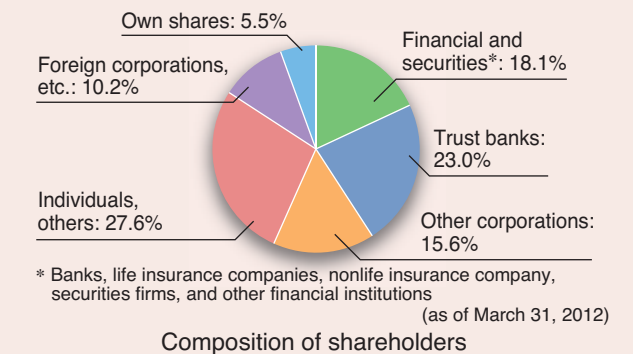
Internal control, constructed and evaluated in order to report on and prevent misstatements in our financial reporting, is based on the Financial Instruments and Exchange Law. This internal control on financial reporting for the Group has resulted in reports that indicate this system has been effective.

IR Activities

In keeping with the “Takuma Group Code of Conduct”, we provide our shareholders and investors with accurate corporate information in a timely and fair manner. As a part of this, we provide notifications on the convening of General Meetings of Shareholders, balance sheet information, timely disclosure information, marketable securities reports, annual reports in English and other business information, all on our website.

[Takuma website > IR information]

<http://www.takuma.co.jp/english/investor/index.html>



BCP (Business Continuity Plan)

Important work at Takuma includes the maintenance of our BCP (Business Continuity Plan) that is based on preventing business from being interrupted due to a disaster or an unexpected accident, and then recovering from that in the shortest possible amount of time.

● Risk Management Code

Takuma has enacted a “Risk Management Code” that provides measures for dealing with unexpected events, such as an earthquakes, fires, or accidents, that occur in our corporate activities both inside Japan and overseas, or when of a major loss or disadvantage is generated and there is a need for company-wide measures.

● Overseas Risk Management Code

The “Overseas Risk Management Code” has been enacted to define the measures for risk management for employees on overseas business trips or posted abroad, etc.

● **Disaster Prevention Management Code**

Takuma's "Disaster Prevention Management Code" was enacted towards thorough in-house disaster prevention management, implementing disaster prevention measures in advance, and aiming at minimizing material damage and human injury when a disaster does occur.

● Earthquake Countermeasure Manual

Our “Earthquake Countermeasure Manual” places priority on preserving employee safety and protecting employees’ lives. It defines the fundamental issues of disaster prevention, such as daily measures for maintaining and continuing corporate activity to the greatest extent possible, a code of conduct for when an earthquake does occur, the establishment of an Earthquake Response Headquarters, and more. This manual was revised in fiscal 2011 to include measures in case of tsunamis, etc.

Basic Policy on Earthquake Countermeasures

- Place top priority on protecting human life.
- Protect company assets and aim at prompt resumption of business.
- Secure a budget for earthquake countermeasures and implement those measures.
- Continuously improve the Earthquake Countermeasure Manual.

● Typhoon (Storm and Flood Damage) Countermeasure Manual

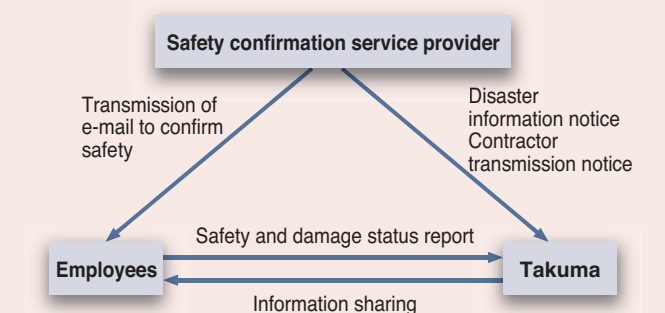
The “Typhoon (Storm and Flood Damage) Countermeasure Manual” is applied when a weather warning, such as a heavy rain, flooding, storm, and high tide, is issued due to the effect of a typhoon, etc., and there is a possibility that an office may suffer damage or that service may be stopped for some manner of commuting.

● Countermeasures against new forms of influenza

We have enacted "Countermeasures against new forms of influenza", which aims at preserving employee safety and continuity of company business by defining the action principles, and the duties of both employees and the company itself, in case of a spread of infection, such as a new strain of influenza.

● Safety confirmation system administration

The "Safety confirmation system" was introduced in order to facilitate the confirmation of employees' safety and for other urgent contact provided in the "Hazard Management Code", "Earthquake Countermeasure Manual", etc. The procedure for administering this system is defined under the "Safety Confirmation System Administration By-laws".



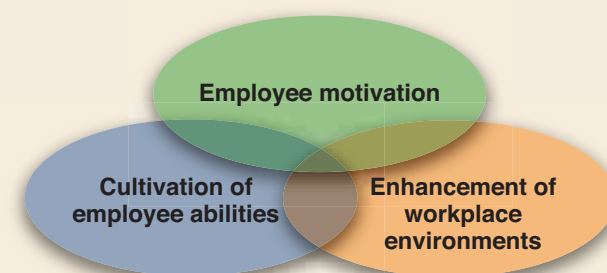
When a massive earthquake strikes, e-mail is sent to specified persons and each one reports on the status of their safety and the surrounding disaster. This enables those in charge of internal control to promptly confirm each employee's situation and share information with them.

Human Rights and Labor Practices

Working with Our Employees

Approaches toward employees

Our company sets “establish a work environment allowing each employee to challenge their goals, as well as getting on with their work through appropriate assessment” as its basic policy. Specifying the following three approaches as critical items, we introduce various systems for each:

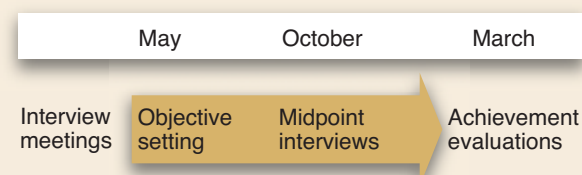


(1) Enhance the motivation of employees by ensuring transparency as well as satisfaction for assessment.

● Objective Management System

We utilize an Objective Management System in which work objectives are set at the beginning of the fiscal year and the degree to which they are achieved are evaluated at the end of the fiscal year. The objectives, which are based on company policies, are decided through meetings and interviews with superiors to include the work tasks that each individual is to undertake over the year and the roles they are expected to fill.

During the fiscal year, we conduct “midpoint interviews” for everyone around the same time. In addition to regular confirmation and follow-up on the progress status of objectives, these promote communication between superiors and the employees that work under them and provide opportunities to deepen mutual understanding and trust.



● In-house commendation

- Takuma Prize*
- Invention and idea commendations
- Qualification acquisition commendations
- Takuma Technical Review Outstanding Paper Award
- Continuous service commendations



* The Takuma Prize is awarded to employees who have demonstrated outstanding achievements in their work as well as to employees who have demonstrated outstanding achievements in their efforts for society outside of work, including lifesaving, disaster prevention and volunteer service.

(2) Provide capacity building assistance to employees.

In order to promote the cultivation of employees abilities and their self-development, we hold technical presentation meetings for technical employees, offer TOEIC tests, and provide financial rewards and pay examination fees for employees who acquire new certifications, for example.

● Junior employee exhibition

As a part of the education of our junior staff, ten-year company employees give presentations that reflect on their experiences and indicate the future growth that they are looking for, and technological exhibitions are held for second-year employees in order to improve their ability to make presentations.



● Open laboratory

We organize open laboratories with the aim of widely enlightening our technical development result within the company and of providing opportunities for exchange between the development team and other employees.

● English education support system

In order to improve the language skills of our employees, we regularly offer TOEIC examinations on site.

● Other systems

- Support for obtaining qualifications
- Correspondence education programs
- New employee training
- General employee training
- Managers training
- Job rotation system
- Technical training sessions

(3) Improve the work environment, facilitating employees' efforts to address business tasks without anxiety.

● Balancing work and private life

In order to maintain suitable working time periods, assure days off, and support diverse ways of working of our employees, we have incorporated systems for discretionary work, flextime, and half-days off. Moreover, in order for employees to fully demonstrate their abilities while involved in both work and raising children, we also provide various systems in support of maternity and child-rearing, as well systems that enable child-care and nursing leave for periods that exceed those specified by law.

- Implementation of no overtime days
- Reduction of working after hours and on holidays
- Promotion of the use of compensatory holidays and paid time off
- Paid holidays in half-day units
- Childcare leave
- Nursing leave (we allow one year compared to the 93 days that are legally required)
- Discretionary work system
- Flextime system

● Other enhancements to workplace environments

- Measures to counter sexual/power harassment
- Work environment measurement
- Listening to opinions within the company*

* To enhance “ideal working conditions” for employees, our company absorbs a wide range of views from employees by placing an “opinion box,” as well as communication via e-mail and telephone concerning their working environments.

● Employee health management

At our Head Office, in cooperation with our corporate health insurance union and the staff working in our cafeteria, we held “Wellness fairs” (themes: “Guide to a Balanced Diet: Using a balance guide to maintain Japanese dietary patterns”, “Internal Improvement: The deciding factor is the strength of your immune system”) that featured panel displays, individual diagnoses by a registered dietitian, and special menu items. We also proactively implement health management measures for all employees through that corporate health insurance union.

Recruitment

● Graduate recruitment

We implement the periodic recruitment of new graduates every year, from the perspectives of long-range outlook and human resource cultivation. As for the recruitment for the next fiscal year, we will continue to implement fairer and more highly transparent recruitment activities via the provision of information, putting ourselves in the students' shoes.

● Internship

We have an internship program, accepting university and technical college students during their school summer breaks.

[Takuma website > Recruitment info]

<http://www.takuma.co.jp/saiyou/index.html>

(content in Japanese)

● Labor-management relations

The labor union is an organization which conducts periodic deliberations and collective negotiations in terms of annual salary, working hours and other working conditions and establishing a stable employee-employer relationship.

[Employee health management measures]

- Improvement program for lifestyle-related diseases
- Lifestyle-related disease prevention checkups
- Mental health measures
- Health consultations
- Transmission of health information (in-house newsletter and website)



● Recruitment of handicapped persons

Currently, 8 handicapped employees are active in the company (as of March 31, 2012). We will continue to strengthen our approaches toward improving the employment rate of handicapped people by proactively participating in job-interview sessions in the local community as well as implementing year-round recruitment.

● Reemployment system for employees reached the mandatory retirement age

Since fiscal 2006, when we introduced a reemployment system for those employees having reached the mandatory retirement age and we have been providing employees who wish to work actively after retirement with the opportunities to continue playing active roles.

Respect for Human Rights and the Abolition of Discrimination

Our company sets out its respect for basic human rights and prohibition of discriminatory acts in the Takuma Group Ethics Charter, Takuma Group Code of Conduct, and labor regulations. In addition, we also support respect for human rights, without contributing to human rights violations, elimination of forced labor/child labor and the abolition of discrimination through participation in the UN Global Compact.

● Takuma Group Ethics Charter (excerpt)

4. We shall respect fundamental human rights and never practice discrimination.

● Takuma Group Code of Conduct (excerpt)

Respect for basic human rights

9. Prohibition of discriminatory actions
10. Respect of individuality, personal quality and privacy
11. Safe work environment

Efforts for Occupational Health and Safety

Constructed according to the “OSHMS” guidelines promoted by the Ministry of Health, Labour and Welfare, the Takuma Occupational Safety & Health Management System (TK-COHSMS) is welcoming its 7th year in operation.

Furthermore, based on the risk assessment indicated in the revised Industrial Safety and Health Act in 2006, we aim at preventing industrial accidents through the active utilization of safe working procedures (SSA).

The following 4 targets were provided as part of the measures towards occupational health and safety implemented in the current fiscal year: ① further reduction in frequency and severity, ② thorough division of the workplace into smoking and non-smoking sections, ③ implementation of safety and health education towards improved performance, ④ strengthening of the control system in case of accident or disaster. An even safer company is aimed at within our system of compliance with health- and safety-related laws and ordinances, in-house rules, and the Construction Business Act.

Occupational safety and health activities and their results

1. Safety inspection system

We maintain a system where any construction or installation work starts only after the health and safety manager in each department inspects the safety and health plans for the construction or installation work prepared by our primary subcontractors, and then approves them.

- Fiscal 2011
Number of safety inspections done: 148

2. Education for worksite representatives (safety and health education)

We continuously provide education to increase the levels of safety awareness of our employees and affiliated contractors.

- April 2004–March 2012
Cumulative number of trainees: 21,674
Number of trainees passing the completion exam: 8,200



3. Safety patrols

Based on an annual Safety Patrol Plan, safety patrols are carried out by the Safety and Health Committee (comprised of committee members and advisors) and independent safety patrols are implemented by construction-related sections with an emphasis on “Confirmation of SSA Content: Promoting Guidance” and the goal of maintaining safety in the workplace.

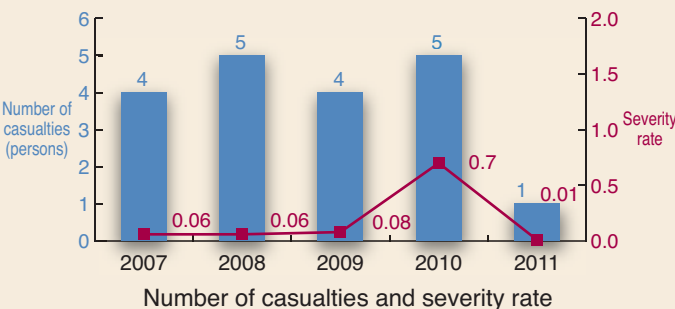
- Number of safety patrols implemented in fiscal 2011
By Safety and Health Committee (members, advisors): 95
By Safety Control Department: 309
By construction-related sections: 341



Safety results in recent years (the number of casualties from and the severity rate of industrial accidents)

Although the severity rate for 2010 reached a high level not seen in recent years, the safety results for 2011 of “Casualties resulting in one or more lost labor days = 1 person, Frequency rate = 0.26, Severity rate* = 0.01” were far below the national average for the severity rate in the construction industry (general construction projects).

* Severity rate: Cumulative number of lost labor days per 1,000 total actual labor hours

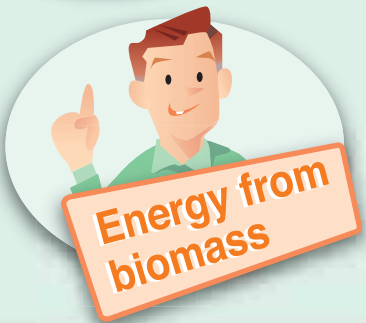
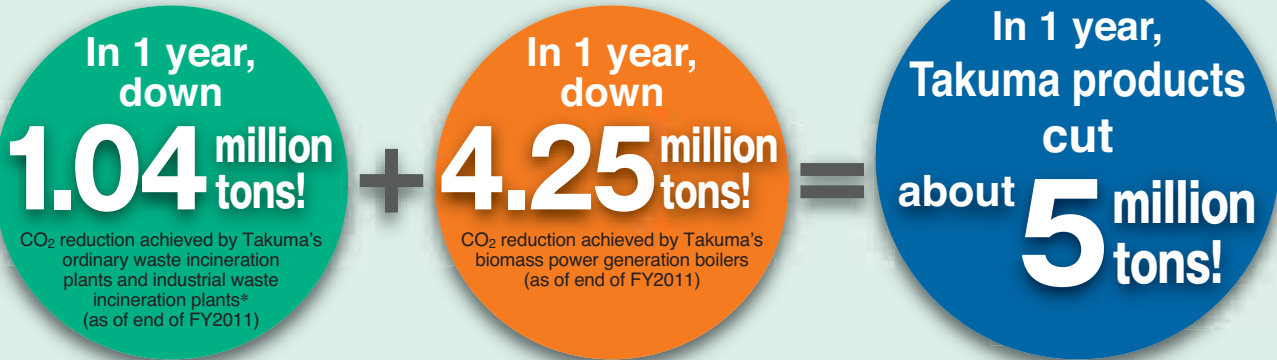


| | |
|---------|------|
| FY 2007 | 0.33 |
| FY 2008 | 0.41 |
| FY 2009 | 0.14 |
| FY 2010 | 0.61 |
| FY 2011 | 0.21 |

National average for the severity rate in the construction industry (general construction projects)

Takuma’s CO₂ Reduction Technologies

We convert waste/biomass into energy and reduce CO₂!



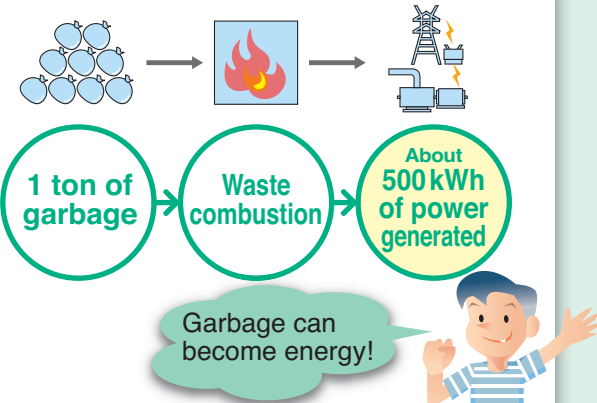
What is biomass?

Biomass is any recyclable organic material derived from a living organism, but does not include fossil fuels. For example, even though CO₂ is emitted if vegetables and other household wastes are incinerated, when vegetables are grown again, they absorb CO₂, so there is no increase in CO₂ in the atmosphere. By using the heat produced by incinerating biomass to generate power, the amount of power generated using fossil fuels as fuels can be reduced, and this contributes to decreasing CO₂.

CO₂ reduction from waste incineration plants

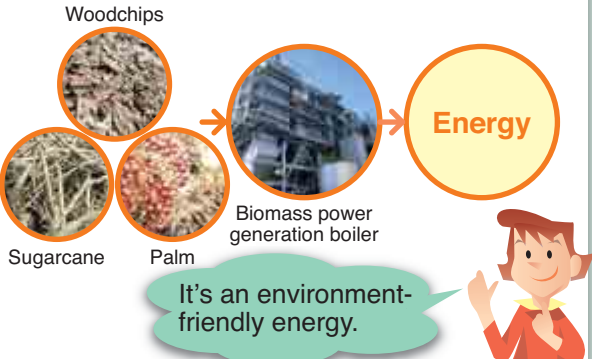
Garbage, or waste, is an important source of energy. About 500 kWh* of power can be generated from one ton of garbage. In Europe and the Americas, waste incineration plants are often called Energy-from-Waste (EfW) plants, and recovering energy from garbage has become the norm. Waste must be seen as a “resource”, so Takuma is seeking to be the best in the world with our technologies to convert waste into energy and reduce CO₂.

* Presumes waste with a calorific value of 8,800 kJ/kg and a power generation efficiency of 20%.



Reducing CO₂ with biomass power generation boilers

A classic example of biomass power generation is in sugar refineries. At factories that make sugar, the remnants of the raw materials are produced in large quantities. Sugarcane is crushed minutely, and sugar is extracted in a compressor. The remaining fiber is called bagasse and can be used as boiler fuel. The steam produced can be used to provide electricity necessary at the plant, and then used as a heat source for refining sugar. In recent years, the amount of power generated at sugar refineries has grown greatly. There are even examples of single plants that are stably supplying electric power equivalent to 50 MW.



External Commendations Regarding the Environment

The 2011 Hyogo Prefecture Science Award: Recognition of our contribution to improvements in technology through the development of biomass energy-use technology

As a pioneer in the boiler industry, Takuma tackled the use of biomass fuel early on and, to-date, has supplied more than 500 of biomass boiler units that use bagasse, woody biomass, corn cob residue, etc. From basic research to development of practical utilization with full-scale equipment, we are involved in all processes of realizing innovative technology that efficiently employs biomass, a fuel that was not conventionally used.

Such achievement in the development of biomass energy-use technology has been acknowledged and the Planning & Development Center, which was in charge of that development, was presented with the 2011 Hyogo Prefecture Science Award.

The following is some of the major technology we have developed in recent years.

① System of sewage sludge gasification and power generation

Takuma has developed technology that can convert raw sludge into gas containing carbon monoxide and hydrogen to generate power by a gas-driven engine with greater efficiency.

② Biomass gasification methanol synthesis technology

This technology converts woody biomasses, like scrap wood and thinned timber, into a gas that contains the carbon monoxide and hydrogen required for methanol synthesis and, thus, facilitates the efficient synthesis of methanol highly from that gas.

③ System of two-stage hydrogen-methane fermentation of shochu distillation lees

With this two-stage hydrogen-methane fermentation process employing mainly food waste like *shochu* lees, and its efficient collection of biogas (gas for fuel) and utilization for energy, we have developed a technology that simultaneously reduces both waste treatment and the amount of fossil fuel consumed.

■ Hyogo Prefecture Science Award

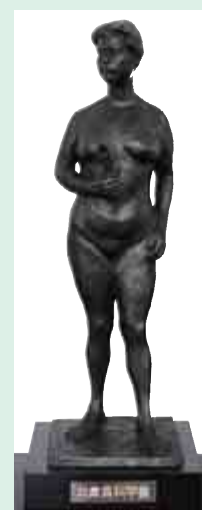
For the purpose of promoting improvements in technology, the governor of Hyogo Prefecture commends researchers who are enthusiastic about technological investigation and as well as those whose research results are recognized as having contributed markedly to improving technology.



The presentation ceremony



Ryoji Sameshima, General Manager of the Planning & Development Center, receiving the commendation from the governor of Hyogo Prefecture



Hyogo Prefecture Science Award, bronze statue as a supplementary prize

Basic Environmental Policy

Our company has established the “Basic Environmental Policy” as follows; aiming to ensure employees contribute toward global environmental conservation. This basic policy applies to the activities of all company departments.

Environmental Philosophy

Takuma is committed to preserving the environment and realizing an affluent society through business activities under the Company Motto: “Value Technology, Value People, Value the Earth.”

Operational Guidelines

1. All Takuma Group companies will recognize the importance of maintaining a balance between preservation of the environment and business activities.
2. Continuously develop activities to preserve the environment that comply with applicable environmental laws and ordinances, and ensure environmental control and assessment systems conform to international environmental standards.
3. Promote development of improved technologies and products for society that preserve the environment.
4. Address resource conservation, energy efficiency, recycling, and minimization of waste generated by all business activities.
5. Improve employee awareness and understanding about the importance of preserving the environment through environmental education and internal promotional activities.
6. Provide the community with information on the activities of Takuma to preserve the environment.

Environmental Objectives

Our company has established the following environmental objectives.

Takuma Environmental Objectives

1. Takuma will reduce the amount of overall energy consumption by 30% compared to its level of fiscal 2001 by fiscal 2012.
2. Takuma will reduce the amount of CO₂ emissions by 30% compared to its level of fiscal 2001 by fiscal 2012.
3. Takuma will reduce the amount of waste generation by 30% compared to its level of fiscal 2001 by fiscal 2012.
4. Takuma will reduce the amount of final disposal of waste by 30% compared to its level of fiscal 2001 by fiscal 2012.
5. Takuma will achieve a rate of green purchase, such as office supplies, by more than 60% by fiscal 2012.
6. Takuma will take all effective and possible environmental measures by controlling expenditures on the same.

Environmental Objectives for Group Companies

In accordance with the establishment of our “Environmental Objectives,” our domestic group companies established their own “Environmental Objectives” and are striving toward efforts to reduce the environmental load.

Environmental Management

■ The situation concerning the acquisition of ISO 14001

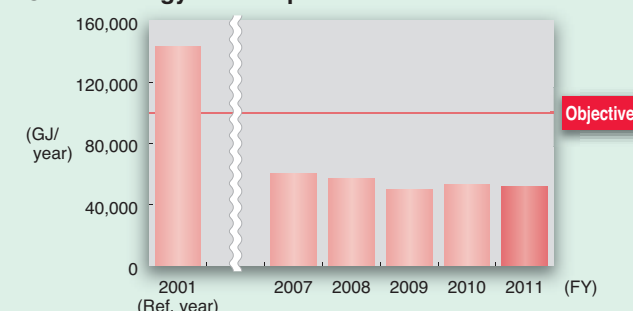
Our Harima Factory has acquired ISO 14001 certification and has been implementing environmental management activities, based on the environmental management system established to comply with international standards.

Our group companies Nippon Thermoener Co., Ltd., Takuma Technos Co., Ltd., and Dan-Takuma Technologies Inc. have also acquired ISO 14001 certification.

Environmental Data

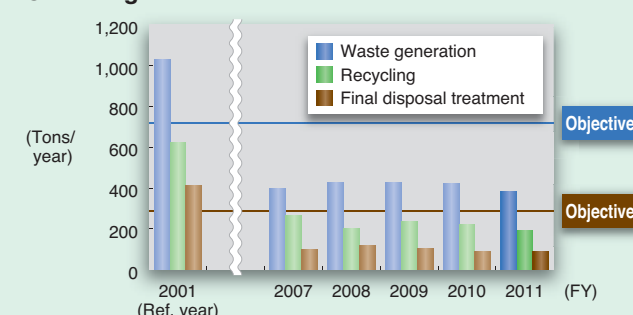
Objectives and achievements

● Total energy consumption



The total energy expenditure of the fuel and the electricity consumed at Takuma generally leveled off in comparison with fiscal 2010 while also achieving our goals for fiscal 2011. We will continue to promote energy savings from here on out.

● Waste generation



Our company sells recyclables and reusables from the waste generated through its business activities to scrap dealers, while outsourcing the treatment of the remainder of the waste—non-recyclables and non-reusables—to haulers, processors and final disposal dealers, in accordance with the Industrial Waste Control Manifest system.

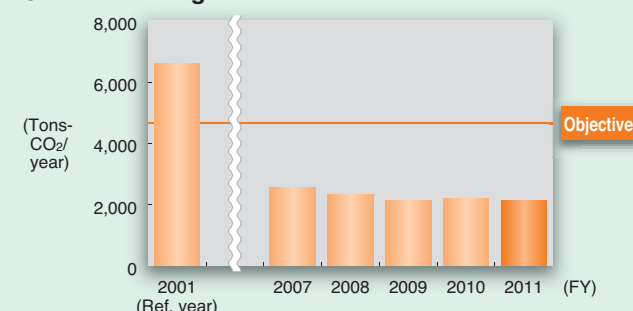
PRTR emissions

Although our business activities do not involve a wide variety of chemical substances on a massive scale, we use a few designated chemical substances. Consequently, we report and register such chemical substances designated as PRTR (Pollutant Release and Transfer Register), in accordance with relevant laws and ordinances, with the local government.

● Dichloromethane (CAS No. 75-09-2)

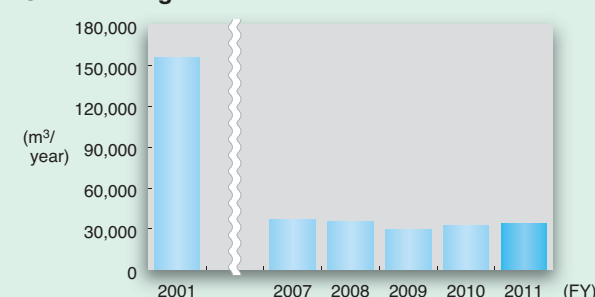
| Rustproofing paint on structural steel for boilers | | | | | |
|--|------|------|------|------|------|
| FY | 2007 | 2008 | 2009 | 2010 | 2011 |
| Emissions (tons) | 0.5 | 0 | 0.1 | 0 | 0 |

● Greenhouse gas emissions



The greenhouse gas emissions created by our company are limited to carbon dioxide (CO₂). The amount of CO₂ emissions in fiscal 2011 was about the same as in fiscal 2010, achieving our objective as well as the target total energy consumption. We will continue striving to reduce CO₂ emissions, both at offices and factories.

● Water usage



The applications of water are cooling and rinsing factory equipment, while being used for daily life, cooling water for air-conditioners, watering plants and makeup water for ponds at the Head Office. The water used for these applications is all tap water.

At the Harima Factory, its water area is covered by the Law Concerning Special Measures for Conservation of the Environment of the Seto Inland Sea, whereby stringent emission concentration regulations as well as total volume control are applied. Thus, we check water quality regularly at each registered drain outlet and report the results to the appropriate administrative body.

● Xylene (CAS No. 1330-20-7)

| Rustproofing paint on boiler structures | | | | | |
|---|------|------|------|------|------|
| FY | 2007 | 2008 | 2009 | 2010 | 2011 |
| Emissions (tons) | 1.5 | 0.2 | 1.2 | 1.4 | 2.0 |

● Toluene (CAS No. 108-88-3)

| Used for chemical analyses inside analytical laboratories | | | | | |
|---|------|------|------|------|------|
| FY | 2007 | 2008 | 2009 | 2010 | 2011 |
| Emissions (tons) | 1.1 | 0.4 | 0.1 | 0.03 | 0.06 |

After use, all materials are taken away by waste-solvent dealers for disposal.

Environmental Accounting

Since fiscal 2006, we introduced and disclosed our own environmental accounting system; based on the “Environmental Accounting Guidelines 2005 issued by the Ministry of the Environment.” As our business activities mainly involve environmental conservation plants and its equipment, Takuma Group employees have a significant awareness of the need for environmental conservation and we have been implementing approaches toward such issues within the Takuma Group.

Environmental conservation cost

| Item | Investment (thousand yen) | Costs (thousand yen) |
|---|---------------------------|----------------------|
| Business area costs | | |
| Pollution prevention costs | 1,030 | 20,316 |
| Global environmental conservation costs | 6,000 | 7,571 |
| Resource recycling costs | — | 15,608 |
| Management activity costs | — | 24,286 |
| Research and development costs | 2,438 | 657,173 |
| Social activity costs | — | 5,953 |
| Total | 9,468 | 730,907 |

Environmental conservation effect

| Item | FY 2010 | FY 2011 |
|--|---------|---------|
| (1) Environmental conservation effect concerning resources input for business activities | | |
| Total energy input (GJ) | 117,277 | 115,234 |
| Water resources input (m³) | 61,276 | 60,166 |
| (2) Environmental conservation effect concerning environmental loads and wastes created by the business activities | | |
| Greenhouse gas emission volume (tons-CO ₂) | 4,961 | 4,917 |
| Waste generation (tons) | 1,011 | 972 |
| Final disposal volume (tons) | 119 | 126 |
| Total drainage volume (m³) | 61,034 | 58,871 |
| BOD emissions (tons) | 3,466 | 3,229 |
| COD emissions (tons) | 3,713 | 3,453 |
| T-N emissions (tons) | 918 | 857 |
| T-P emissions (tons) | 160 | 149 |

Scope of data collected

- Period covered: April 1, 2011 to March 31, 2012
- Companies targeted: **12 domestic companies**

Takuma Co., Ltd. (the Head Office, other offices including overseas sites and the Harima factory), Nippon Thermoener Co., Ltd., Takuma Technos Co., Ltd., Hokkaido Sanitary Maintenance Co., Ltd., Takuma Technos Hokkaido Co., Ltd., Sun Plant Co., Ltd., Takuma Engineering Co., Ltd., Takuma System Control Co., Ltd., Dan-Takuma Technologies Inc., Kyoritsu Setsubi Co., Ltd., Kankyo Sol-Tech Co., Ltd., and Takuma Plant Services Co., Ltd.

4 overseas subsidiaries

KAB Takuma GmbH, Bioener ApS, Taiden Environtech Co., Ltd., and SIAM TAKUMA Co., Ltd.

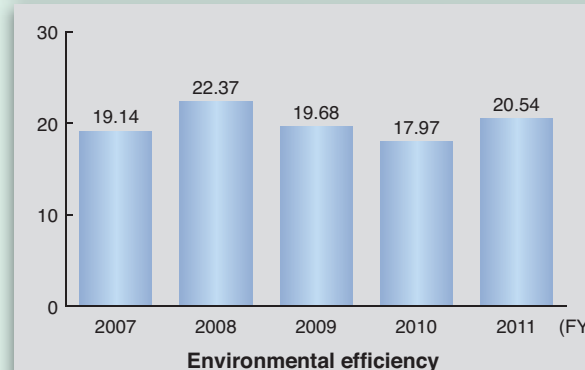
Environmental Efficiency

“As for environmental loads, there is a need for business organizations to reduce their gross volumes. However, approaches toward high economic efficiency are also required from a business management perspective. Consequently, when comprehending and evaluating environmental performance as well as approaches toward the environment implemented by business organizations, it is important to comprehend and manage an index indicating the efficiency of their approaches toward the environment, while also reflecting the economic value they produce, as well as an index indicating the total loading dose.” (Environmental Performance Indicators Guideline for Organizations—Fiscal Year 2002 Version—: Ministry of the Environment)

At Takuma, we calculated our environmental efficiency in response to the demands of this age. And, in that regard, fiscal 2011 improved in comparison with fiscal 2010.

Definition of our environmental efficiency

$$\frac{\text{Consolidated net sales (million yen)}}{\text{Greenhouse gas emissions (tons-CO}_2\text{)}}$$



Compliance/CSR Promotion Education

Following fiscal 2010, we positioned fiscal 2011 as a period for continuation and application of compliance where employees think and act on their own initiative, and we implemented education on compliance and CSR promotion in four separate stages.

Education in the 1st and 2nd terms was centered on the theme of compliance, while the theme was mainly related to CSR in the 3rd and 4th terms. In order to also deepen the understanding of compliance, we conducted an exam to grasp the level of comprehension of compliance along with the education programs for each theme.

1st term: Construction Industry Law

Education was related to the Construction Industry Law, which is very closely associated with our business activities.

Contracts, engineer systems, and construction organization ledgers, etc., were explained so that they could be appropriately used in business.

2nd term: Non-disclosure/electronic information security

There have been many scandals related to non-disclosure protection in recent years, including leaks of personal information. Thus, we conducted education on non-disclosure and electronic information security that included the introduction to measures for incidents of personal information disclosure that have actually occurred as well measures for preventing in-company information from being leaked.

3rd term: What is the aim of CSR management?

Through our Company Motto and our Management Principles, etc., Takuma instructed employees on the aim of CSR management. Following that, we held discussions in each corresponding section and department under the themes “What action produces what is recognized as valuable in the world?” and “What measures make ‘a good company’, i.e., a company in which all stakeholders are satisfied and employees have pride?”

CSR lectures for corporate management

A corporate management-oriented lecture entitled “Looking for strategic CSR” was given by Scott Davis, professor of strategic CSR at Rikkyo University, who provided the third party opinion for last year’s report. One entitled “Towards the 2nd phase evolution of ‘CSR management’ at Takuma” was presented by Shizuo Fukada of Inter-Business Networks Inc. (former Japanese representative industrial expert and Chairman of the ISO/SR Standardization Working Group).



4th term: Why perform risk management?

Introduction to the Organized Crime Exclusion Ordinances

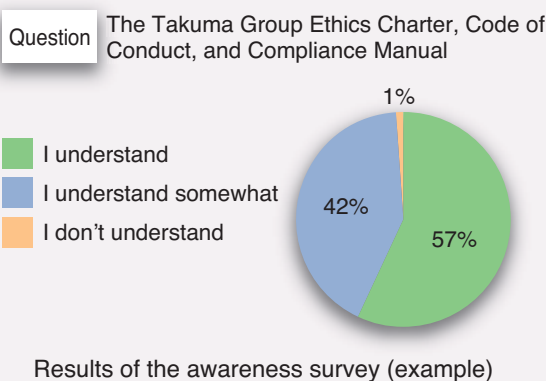
“Why perform risk management” was clarified by explaining the risk management system currently employed at Takuma.

We also introduced the “Organized Crime Exclusion Ordinances” enforced in all prefectures, and offered education on responding to antisocial forces.

CSR Awareness Survey

As a means to understanding the levels of permeation and awareness of education that promotes compliance and CSR, and employing that data as reference for the integrated activities carried out during each fiscal year and for the following fiscal year’s action plan, we have conducted the “CSR Awareness Survey” every year since fiscal 2008 with the end goal of utilizing that information for future compliance and CSR promotion activities.

From the results of the survey in fiscal 2011, it appears that levels of permeation and awareness are improving and that education is having a positive effect.



Compliance Measures

Legal Change Information System

In order to enable our employees to gain a continuous grasp of the latest information on revised and abolished laws and ordinances, we introduced our “Legal Change Information System”. In this system, the most recent information on revisions and changes to laws and ordinances is distributed by e-mail, and the details of the corresponding law or ordinance can be checked on the Internet.

Starting from fiscal 2012, on top of the “Current laws and ordinances” menu, we added a searchable system on “Legal reports and descriptions of judicial precedents” to facilitate an even greater understanding of relevant laws and ordinances.

Measures related to the Anti-Monopoly Law and the Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors

Towards ensuring permanent compliance to the Anti-Monopoly Law, we enacted our “Regulations concerning Management of the Pledge of the Anti-Monopoly Act Compliance”, which provides for the submission of a written oath in regard to observing the Anti-Monopoly Law.

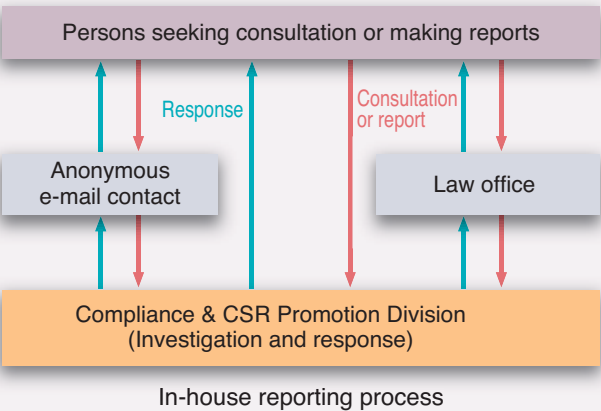
“Rules on Controlling Contact with Competitor’s Sales Departments, Etc.” defines the procedure for an employee to contact the sales department, etc., of a competitor and specifies that an application be made to and approval obtained from the affiliated division manager in advance to ensure fair business contact.

In-House Reporting System

We have been operating an in-house reporting system since August 2006, with the aim of promoting compliance management by uncovering illegal or unfair acts as early as possible and undertaking corrective measures.

Reporting contacts are set up at our Compliance & CSR Promotion Division and at an outside law office, as well as a dedicated contact for anonymous e-mail reporting. Our “In-House Reporting Code” and the “Takuma Group Code of Conduct” further declare that no informant shall be subjected to disadvantageous treatment simply due having filed a report.

In order for this system to be correctly understood and utilized, we distribute and publicize a card to all employees with information on the reporting contacts.



Material Procurement Policy

Takuma carries out procurement activity as defined by our Material Procurement Policy.

Material Procurement Policy

1. Treat all candidates fairly when selecting a supplier.
2. Strive to discover new manufacturers.
3. Strictly control confidential information.
4. Strive to acquire new and pertinent information.
5. Promote green procurement.
6. Comply with laws and ordinances related to business dealings.
7. Always keep VA and VE in mind.
8. Strive for self-development.

We provide fair opportunities for all suppliers, irrespective of nationality, company size, or transaction history.

Suppliers are selected based on our comprehensive evaluation of their reliability and safeness in terms of quality, price, delivery, etc., as well as their abilities in technological development and supply capabilities.

Long-term stable transactions with dependable suppliers results in improved product reliability and greater corporate value. We, therefore, seek to establish relationships of mutual trust and mutual development with our suppliers.

While also respecting relevant laws and regulations as well as social norms, we strictly control and maintain any confidential information that we obtain through our business transactions.

Takuma procurement procedures and required items are posted on the following website.

[Takuma website > Material Procurement]
<http://www.takuma.co.jp/procurement/index.html>
(content in Japanese)

Activities Involving Product Quality

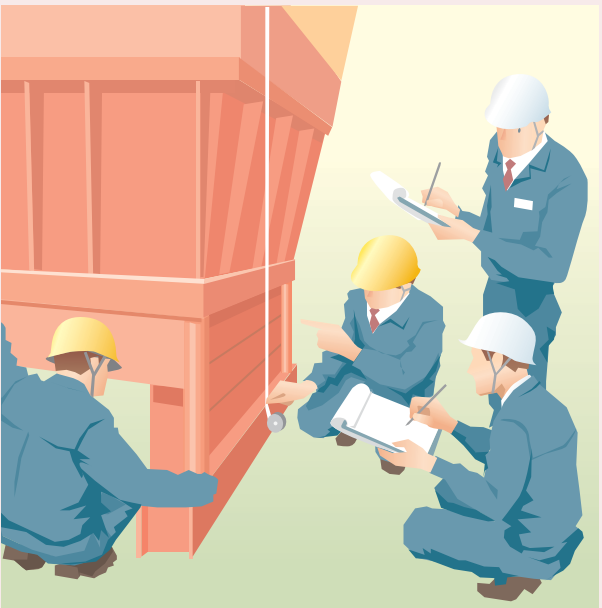
In 1997, we defined our Quality Policy of “Manufacturing products that result in customer satisfaction”, registered for “ISO 9001: Management Systems” certification (Registration No.: JQA 1952), and carried out concrete activities to enhance customer satisfaction as well as improve product quality based on our quality management system. The present status for ISO 9001 certification includes having switched to ISO 9001:2000 in fiscal 2002 and then to ISO 9001:2008 in fiscal 2010.

Based on that Quality Policy, Takuma implements various measures in each sales, design, procurement, manufacture, construction, and management process towards improving the quality of our products and services.

As measures for heightening the quality of the organization as a whole, we establish quality objectives in each section and department at the beginning of the fiscal year, and regularly report (2 times per year) the status of achievements to the QM committee (quality management review).

In order to produce products that customers truly appreciate, it is necessary to not only boost the quality of the product itself, but to improve the content of that work as well as each individual’s ability to create a good product within each of the related processes (sales, design, procurement, manufacture, construction, and management).

Towards systematic improvements in work content, we raise the accuracy of each job through standardization of the work procedure within each process, confirm work status by implementing internal quality audits in each section and department, and enhance work content as necessary.



To develop the capabilities of ISO 9001 internal quality audit members, we invite lecturers from external organizations and hold seminars every year. Through this, we strive to have those audit members acquire fundamental knowledge about ISO 9001 all the way through to actual methods for implementing internal audits. Employees who attend lectures during this seminar and are authorized as ISO 9001 internal audit members are required to periodically conduct internal audits of their affiliation section or department.

Each section and department also creates a “Work (Technical Capability) Achievement Checksheet” in order to precisely grasp the work capability of the personnel required for each process. They then take measures towards further understanding and further honing each individual employee’s present abilities.

Through such steps, quality control is recognized at Takuma, as well as everywhere else, as an important aspect of producing products.

In-house handling of non-compliant products involves implementing the measures (remedies) provided in the corresponding manual (standard). For processes in which there is even a possibility of non-compliance, review is carried out even on those products that were not initially deemed as being non-compliant. In order to also prevent procurement of such non-compliant products, we provide further education (instruction) for all suppliers.

Customer satisfaction survey

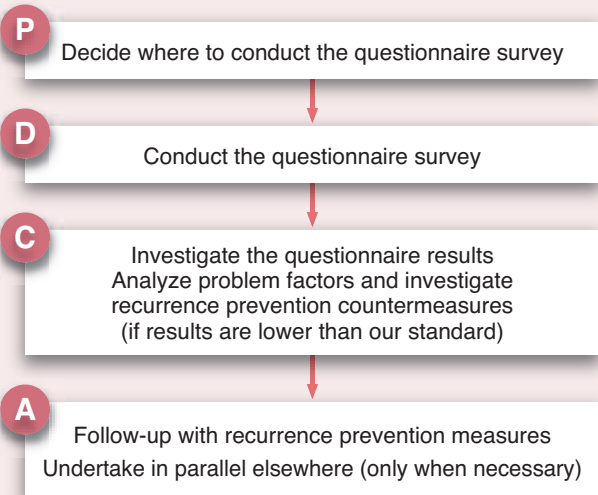
We use our customer satisfaction surveys to obtain feedback from customers when we have built new plants and delivered new equipment, for example, as well as from those to whom we provide regular servicing and upgrades for existing plants. These surveys allow us to hear the unvarnished opinions of our customers about the products that we have delivered and our staff who have been responsible for working with them.

We conduct our satisfaction questionnaire surveys for these types of customers and analyze the results. If there were problems, we analyze the factors that contribute to them and undertake countermeasures to prevent them in the future. The questionnaire survey process is shown on the right as a PDCA flow.

We have used this format to conduct questionnaires since fiscal 2007. Since the second year, average scores of the evaluations we receive from the results have been continually as high as over 80.

We specifically strive to increase the satisfaction of customers who give a total score of less than 70, or who select 1 (Dissatisfied) or 2 (Rather dissatisfied) on a 4-point scale to any of the evaluation items, by analyzing the problem factors in their questionnaire results and discussing measures to prevent recurrence.

For those customers, for whom we conducted the problem analysis and studied the prevention measures, we also conduct a follow-up survey to discern whether their level of satisfaction has indeed been improved (i.e., we ask the same customers to fill out the questionnaire again and check on whether or not there has been an improvement in their level of satisfaction).



PDCA cycle for customer satisfaction surveys

Average evaluation scores from questionnaire surveys

| | |
|----------|-------------------------|
| FY 2007: | 73.4 points (37 plants) |
| FY 2008: | 80.2 points (18 plants) |
| FY 2009: | 83.5 points (26 plants) |
| FY 2010: | 82.3 points (16 plants) |
| FY 2011: | 85.5 points (18 plants) |

Participation in the Community

Disaster Preparedness Agreement Signed

Takuma has entered into an "Agreement on Use as a Temporary Evacuation Center in Case of Tsunamis, Etc.," a Disaster Preparedness Agreement, with Amagasaki City.

Our corporate Head Office is located in Amagasaki where, based on lessons learned from the Great East Japan Earthquake, they are advancing the establishment of temporary evacuation areas in preparation for disasters, such as those that may be generated by tsunamis from earthquakes in the Tonankai and Nankai areas that are anticipated in the near future, as well as those from typhoons, heavy rain, and high tides caused by flooding.

To that end, we recently concluded a Disaster Preparedness Agreement with that city defining our Head Office as temporary evacuation center, and enabling the local populace free access whenever there is a possibility of one of the above disasters occurring. Our corporate Head Office was thus designated by Amagasaki City as a "Temporary Evacuation Center in Case of Tsunamis, Etc.," starting from October 2011.

We are pleased that Takuma can contribute to the community through this Agreement.



Yotteko-mura, Arai

"Yotteko-mura, Arai" is launched in Takasago City's Arai district with support from the Hyogo Prefecture's "Kenmin Koryu Hiroba" (Civic Exchange Plaza) project. Takuma offers the "Takuma Club" recreation facility located in our Harima Factory free of charge as their village office "Yotteko" means "Come on over" in Banshu (south west Hyogo Prefecture) dialect and "Yotteko-mura" was inaugurated for the purpose of securing a new local community venue in which anyone can participate at any time.

Its daily activities include the opening of an area for playing the game of go, the lending of books, etc., and various events are also held throughout the year. About 2,500 persons participated in the "Nagomi Market" held in commemoration of the 3rd anniversary of the inauguration of Yotteko-mura, and the event was packed with people.

"Yotteko-mura, Arai" was additionally awarded the "Sukusuku Plaza Prize" (the highest award) in the Citizen Exchange Plaza Community Prize category at the "Local Community Awards 2011" (held as an opportunity for prefecture-wide Citizen Exchange Plazas to share know-how and discuss their activities, and as a place of generating exchange that stimulates people's enthusiasm).

Takuma will continue to contribute to the community through "Yotteko-mura, Arai".



Nagomi Market 3rd anniversary event



Activities That Contribute to Society

● Supporting the World Food Programme

Takuma serves on the Board of Trustees of the Japan Association for the United Nations World Food Programme, which is an official support partner of the WFP (World Food Programme) in Japan. In support, we carry out a campaign period once per year and place posters around entrances to our office buildings and dining halls, etc., in order to get our employees thinking about the global food problem. We also undertake related fund-raising activities.

● Social contribution activities by Takuma employees

● Takuma Group coordinated cleanup activities

In line with "World Environment Day" on June 5 we organized "coordinated cleanup activities" to clean the neighborhoods around our offices from May to June 2011. Group-wide calls for volunteers resulted in the participation of 450 employees from throughout the Group. We will also continue this activity in order to make a contribution to local communities.



● Participation in the "Osaka Marathon 'Cleanup' Campaign"

Tie up with "the city-wide campaign: 'Clean Up Osaka'", which is held every year in Osaka City, volunteers from Takuma's Plant Service Department (Osaka) participated in the "Osaka Marathon 'Cleanup' Campaign" held in October 2011.

● Participation in GCJN Collective Action for Recovery from the Great East Japan Earthquake

Volunteer activities to support areas stricken by the Great East Japan Earthquake were carried out by GC-JN (Japanese Global Compact Local Network) and member companies. Yoshiaki Okada from our Audit Department participated on behalf of Takuma.

In the Oshima area of Kesennuma City (Miyagi Prefecture), we were involved in activities like the removal of debris, clearing away the wreckage from collapsed houses, communicating with local residents, and the holding of meetings on reconstruction.

● Exhibition

Takuma exhibited in the "Sho-Ene (Energy-Saving) Fair 2012" held on January 26 and 27, 2012 at MyDome Osaka. We introduced our latest energy-saving technologies and equipment there and greeted a large number of visitors.

● Blood donation campaign

Takuma supports blood donation activities through the Japanese Red Cross Society. In our Head Office, 83 persons participated in this campaign in October 2011, 97 persons in March 2012, and 11 persons participated in January 2012 at our Harima Factory. We plan to continue this activity during fiscal 2012 as well.

● Contributions to NPOs

● Purchasing UNICEF Christmas cards

Fifty percent of the proceeds are used to fund UNICEF in their work to help children around the world.

● Donating to a calendar market sponsored by the NPO "Nippon Volunteer Network Active in Disasters"

Takuma donated 150 unused in-house calendars. The proceeds are used to support disaster victims.

● Using of carbon offset New Year's postcards

Takuma purchased 5,949 carbon offset New Year's postcards, resulting in a CO₂ reduction of 17.8 tons in 2012.

● Takuma Technical Review

We issue the Takuma Technical Review twice a year where we introduce proprietary technical related information. To-date, we have published reports on plant operation and on demonstration testing and announced new products. Please visit our website to read abstracts.



[Takuma website > Technical Information > Technical Review]
<http://www.takuma.co.jp/english/gijutu/gihou.html>

● Activities by the group company

● Ichihara New Energy Co., Ltd.

On November 24, 2011, vice-president Masahide Nishigaki gave a lecture at the "Status of the Business of Generating Electricity from Waste Materials and Heat Supply" symposium sponsored by the Japan Society of Material Cycles and Waste Management. That symposium featured lectures on future energy policies, trends in energy recovery technology, the status of businesses generating electricity from waste materials and heat supply, etc. Vice-president Nishigaki's lecture was based on the standpoint of a businessman about improving income and expenditure, issues faced by private business entities, and requests regarding national policy, etc.



● RBN Co., Ltd.

Participated in the following exhibitions:

- Hyogo Environmental Business Exhibition (September 21 and 22, 2011: Kobe International Exhibition Hall)
- Himeji Environmental Festival (October 1 and 2, 2011: Otemae Park)
- "3R Promotion Month" exhibition for promoting consumer electronics recycling (October 4 to 7, 2011: Sunport Takamatsu)



Outside Expert Opinion



Shingo Akechi

Guest Professor
Graduate School of Business
Doshisha University

A social enterprise is a company that has a social mission, maximizes their proprietary capabilities, and makes the resolution of social issues their business. Takuma can be considered as corresponding precisely to this definition.

Takuma's Management Principles state their latest Corporate Vision as "TAKUMA aims to maintain its role of being an indispensable presence in society as a leading company in the field of renewable energy utilization and environmental protection...". Specific examples and results can be seen in the "Deployment of Businesses" and "Topics" sections of this Report.

With contents that include principles, vision, business and other concrete activities, and more, Takuma unites its Company Profile with its CSR Report to fully appeal for its CSR management, i.e., "CSR through our core business".

Readers of This Report

For those engaged in creating a CSR report, the desire to have it read by a wide range of stakeholders is common. But these reports do not easily reach those stakeholders, to the point that there is black humor in the fact of the very first reader of a CSR report being a person in charge of another company's CSR.

Combined with their Company Profile, Takuma's CSR Report can be used during sales and exhibitions to tout the social nature of the company to current and potential customers, and can obtain their sympathy towards the company's businesses and activities.

It is also an effective tool for supplying appropriate information on their business to shareholders and job-hunting students.

If a group employee, i.e., an important stakeholder, reads this Report, it will engender feelings that their work can contribute to society, and will thus lead to feeling that their work is worthwhile. An outline of Takuma's 10th Mid-Term Management Plan is specifically included in this fiscal 2012 edition, so this can also play a part in the incorporation of that plan by all employees.

Especially if they get their families to read it, this Report can enable father, mother, son, and daughter to all share their pride in those who work at Takuma by knowing what kind of company it is and what kind of work they do.

If I may be allowed one wish, it might be a good idea to increase, even to a slight degree, the information in the history contained in the Company Profile. A greater balance of economy, environment, and society, the so-called "triple bottom line", is also important.

Measures of the Mid-Term Management Plan and CSR

Net income was minus 10 billion yen or so every year during the 8th Mid-Term Management Plan that went into effect when Takuma's Compliance & CSR Promotion Division was established in fiscal 2006, but recovery began once they started their 9th Mid-Term Plan. Although the priorities for CSR activity in both periods were "compliance" and "risk management", looking at things from the fact of that Division having just been initiated, and in the transitions of their achievements, the activities during that time may have been well timed.

For the 10th Mid-Term Management Plan, "strengthening our operating base to maintain stable profits" is raised on the basis of the Corporate Vision, while CSR activities include "Activities concretely scheduled for FY2012" and "Towards medium-to-long term activities (targets from fiscal 2013 to fiscal 2015)" as a roadmap for the future.

CSR management is achievable exactly because their management strategy, management plan, and CSR activities are unified. I would like to strongly recommend aiming at consistency in the selection of important CSR issues within the Basic Policy for the 10th Mid-Term Management Plan.

The same may be said of the performance measurement index (KPI). For example, what about placing the conversion of waste and biomass into energy and the reduction of the global tonnage of CO₂ as the overall KPI? Wouldn't that be a KPI under which the whole of the Group can unite and strive to reach the targeted goals?

In terms of Takuma's business attributes and business environment, and from the point of view of the establishment of a competitive advantage, the overseas deployment, and the human resource training that are contained in the policy for the present Mid-Term Plan, placing "compliance" at the very foundation of all important issues may very well be the right choice.

The Takuma group is an irreplaceable company for our Earth and for humankind. I would hope for each and every group member to display sufficient spirit towards playing a central role in the restoration of the global environment and in the revival from frequently occurring natural disasters, and for CSR management to penetrate throughout all of the Takuma Group.

Profile:

Former Executive Vice-President of OMRON Corporation. While driving CSR at OMRON during his tenure, was also engaged in education in the world of economics. Currently based in Kyoto and directing his energies towards CSR promotion in small and medium-sized enterprises.

Response to the Outside Expert Opinion



Wataru Yoshida

Managing Executive Officer
General Manager,
Compliance & CSR Promotion Div.
& Corporate Service Div.

We deeply appreciate the third party opinion of Professor Shingo Akechi.

This is our sixth "CSR Report". Fiscal 2011, when this became our main publication, was the last fiscal year of our 9th Mid-Term Management Plan, and fiscal 2012 marks the first year of the 10th Mid-Term Management Plan.

In his Outside Expert Opinion, Professor Akechi featured "Readers of this Report" and "Measures of the Mid-Term Management Plan and CSR".

It is difficult to create a report with which all stakeholders will be satisfied, but, in order that they may understand the latest circumstances surrounding our company, we strive to explain the contents intelligibly and carefully. In order to deliver substantial content that satisfies the majority of our stakeholders, we plan to continue, improve, and expand the sections on economy, environment, and society, the "triple bottom line" as Professor Akechi pointed out.

In terms of management, we tackled our 8th and 9th Mid-Term Management Plans with "compliance" and "risk management" as a priority. This is also being continued and implemented in the 10th Mid-Term Management Plans as well.

As "CSR Activities for the Future", we continue to include measures for creating a roadmap. In fiscal 2012, we plan on concentrating on the "selection of important issues" and achieving success that way. We will advance honestly and steadily, step by step, implement reexamination and improvement of our CSR activities, and work hard to integrate it into management.

Social issues on energies, such as problems at nuclear power plants and electric power shortages, continue to change on a daily basis. Thus, as a company involved in "environment and energy", we will continuously take into consideration the communication of policies, principles and targets, and the corresponding concrete contents that need to be conveyed, and implement that through our "CSR Report", the basis of our new Corporate Vision.

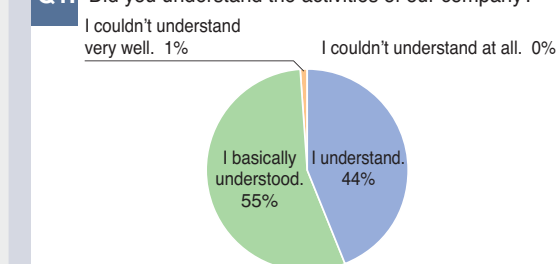
We will take in the points that Professor Akechi has called attention to with due sincerity, and will employ them in creating our next CSR Report and in the promotion of future CSR management.

Takuma Corporate Profile & CSR Report 2011 Questionnaire Survey Results

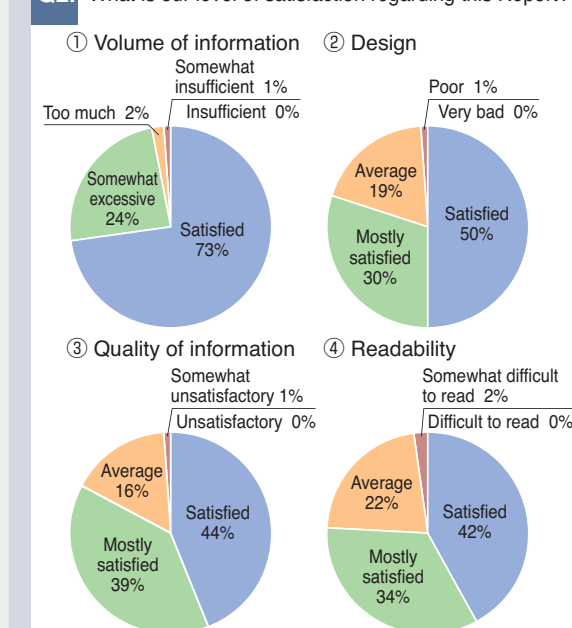
Survey period: June 2011 to May 2012

Number of respondents: 718

Q1. Did you understand the activities of our company?



Q2. What is our level of satisfaction regarding this Report?



Q3. Which items were you interested in? (Select up to 3.)



We thank everyone who has offered us their opinions, something that is useful to us in further improving this Report. We ask for your further cooperation in filling out this questionnaire regarding the fiscal 2012 edition.



Takuma Co., Ltd.

2-2-33 Kinrakuji-cho, Amagasaki, Hyogo 660-0806, Japan

Website: <http://www.takuma.co.jp/english/>

● For further information on the CSR Report, please contact:

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■ Paper



Printed on FSC™-certified paper (made from trees from responsibly managed forests).



Printed on paper made with wood from forest thinning. "Morino Chonai-Kai" (Forest Neighborhood Association) – Supporting sound forest management.

■ Printing



Printed using "waterless printing", which does not generate hazardous waste.



Printed using vegetable oil ink.