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## 2013 CSR Report

### Corporate Social Responsibility

# 2013 CSR Report

The Yokogawa Group aims to benefit society by providing solutions that protect the environment and being a positive influence for social change.

Building a sustainable society through broad-ranging activities in the areas of measurement, control, and information.

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Takashi Nishijima  
President & COO

### YOKOGAWA CSR Policies

- ▶ Contributing to building a sustainable society through business activities

### Corporate Governance and Compliance

- ▶ Corporate Governance
- ▶ Risk Management
- ▶ Anti-corruption and Compliance

### Creating Value for Society and our Customers

You can read some of our contribution to society and our customers through the use of our measurement, control and information technologies.

### Responsibility to Stakeholder

- ▶ Environmental Reporting
  - Reducing Environmental Impact by Products
  - Reducing Environmental Impact within Yokogawa
  - 2012 Achievements
- ▶ Customers and Quality first
- ▶ Supplier Relations
- ▶ Employees
- ▶ Occupational Safety and Health
- ▶ Community Involvement

#### About the 2013 CSR Report

The 2013 CSR Report gives a complete overview of the CSR activities of the Yokogawa Group. Financial information is provided in our annual report.

Our Group prepares its CSR Report in four versions--the "Global Version," "Japanese Version", "European Version" and "Chinese Version"--in order to provide useful information for the benefit of stakeholders.

[→ Global Version](#) (This website)[→ CSR Reports \(PDF\)](#)

Provide stakeholders worldwide with information on what the Group is doing globally. (Language: English)

[→ Japan Version](#)

Provide stakeholders in Japan with information on what the Group is doing globally,

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MEMBER OF  
**Dow Jones Sustainability Indices**  
in Collaboration with RobecoSAM

as well as significant, local-community activities in Japan. (Language: Japanese)

[→ European Version](#)

Provide stakeholders worldwide with information on the activities of the group companies in Europe. (Language: English)

China Version:

[→ Yokogawa China Co., LTD.](#)

 [Yokogawa Electric China Co., Ltd. \(PDF: 2.64MB\)](#)

Provide stakeholders in China with information on the activities of these two group companies in China. (Language: Chinese)

- Period covered by this report  
April 1, 2012 through March 31, 2013  
Where appropriate, information on events occurring outside this period may be included.
- Scope of data  
This report covers Yokogawa Electric and its Group companies. When data having a different scope is provided, that is noted.
- Company names  
In this report, "Yokogawa" and "Yokogawa Group" refer to the entire organization, "Yokogawa Electric" is only used with reference to Yokogawa Electric Corporation.
- Reference Guidelines  
Environmental Reporting Guidelines (Fiscal year 2007 Version),  
published by the Ministry of the Environment, Japan  
Environmental Accounting Guidelines (Fiscal year 2005 Version),  
published by the Ministry of the Environment, Japan  
Sustainability Reporting Guidelines 2006,  
published by the Global Reporting Initiative

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## Top Message

### Yokogawa contributes to building a sustainable society through broad-ranging activities in the areas of measurement, control, and information

Today, our society faces a number of issues such as the need to achieve both economic growth and environmental preservation while providing solutions for limited energy and resources. Specifically, the increase in demand for oil, natural gas, electricity and other energy resources, and environmental problems such as global warming, are more evident than ever before due to the fast-growing economies of emerging markets and other countries, coupled with the increasing global population.

With Yokogawa Group's corporate philosophy of "contribute to society through broad-ranging activities in the areas of measurement, control, and information," we are working to resolve the aforementioned issues in the context of our business activities.

Our "Evolution 2015" Mid-Term Business Plan states that we will help solve the unique challenges faced by emerging markets, resource-rich countries, Western nations and other countries and regions--such as energy conservation, the reduction of environmental impact and improved plant safety--by utilizing our solutions. Moreover, we will make proactive efforts to develop technologies that will be useful for the creation of alternative, renewable and other new energy sources.

We will strive to create new value with our customers, as a "global solutions and service company" that provides ways to address challenges from the customer's point of view. We won't stop there, however. We will also anticipate social challenges that might arise in the communities in which our customers and Yokogawa conduct business. We will implement CSR activities with the concept of what Yokogawa calls "B to B to C (Business to Business to 'Community') through which we work with our customers to build the future of customers, industries and the earth," and will unite all our efforts as Yokogawa Group in a commitment to contribute to building a sustainable society through the use of our technologies in measurement, control and information.



Takashi Nishijima  
President and COO

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## Yokogawa Policies

Yokogawa's mission, since its inception in 1915, has been to provide electrical measuring instruments, electronic measuring devices and industrial control equipment and thereby help society grow and develop. This founding principle has been passed on to the present in our corporate philosophy: "Contribute to society through broad-ranging activities in the areas of measurement, control, and information."

We believe our most important social responsibility is to help build a sustainable society through our business activities. Yokogawa's CSR concept is shown below.



Yokogawa supports the United Nations Global Compact and thinks of its principles as value that should be shared by all members of the Yokogawa Group. We also maintain our commitment to the ISO 26000 standard as we engage in the CSR activities.

### Building a Sustainable Society (B to B to C)

We demonstrate our social responsibility as a business through the belief that Yokogawa supports the industries worldwide through the themes of measurement, control and information. In addressing the environmental and societal challenges we face, we utilize our "technologies in measurement, control and information" in the areas of solutions for energy savings, support for new/alternative energy development, environmental impact measurement/analysis, support for medical/pharmaceutical product development and so on.

Yokogawa identifies Business to Business to Community as the concept for our CSR activities and will therefore work to help build a sustainable society.

→ [Building a sustainable society](#)

### Corporate Philosophy and Standards of Business Conduct

Yokogawa has established the corporate philosophy and the standards of business conduct applied to all the group companies. These policies clearly describe Yokogawa's corporate responsibility.

Our corporate philosophy defines Yokogawa's raison d'être and values, but it also defines what a Yokogawa employee should aspire to be. Our Standards of Business Conduct set forth five basic principles--realization of the corporate philosophy; customer satisfaction; compliance with laws, regulations and rules; respect for human rights; peace, safety and order of the civil society--while also defining the "basic attitude" by describing how we should help preserve the global environment and what kind of relationship we should have with our stakeholders.

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[→ Corporate Philosophy](#)

[→ Standards of Business Conduct](#)

Also, the Yokogawa Group Compliance Guidelines give clear rules and guidelines relating to human rights, obedience to the law, workplace safety, hygiene, etc.

[→ Yokogawa Group Compliance Guidelines \(Human Rights\)](#)

## Corporate Governance, Risk Management and Compliance

As business activities are becoming increasingly global, Yokogawa faces diverse risks and compliance is more important than ever before. Yokogawa is actively engaged in fulfilling its corporate social responsibilities in the areas of society and environment, business activities, human resources, and management.

Aiming to be a company that is trusted in the global markets, we have positioned compliance as our number one management priority. We have also strengthened our internal control system and risk management.

[→ Corporate Governance and Compliance](#)

## CSR Promotion Structure

We have established a dedicated CSR group within the Audit and Compliance Headquarters, whose functional scope also includes overseeing internal controls. With this CSR group, which drives the activities aimed at CSR, environmental protection, occupational safety and health, and social contribution (citizenship), we have put in place a system for the implementation of more comprehensive CSR activities throughout the entire group.

[→ Internal Control System](#)

## The United Nations Global Compact

In January 2009, Yokogawa participated in the "United Nations Global Compact," an international initiative that promotes 10 principles concerning human rights, labor standards, environment, and anti-corruption. As of May 2013, 11,384 groups are participating in the world, and Yokogawa is the 76th Japanese company to participate in it. An effort has been ongoing to share the ethos and the standard of the Global Compact with all workers within the Group and all the customers and suppliers connected through its supply chains.

[→ UN Global Compact Index](#)

## ISO 26000

ISO 26000, issued by the International Standardization Organization in November 2010, is an international standard for the social responsibilities of corporate entities, presenting seven core subjects including organizational governance, human rights, labor practices, environment and fair operating practices. The standard serves as a guidance manual instead of defining and requiring conformity assessment or third-party certification such as in the case of ISO 9000 and ISO 14000.

Yokogawa, as a company active in the global marketplace, observes ISO 26000 and upholds corporate governance as a key principle of CSR in running the company. As such, we are committed to CSR activities designed to contribute to society through our business operations, conserve the environment and protect human rights, to meet the expectations of stakeholders.

[→ ISO 26000](#)

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## Building a sustainable society (B to B to C)

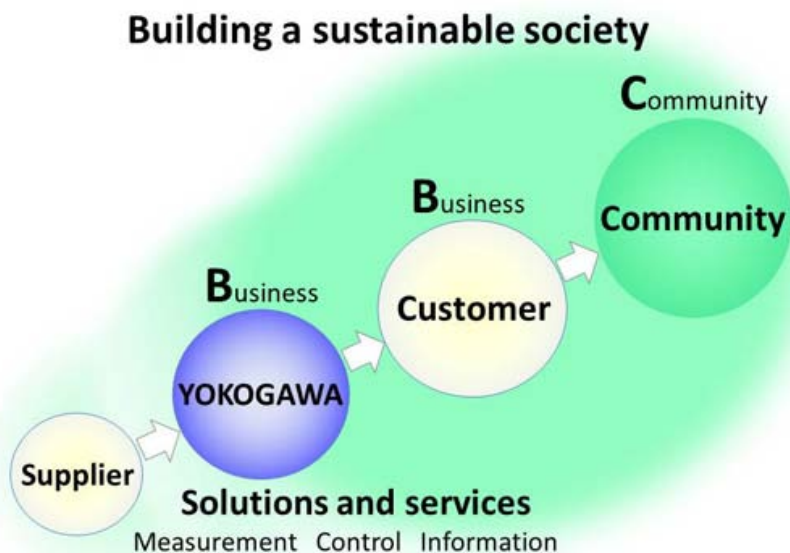
Yokogawa Group is committed to supporting our corporate customers in a variety of industries by providing solution services based on our technologies in measurement, control and information.

Many of our customers are involved in the development and production of energy, resources, materials and products that support people's lives. They conduct business on a global scale.

Furthermore, our customers have deep ties with the communities they serve. In addition to operating their plants with safety and environmental considerations, they contribute to community growth by hiring workers and promoting human resource development, among others.

Yokogawa Group, with the generous support of many suppliers, provides a range of solution services in the fields of energy conservation, safety and environment, thus helping our customers create value.

As part of our effort to help build a sustainable society, Yokogawa Group implements CSR activities with the concept of "B to B to C (Business to Business to Community)."



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## Corporate Philosophy

### The Yokogawa Philosophy

#### Introduction to Yokogawa's corporate symbol and standards of business conduct

As a company, our goal is to contribute to society through broad-ranging activities in the areas of measurement, control, and information.

Individually, we aim to combine good citizenship with the courage to innovate.

Published in January 1988

### Standards of Business Conduct for the Yokogawa Group

#### I. Basic Pries of the Yokogawa Group

##### 1. Realizing The Yokogawa Philosophy

This Company Code imparts the principles of good business for the Yokogawa Group members who aspire to fulfill the Yokogawa Philosophy. "As a group, our goal is to contribute to society through broad-ranging activities in the areas of measurement, control and information. Individually, we aim to combine good citizenship with the courage to innovate."

We, as members of the Yokogawa Group, conduct business activities according to the Yokogawa Philosophy and carry out duties with integrity.

We observe the Standards of Business Conduct.

##### 2. Customer Satisfaction

From the viewpoint of customer satisfaction, we provide valuable products and services that are useful to society.

Winning customer satisfaction is the start to gaining the trust of shareholders and all concerned people in the community and society.

##### 3. Observance of Laws and Regulations

We observe the laws, regulations, and other rules of society, and conduct business activities with ethical conscience.

We accept different cultures and respect the laws and social mores of the international community.

##### 4. Respect for Human Rights

We value and respect the dignity of each individual and all basic human rights.

##### 5. Order and Safety of Community and Society

We do not develop or foster any relationship with any people or groups that threaten the order and safety of the community and society.

#### II. Basic Attitude of the Yokogawa Group

##### 1. Customers

We conduct activities with integrity to gain the approval and trust of customers.

We provide accurate and ample information to customers so that they can use our products and services in safety and with satisfaction.

##### 2. Shareholders

We use, maintain and enhance corporate assets efficiently and effectively to win the trust of our shareholders.

We openly and accurately disclose corporate and management information to our shareholders.

We maintain a sound and clear relationship with our shareholders.

##### 3. Community and Society

We strive to achieve the common goals of the community and society, including protection of the global environment and the building of prosperous societies.

We endeavor to be a friendly and cooperating member of society and participate positively in the activities of society.

##### 4. Suppliers and Vendors

We work sincerely and soundly with suppliers and vendors and treat them fairly and equally.

We refrain from making any contacts with the suppliers or vendors that may be misinterpreted as abuse of a special relationship, and we maintain sound and open

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relationships.

5. **Competitors**

We compete fairly, openly and freely with other suppliers.

6. **Politicians and Governmental Agencies**

We maintain sound and open relationships with politicians, public servants and people related to them.

III. **Guideline of Conduct for Yokogawa Group Members**

1. **Workplace**

We maintain an active, bright, safe and sound company atmosphere that we can take pride in.

We pay careful attention so that none of us would suffer from harassment, unfair treatment, or infringement of privacy.

2. **Group Assets**

We use the assets of the Yokogawa Group only for Group-related business activities.

3. **Management of Information**

We fully recognize the value of the knowledge within the Yokogawa Group and that of business partners, and maintain strict records and guardianship of this information.

We use information obtained through business activities only for business purposes.

4. **Avoidance of Conflict of Interest**

We conduct our business activities neither for personal gain nor to take advantages of business positions. Furthermore, we conduct our activities in such a way that the Yokogawa Group suffers no losses or damage.

5. **Prudent Personal Activities**

We act responsibly, in private and on business, so as not to impair the Yokogawa Group's credibility or reputation or cause any losses or damage to the Group.

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## UN Global Compact

The United Nations has put forward a set of ten principles, The UN Global Compact, relating to human rights, labor, the environment, and anti-corruption. On January 5, 2009, Yokogawa signed on as a participating company.

Kofi Annan, former Secretary-General of the UN, first proposed the Global Compact at the World Economic Forum in 1999; the UN officially launched it in 2000. Participating companies are expected to uphold and practice international standards relating to human rights, labor, the environment, and anti-corruption.

Today, Yokogawa does business around the world and its actions affect economies, societies, and the environment. Recognizing its role as a global company, it abides by international norms and actively works to address urgent international issues such as the environment and human rights.

→ [Press release of January 7, 2009, announcing Yokogawa's participation in the UN Global Compact](#)

Below are the ten principles of the UN Global Compact, followed by Yokogawa's efforts in each area:

### Human Rights

**Principle 1:**

Businesses should support and respect the protection of internationally proclaimed human rights; and

**Principle 2:**

make sure that they are not complicit in human rights abuses.

**Yokogawa's Efforts:**

- [Human rights policies](#)
- [Extends CSR through the supply chain](#)
- [United Nations Millennium Development Goals \(MDGs\)](#)

### 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.

**Yokogawa's Efforts:**

- [Encourages the use of human resources with an emphasis on diversity](#)
- [Employs the disabled](#)
- [Maintains workplace safety and hygiene](#)

### Environment

**Principle 7:**

Businesses should support a precautionary approach to environmental challenges;

**Principle 8:**

tundertake initiatives to promote greater environmental responsibility; and

**Principle 9:****Recommended contents**

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encourage the development and diffusion of environmentally friendly technologies.

**Yokogawa's Efforts:**

- [Environmental management](#)
- [Contribute to a Sustainable Future](#)
- [Environmental equipment and instruments](#)

## Anti-Corruption

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**Principle 10:**

Businesses should work against corruption in all its forms, including extortion and bribery

**Yokogawa's Efforts:**

- [Anti-corruption and Compliance](#)

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## ISO 26000

ISO 26000, issued by the International Standardization Organization in November 2010, is an international standard for the social responsibilities of corporate entities, presenting seven core subjects including organizational governance, human rights, labor practices, environment and fair operating practices.

We at Yokogawa, as a company active in the global marketplace, adhere to ISO 26000 and uphold corporate governance as a key principle of Corporate Social Responsibility (CSR), which forms the foundation of corporate management. As such, we are committed to the implementation of socially responsible programs/activities designed to contribute to society through business operations, environmental conservation and the assurance of human rights in order to meet our shareholders' expectations.

The core subjects of ISO 26000 and our key efforts in regard to these subjects are explained below.

### Organizational governance

We strive to provide effective corporate governance according to ten internal control systems, including the decision-making system, which is central to our corporate governance.

**Yokogawa's Efforts:**[→ Internal control system](#)[→ Corporate governance](#)

### Human rights

We at Yokogawa have defined "respect for human rights" as the policy/goal of the entire Group, as found in the Standards of Business Conduct and the Yokogawa Group Management Standards. Additionally, we use two of our internal control systems-- business ethics and labor management--to promote the assurance of human rights.

**Yokogawa's Efforts:**[→ Standards of Business Conduct](#)[→ Human rights policies](#)[→ Career development and work life balance](#)[→ Employment of people with disabilities](#)

### Labor practices

Among our internal control systems, we use the labor management system to maintain a proper employment environment.

**Yokogawa's Efforts:**[→ Human rights policies](#)

### The environment

Among our internal control systems, we use the environment, safety & health management system to promote the environment conservation.

**Yokogawa's Efforts:**[→ Environmental management](#)**Recommended contents**

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## Fair operating practices

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We have specified, in the Standards of Business Conduct, the requirements for compliance with laws and rules and the maintenance of fair relationships with customers, suppliers, vendors and competitors. We also use our internal control systems, primarily those of business ethics and financial reporting control, to ensure legal compliance and fair, open business practices.

### Yokogawa's Efforts:

- [Standards of Business Conduct](#)
- [Anti-corruption and compliance](#)
- [Supplier relations](#)

## Consumer issues

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We are committed to responsible practices with respect to our customers and society. Therefore, we use the internal control systems, primarily those of quality management and information security, as the key elements.

### Yokogawa's Efforts:

- [Customer satisfaction and Quality Assurance](#)
- [Information Security](#)
- [LCA Label](#)

## Community involvement and development

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According to our corporate philosophy--" We aim to combine good citizenship with the courage to innovate."--we have vigorously involved in activities and programs designed to address increasingly serious social issues and promote regional revitalization, thereby helping resolve the challenges faced by the communities in which we operate.

### Yokogawa's Efforts:

- [Community Involvement](#)

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## Corporate Governance and Compliance

Yokogawa is actively engaged in fulfilling its corporate social responsibilities in the areas of society and environment, business activities, human resources, and management.

Aiming to be a company that is trusted in the global markets, we have positioned compliance as our number one management priority. We have also strengthened our internal control system and risk management.

### Corporate Governance

Yokogawa's basic system of corporate governance including business execution system, board of directors, board of auditors, and whole structure

[→ more](#)

### Anti-corruption and Compliance

System to promote compliance, compliance training, compliance hotline, and global awareness survey

[→ more](#)

### Information Security

Information security measures to address three aspects: people, equipment, and information technology

[→ more](#)

### Internal Control System

Yokogawa's "internal control" is a management process in which business resources are allocated appropriately and moved functionally.

[→ more](#)

### Risk Management

Risk survey, classification of risks, management system, risk reporting, and BCP

[→ more](#)

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## Corporate Governance

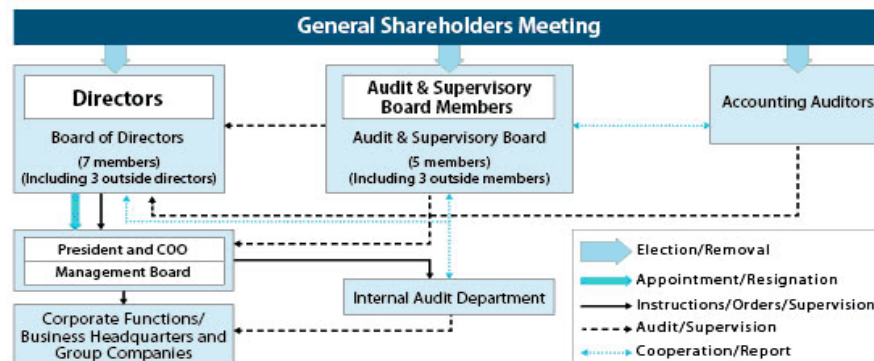
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The Yokogawa Group recognizes that the basic mission of corporate management is to secure sound and sustainable growth, and to earn the trust of its shareholders and other stakeholders. Accordingly, the Group is implementing measures to enhance corporate governance in order to achieve a sound and profitably run organization. The Company employs a corporate auditor system and has a Board of Directors that monitors directors in the execution of their duties and a Board of Corporate Auditors that monitors the Board of Directors. We are enhancing this system by utilizing independent outside directors and corporate auditors. Through these systems, the Company is bolstering the effectiveness of its corporate governance.

Speedy decision making and transparency are ensured through deliberations between directors who are well versed in the Group's business and outside directors who maintain a high degree of independence. Through audits by the corporate auditors, the legality, efficiency, and rationality of the directors' activities and the appropriateness of their decisions are rigorously examined.

The Yokogawa Group has set forth its basic compliance policies in the Standards of Business Conduct for the Yokogawa Group, and directors take the lead in working to see that business ethics are upheld and embraced throughout the Group. In addition, the Yokogawa Group Internal Control Systems, which are intended in part to ensure the reliability of financial statements and the propriety of decision making, guarantee the appropriateness and efficiency of Group operations.

### Corporate Governance Structure



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## Internal Control System

At Yokogawa, "internal control" is a management process in which business resources, such as human resources, assets, and budgets, etc., are allocated appropriately and moved functionally to increase the corporate value. An internal control system is constructed as a means to achieve internal control; this is used to control both the positive and negative aspects. By doing this, Yokogawa aims at improving the corporate value of the entire Group.

### The Structure of the Internal Control System

The internal control system of the Yokogawa Group consists of 10 control systems and 4 subsystems as shown in the table below: Each control system sweeps across all divisions that are conducting business activities.

Internal Control Systems	Subsystems	Primary laws (excerpt)
Business Ethics		General law, Whistleblower Protection Act, etc.
Decision Making		Corporate law etc.
Quality Management		Laws concerning products, such as Product Liability Act and Measurement Act, etc.
Labor Management		Labor Standards Act, Act on Securing, Etc. of Equal Opportunity and Treatment between Men and Women in Employment, etc.
Environment, Safety & Health Management		General environmental laws, Occupational Safety and Health Act, etc.
Information Security Management		Unfair Competition Prevention Act, Act on the Protection of Personal Information, etc.
Export Control		Foreign Exchange Law, etc.
Financial Reporting Control	Financial Reporting Management	Financial Instruments and Exchange Act
	Purchasing Management	Financial Instruments and Exchange Act, Act against Delay in Payment of Subcont
	Prevention of Insider Trading	Financial Instruments and Exchange Law
	Disclosure Management	Corporate law, Financial Instruments and Exchange Law, etc.
Crisis Management		General laws
Corporate Auditing Infrastructure		Corporate law

As for each internal control system, the relevant key result indicators and action indicators are clearly defined and the PDCA cycle is applied according to the evaluations of the respective indicators' achievement levels.

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## Anti-corruption and Compliance

Yokogawa promotes compliance management strongly throughout its entire group, with the slogan, "compliance above everything else". It aims to be a healthy and open business with two pillar foundations: "corporate culture that encourages ethical conduct" and "systems to prevent unethical conduct."



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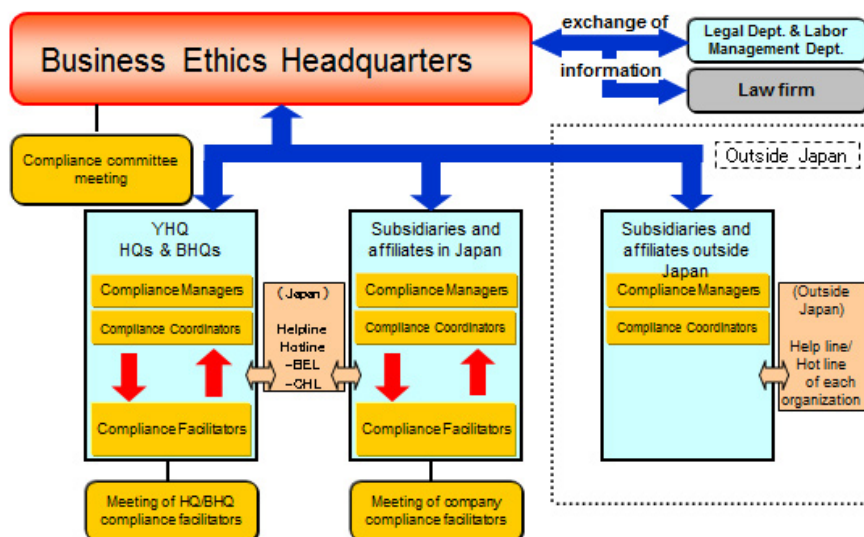


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### Provision of Compliance Promotion Structure

To build a "corporate culture that encourages ethical conduct" and "systems to prevent unethical conduct," a compliance promotion structure has been set in place globally. In Japan, compliance facilitators, who are advisors in the workplace, drive activities designed to communicate and entrench compliance awareness. A leader is selected from among the compliance facilitators in each organization, and all leaders gather at the "Compliance Committee" meeting held on a regular basis in order to share information and monitor progress.



### Anti-bribery Guideline

We have established a specific guideline on prevention of bribery of not only public servants but also private citizens in Japan and abroad, in order to ensure compliance with the anti-bribery law in each country where the Yokogawa Group conducts business and prevent bribery while engaging in corporate activities in a fair, proper manner. The guidelines have been rolled out on a global basis for thorough implementation by each

group company. We also conduct regular internal audits to ensure compliance with the guidelines.

### Strict Prohibition of Insider Trading

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To prevent insider trading, we have established the "Regulations on Prevention of Insider Trading" as an internal regulation and have included a section on prohibition of insider trading in our "Compliance Guidelines." Additionally, we have established a group-wide compliance structure and provided education, etc., to strictly prohibit insider trading.

### Conducting Enlightenment Activities

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Compliance training and business ethics campaign are conducted.

[→ Enlightenment Activities](#)

### Use of Consultation and Reporting System

---

To quickly identify and address compliance issues, a channel for reporting and inquiries has been established. In Japan, two hotlines are available: the internal hotline and the external hotline, which is staffed with lawyers.

An employee can contact the BEL anonymously or with his/her real name in order to report or consult on a compliance issue. The personal information of the employee who has contacted the CHL will not be made available to the company. Both the BEL and CHL can be contacted by e-mail, over the phone or in writing. Each case will be investigated by keeping the identity of the reporting employee in strict confidence and in an expedient manner, in compliance with the manual on investigation. Similar hotlines have been established at our overseas group companies, and the cases handled locally are reported to the head office in Japan in order to share the information between the responsible departments at the local operation and the head office.

### Performing of Global Awareness Survey

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An awareness survey regarding compliance is conducted for all Yokogawa Group employees every year. After analyzing the results by workplace and function in order to visually track how the compliance awareness of employees changes over time, the results are then used to facilitate the planning of the following year's activities.

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## Enlightenment Activities

### Conducting Compliance Training

Yokogawa conducts compliance education and training to foster employees' awareness of compliance and a corporate culture that emphasizes fair, clear and open business conducts. In the fiscal year 2012, Yokogawa conducted the following training/education programs to help foster awareness of compliance throughout the Group.

- Compliance Training for managers of the Yokogawa Group in Japan
- Compliance Education for new managers in Japan
- Compliance Training for general employees of Yokogawa Group in Japan
- Compliance Education for employees who are to be posted outside Japan
- Compliance Education for new employees of Yokogawa Group
- Compliance Training for employees of subsidiaries outside Japan



Training for Managers in Japan



Training in Singapore



Training in South Korea



Training in China

### Use of Compliance Guidelines

Subsequent to the Japanese version of "Compliance Guidelines for Yokogawa Group", English, Chinese and Portuguese versions were published. In 2012, compliance coordinators at overseas subsidiaries used those guidelines to strengthen their compliance training.

### Compliance News Issued

The "Compliance News" is issued bimonthly to all Group employees. It features timely discussions designed to raise awareness of compliance among all employees.



### Revised Misconduct Case Studies Issued

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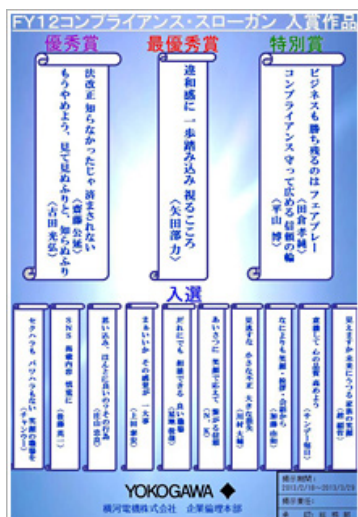
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The "Misconduct Case Studies" is revised every year by adding/supplementing new examples and disclosed to all employees.

## Compliance Week

"Compliance Week" in which all employees of Group companies throughout Japan participated, was held again in the fiscal year 2012 to help permeate and embed awareness of compliance. The week consisted of the following:

- A message from the head of Business Ethics Headquarters regarding "Compliance above everything else."
- A special lecture on compliance was held.
- E-learning for all employees to help deepen their understanding of compliance.
- A "Compliance Slogans Contest" was held. Excellence slogans were featured in the company newsletter, on posters and the intranet, and employees at each workplace chanted a selected different slogan each day.



Poster Featuring Winning Compliance Slogans



Employees Chanting a Compliance Slogan

## Compliance Month

### Yokogawa Field Engineering Service

Yokogawa Field Engineering Service (consolidated into Yokogawa Solution Service effective April 2013) runs its own "Compliance Month" campaign twice a year in addition to Compliance Week, a group-wide event in which all Yokogawa companies participate.

- Choral chanting of daily compliance slogans and witty poems (senryu)
- The "Compliance First" screensaver on employee PCs
- The uploading of near-miss compliance incidents to the Intranet, bringing their message home to all employees.
- The promotion of self-learning on compliance.

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## Risk Management

### Risk Survey

We are conducting a risk survey for all domestic and foreign affiliates and for the headquarters in the Yokogawa Group. The survey is conducted as a self-assessment of the state of risk extraction and risk management, using a risk survey sheet based on the book, **Learn Risk Management from Leading Companies -- Practice Text**, issued by METI. "Risk" is defined as something that could affect the management of the Yokogawa Group. We further define risks that occurred in the past or is currently occurring as "explicit risks", and foreseeable risks that have not yet surfaced as "implicit risks".

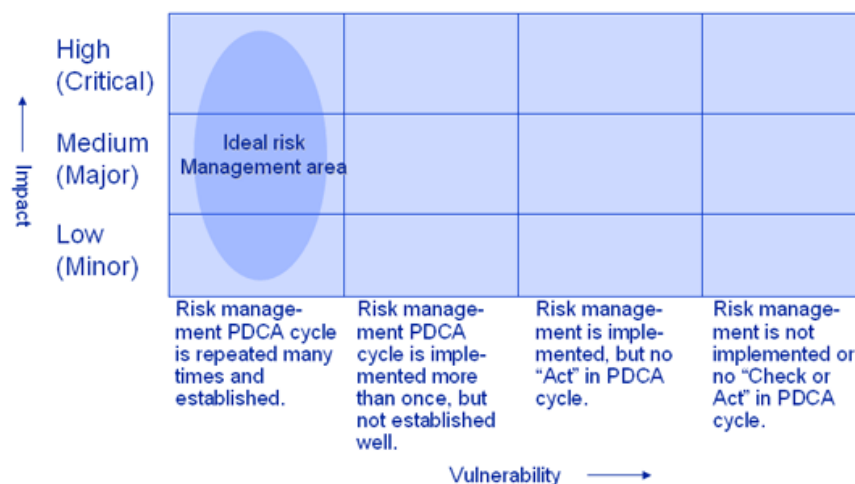
METI: the Ministry of Economy, Trade and Industry

### Classification of Risks

The risks extracted from the survey were classified into two categories, "corporate risks" and "business risks". "Corporate risks" deal with the Yokogawa Group's internal control systems, and is handled from each perspective (e.g. quality, environment-health and safety, and information security, etc.) "Business risks" deal with our decision making. They are classified into "1. risks relating to the external environment", "2. risks relating to achieving business plan", "3. risks relating to partnerships with other companies", and "4. risks relating to human resources (recruiting, training, and utilization, etc.)".

### Risk Management

We use the PDCA cycle management to avoid, reduce, transfer and retain risks. The risk map is used to analyze situations in risk management.



### Approach to Risk Assessment

The Yokogawa Group's risk map places crisis events (High), semi-crisis events (Medium) and minor events (Low) along the vertical axis representing the "impact of risk." Each crisis event is defined according to a set of rules specified by the Group. The horizontal axis represents the "degree of vulnerability of risk management," as measured on four levels from the PDCA (Plan, Do, Check, Act) viewpoints recommended by the International Division of the Institute of Internal Auditors. The general risk-occurrence frequency is also analyzed for each risk thus identified.

### Reporting the Results of the Risk Survey and Risk Management

We reported the results of the risk survey and the risk management at the board and management meetings. We are continuously reducing the risks that are not well managed, and are also strengthening our risk management.

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## Escalation of Information

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In the event of a disaster, accident, or incident that can seriously impact the Yokogawa Group companies' management and/or the lives of their officers and employees, the concerned organization must take prompt action to minimize the damage by gathering information and reporting back to the Group's top management.

To address this issue, we have created the "Guidelines for Reporting Disasters, Accidents, and Incidents". These guidelines have been prepared to advise all departments and affiliates in the Yokogawa Group on the reporting procedures to follow in the event of such disasters.

## Business Continuity Plan (BCP)

---

Our control business, which is a core segment of the Company, is deeply tied to social infrastructures such as electricity, gas and water supply. To continue with our business activities as much as possible in the event of a disaster and quickly help maintain and restore social infrastructure, we developed the "Yokogawa Group Business Continuity Plan (BCP) in case of a Major Earthquake in Tokyo Metropolitan Area" in March 2010. We also have business continuity plans (BCPs), which assume the specific risks associated with bird flu and other epidemics of contagious diseases. The details of those BCPs have been communicated to all group companies worldwide as we work together to improve the plans.

Additionally, we conduct company-wide evacuation drills, drills to which the Self-Defense Force is invited, and simulation drills under the supervision of the Crisis Management Committee (including members of the management team), all on a regular basis, to ensure that these plans will function effectively in the event of a disaster.

Subsequent to the Great East Japan Earthquake in March 2011, we revised the emergency/initial action procedure to be followed immediately after an earthquake hits. We readjusted the organizational structure of the crisis management headquarters, and we made various revisions to the existing procedures by adding steps to respond to overseas sites and overseas customers, among others. We at Yokogawa will continue to review the details of our BCPs so as to be more prepared to handle possible disasters and various risks.

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Protection of Important Stakeholder Information

## Information Security

The Yokogawa Group works together with customers to provide them with solutions. To protect important information entrusted to us by our stakeholders, we implement information security measures to address three aspects: people, equipment, and information technology (IT).

### People: Information Security Training

An important way to protect information is to raise the security awareness of each employee by training them on how to handle information. To ensure that Yokogawa's employees appreciate on the importance of information security and keep their knowledge up to date, the Yokogawa Group uses an e-learning system to annually provide training to all employees. Based on the belief that "a good beginning makes a good ending," the Group provides training to new employees who are entering straight out of university or in mid-career to familiarize them with the rules of their new workplace. We also review the details and results of the training through information security audits.

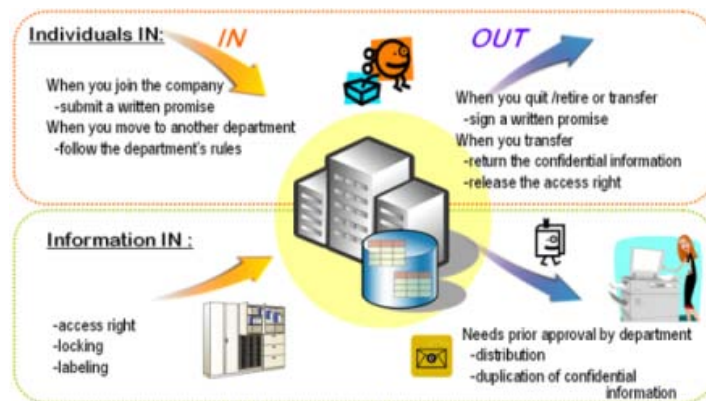


Image from ISMS text

### Equipment: Continuous Improvement

We implement anti-theft, fire-prevention, and other security measures to protect locations where information is stored. Our facilities and equipment are kept under continual surveillance, and efforts are made to replace obsolete facilities and equipment with state-of-the-art ones. For R&D facilities that require advanced security, we implement a variety of security measures including the introduction of iris authentication for facility access control and the use of storage cabinets that can only be unlocked with an employee ID card.



Opening a locked cabinet with an employee ID card

### Information Technology (IT): Protection Behind the Scenes

The most vulnerable point with regards to information security breaches is people. People can leak information by mistake and misuse information out of ignorance. IT systems provide ways to prevent such human errors.

#### 1. Measures to prevent data leakage from PCs

We create a more secure environment by installing antivirus software, implementing biometric authentication, using data encryption, and more.

#### 2. Anti-spam measures

We have implemented an anti-spam filtering system, because spam mail is not only bothersome but also includes malicious mail that may cause data leakage and virus infection.

#### 3. Network connection device management

To protect against unauthorized access and data leakage, we prevent unregistered PCs and related devices from being connected to the network.

### Organization

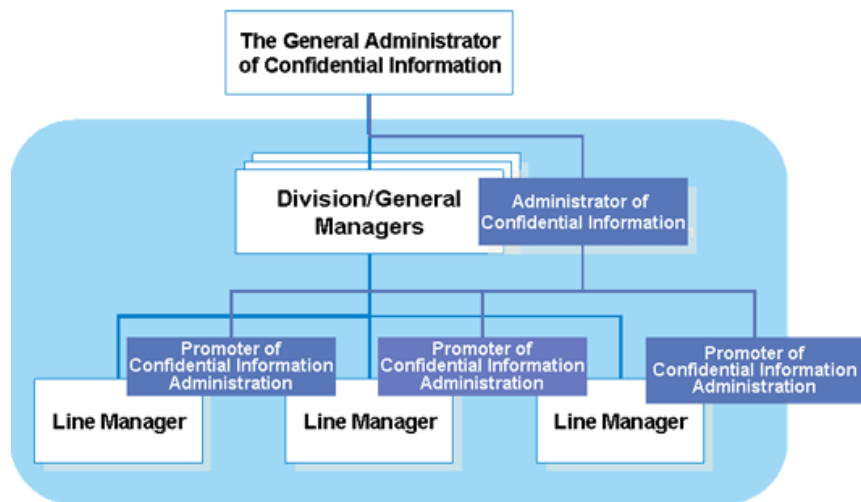
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In Yokogawa Group, information security activities have been developed based on the idea of ISO27001, and information security measures and policies are notified to the Group's headquarters, business headquarters and each Group company by the general administrator of confidential information. The head office checks the operations if they follow the rules and implements necessary reforms. In addition, there is an information security department or section for each of the Yokogawa Group's headquarters and business headquarters, as well as for each Group company. A PDCA, or Plan-Do-Check-Act, cycle is implemented to ensure information security activities are implemented smoothly.



Information security organization of Yokogawa Electric Corporation

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## Creating Value for Society and our Customers

Yokogawa's control systems and other solutions are in use in major industrial plant facilities around the world, including in emerging countries. Many Yokogawa products are in operation constantly in customers' plants in a broad-range of industries such as urban infrastructure (including electricity, gas and water), petroleum, chemical, iron and steel, pulp and paper, and pharmaceutical, as well as food production.

Yokogawa products not only increase the productivity and quality of plants through automation of field operations, but also provide features which increase safety and automate dangerous work. With these features, we help prevent accidents or trouble from occurring by comprehensively monitoring plants to ensure stable and optimum operations. Also, by utilizing the advanced features of our control systems, Yokogawa products enable the efficient use of energy and resources, reducing environmental impact and preventing air pollution. Many Yokogawa products are also used with vital water resources and the development of natural energy.

Yokogawa provides solution services to customers based on our concept of "B to B to C (Business to Business to 'Community') through which we work with our customers to build a better future for communities, industries and the earth". Through the use of our measurement, control and information technologies, we focus all our efforts as the Yokogawa Group on our commitment to helping build a sustainable society.

The following introduces several ways in which Yokogawa is making these types of contributions.

### Case 1 Korea Gas Corporation, Incheon, South Korea

▶ **World's Largest LNG Terminal Relies on CENTUM to Maximize Safety and Reliability**

### Case 2 Map Ta Phut Olefins Company Limited, Rayong, Thailand

▶ **Operational Excellence by Asset Maximization, Utilizing Yokogawa's DCS, SIS, Analyzers, and Field Instruments**

### Case 3 Braskem, Rio Grande do Sul, Brazil

▶ **World's First Large-scale Green Ethylene Plant Uses CENTUM VP, ProSafe-RS, and FOUNDATION™ fieldbus Technology**

### Case 4 Lakeside EFW Ltd., Berkshire, England, UK

▶ **Modern Waste to Energy Facility in UK Uses CENTUM CS 3000 and ProSafe-RS**

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Success Stories

## Korea Gas Corporation, Incheon, South Korea



### World's Largest LNG Terminal Relies on CENTUM to Maximize Safety and Reliability

**Location:** Incheon, South Korea**First Installation:** 1998**Current** 2011 (plant 1)**Migration:****Industry:** LNG Supply Chain

#### Executive Summary

Korean Gas Corporation,  
Incheon, South Korea

Established by the Korean government in 1983, Korea Gas Corporation (KOGAS) is the world's largest importer of LNG, and the country's sole importer of this important resource. KOGAS is fully committed to providing clean, safe, and convenient energy to the people of Korea. The company currently operates LNG receiving terminals in Incheon, Pyeongtaek, and Tongyeong, and distributes natural gas and gas by-products via a 2,739 km pipeline network to power plants, gas utility companies, and city gas companies throughout the country.

The Incheon LNG terminal is the world's largest LNG receiving complex, and it supplies natural gas to the Incheon and Seoul metropolitan areas, which account for 40% of the country's natural gas demand. Built on a 990,000 m<sup>2</sup> plot of reclaimed land 8.7 km off the coast, the terminal has two plants with a jetty capable of accommodating two ultra-large LNG carriers of up to 100,000 tons in size and a total of ten 100,000 m<sup>3</sup> above-ground storage tanks, two 140,000 m<sup>3</sup> underground tanks, and eight 200,000 m<sup>3</sup> underground tanks, giving it a total storage capacity of 2,880,000 m<sup>3</sup> (KI). The total gas send out capacity of the Incheon terminal is 4,350 tons per hour.

In 1996, Yokogawa Korea installed a CENTUM CS production control system at plant 1 of the Incheon terminal, and migrated this system to CENTUM VP in 2011. With the construction by KOGAS of plant 2 in 2004, Yokogawa Korea installed a CENTUM CS system, and subsequently installed another CENTUM CS 3000 system in 2009. Engineering work is now underway at plant 2 for migration to CENTUM VP. The Incheon terminal utilizes Yokogawa's CENTUM systems for the control and monitoring of facilities throughout both plants, including unloading arms, storage tanks, recondensers, open rack vaporizers (ORV), submerged combustion vaporizers (SMV), and trunk lines with metering stations.

#### The Challenges and the Solutions

##### 1. Safe operation

At LNG receiving terminals, safety is a paramount concern with the transfer and storage of LNG from carriers. It is very important to maintain a constant pressure inside the storage tanks, which requires careful control of the operation of boil-off gas (BOG) compressors, recondensers, and pumps. By means of sequence functions, CENTUM operators can easily control the process from a remote location, starting and stopping the BOG compressors depending on BOG temperature, gas composition, and volume. In addition, KOGAS has a disaster protection system for dealing with critical situations, and personnel in the central control room can share information in real time with operators in plants 1 and 2, ensuring a timely and well coordinated response if fire or a gas leak is detected.

##### 2. Steady gas supply

It is very important for KOGAS to be able to adjust flexibly to shifts in demand in the gas that it supplies to power plants, industrial companies, and residences. While seawater in an ORV is normally used to cool and vaporize the LNG, in periods of peak demand operation can be automatically switched over to an SMV that relies on the combustion of BOG to vaporize the LNG. Every aspect of these vaporization processes, from the switching on and off of pumps to the control of vaporization temperature and gas

#### Featured Sites

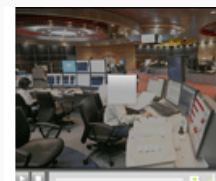
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pressure, is carefully configured in the CENTUM system. The adjustment to shifts in demand is fully automated at this terminal, ensuring uninterrupted supply.

### 3. Proactive maintenance for asset excellence

Systems from other vendors that control the plant's offloading, tank gauging, pipe line monitoring, metering, and other processes are all integrated via a Modbus interface with each plant's CENTUM production control system. The data from these processes is used to make production reports, calculate plant efficiency, and analyze performance. For example, operators use an accumulated running time report to track how long each LNG pump, air compressor, and other rotating equipment throughout the terminal has been operating. This enables a proactive approach to the scheduling of inspections to determine when repair or replacement will be necessary. This puts the right information at the right time into the hands of the right operators and managers, so they can make timely and correct decisions. The system can also generate the following types of reports used by plant specialists to analyze overall performance of the LNG terminal as well as individual processes:

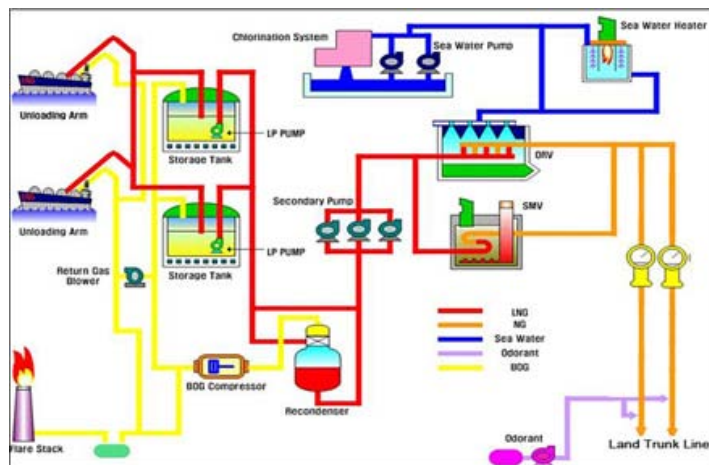
1. LNG cost analysis
2. Electric power consumption
3. Fuel gas consumption
4. Unit operation cost
5. Daily cost analysis
6. LNG unloading
7. BOG treatment
8. Odorant treatment
9. Running time accumulation
10. Yield accounting



CENTUM VP operator in central control room

### Customer Satisfaction

People at the KOGAS Incheon LNG terminal, says, "With CENTUM and other systems, we have built an enterprise-wide operating information system. The visualization of all process data allows us to maintain a clear picture of the execution of our business plans, create optimal LNG supply chain scenarios, and make quick decisions and timely adjustments. With the CENTUM system, operability and safety are enhanced, and operators as well as managers can maximize the effectiveness of their activities." They went on to say, "We appreciate the continual support and the solutions that Yokogawa Korea has provided us. Yokogawa is one of our best partners."



KOGAS Incheon LNG terminal

#### For further information

- Industry: → [LNG Supply Chain](#)
- Products & Solutions: → [CENTUM VP \(Production Control Systems\)](#)



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Success Stories

## Map Ta Phut Olefins Company Limited, Rayong, Thailand



### Operational Excellence by Asset Maximization, Utilizing Yokogawa's DCS, SIS, Analyzers, and Field Instruments

**Location:** Rayong, Thailand  
**Order date:** August 2008  
**Completion:** June 2010  
**Industry:** Petrochemical



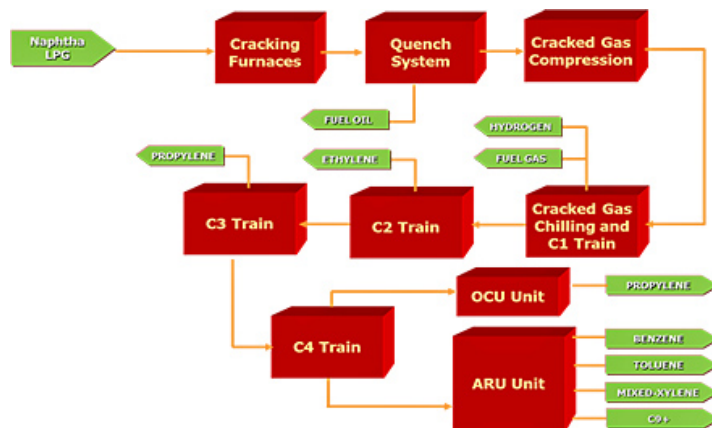
#### Executive Summary



Map Ta Phut Olefins Co. Ltd., Rayong, Thailand

Map Ta Phut Olefins Company Limited (MOC), SCG Chemicals's subsidiary, operates a newly completed petrochemical complex at the Map Ta Phut Industrial Estate in Thailand's Rayong province. The complex produces 900,000 tpa of ethylene and 800,000 tpa of propylene, which is used in downstream plants to produce 400,000 tpa of high density polyethylene (HDPE) and 400,000 tpa of polypropylene.

Functioning for the first time as a main automation contractor (MAC), Yokogawa Thailand worked closely with the EPC contractor to deliver a comprehensive control and instrumentation solution for this greenfield project. This included the CENTUM VP production control system (PCS); the ProSafe-RS safety instrumented system (SIS); process gas chromatographs; analyzers; an advanced analytical instrument management system (AAIMS™); HART differential pressure transmitters, temperature transmitters, and flowmeters; InsightSuite AE asset excellence services; an Exaplog event analysis package for alarm reduction; and the Exasmoc advanced process control package.



#### The Challenges and the Solutions

##### 1. Project execution

In such a large greenfield project, it is important to start engineering and determine the basic specifications at an early stage. As the MAC, Yokogawa Thailand proceeded from front end engineering design (FEED) to the engineering phase, then undertook configuration & implementation, staging, and startup & commissioning. By executing this project as the MAC, Yokogawa Thailand was able to effectively manage the overall project schedule and reduce maintenance costs by maintaining consistency in the specifications.

##### 2. Safety and efficiency

The CENTUM VP PCS and ProSafe-RS SIS were integrated using the same engineering environment. This reduced the overall engineering costs and resulted in a system that operates smoothly and efficiently. The PCS and SIS faceplates have the same look & feel,

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→ VigilantPlant Services™

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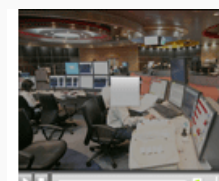
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→ Power

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→ Miyazaki Biomass Recycle, Miyazaki, Japan

→ PTT LNG Company Limited, Rayong, Thailand

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→ PUB, Singapore

and security measures are in place that restrict access to the SIS faceplate.

The ethylene plant has multiple crackers and decoking is essential to maintaining efficient ethylene production. The InsightSuite AE analysis package calculates an optimum decoking algorithm that is used to optimize steam consumption, for greater efficiency and improved plant safety.

### 3. Asset maximization

To manage the more than 5,000 Yokogawa field instruments installed throughout this large complex, MOC opted for a remote monitoring solution based on Yokogawa's PRM plant asset management package that reduces the maintenance workload for field technicians and generates summary reports for future reference. This is backed by InsightSuite AE services that work 24/7 to identify issues and implement corrections that improve both availability and performance rate and reduce maintenance costs over the entire plant lifecycle.

The olefins plant has approximately 20 critical safety valves that are rated for SIL levels 1, 2, and 3, and they need to be checked periodically to determine that they are in correct working order. PRM's partial stroke test (PST) function allows these tests to be run from the control room, eliminating the need for technicians to go to each device to manually check its operation. This reduces workload and ensures safety.

### 4. Analyzer maintenance and data acquisition

Nearly 60 gas chromatographs and a large number of other types of analyzers in several analyzer houses are utilized throughout this petrochemical complex. An AAIMS is used to monitor, evaluate, and improve the performance of these on-line analyzers in a cost-effective manner. An AAIMS executes statistical analyses for analyzer validation; calculates validation KPIs such as availability rate, breakdown rate, checking rate, reproduction rate, and standard deviation; and generates SQC validation, maintenance, and key performance reports. An AAIMS has the following benefits:

- 1) A flexible and reliable tool that centralizes the monitoring and management of analyzers
- 2) Automates the collection of analyzer data in real time from the PCS, through an OPC server
- 3) Automates the analyzer validation process

Working at an AAIMS workstation, operators, QMI personnel, and maintenance personnel can also manually enter and edit data like sample test results and maintenance records.

The information on gas chromatographs and other types of analyzers that is gathered with this system can play an important role in maximizing the efficiency of plant operations.

## Customer Satisfaction

Witoon Pradubsripetch, the olefins production manager at the MOC complex, said, "We are striving to operate this plant safely and efficiently, and to make maximum effective use of all assets. That's why we are using field digital technology with FDT/DTM, PRM, and AAIMS. We have started using ISA 100 wireless devices at our raw material tank yard. All systems in this plant are integrated in the central control room. Our operators can clearly see everything that is happening in the plant. They know the status of each operation and have all the information they need to make correct and timely decisions. We appreciate the support given to us by Yokogawa Thailand."



Wireless transmitter



Central control room

### For further information

- Industry: → [Petrochemical](#)
- Products & Solutions: → [CENTUM VP \(Production Control Systems\)](#)
- [ProSafe-RS \(Safety Instrumented Systems\)](#)
- [Exaplog \(Solution-based Software Products\)](#)
- [PRM \(Plant Asset Management\)](#)

- [Exasmoc \(Solution-based Software Products\)](#)
- [InsightSuiteAE \(VigilantPlant Services\)](#)
- [AAIMS \(Advanced Analytical Instrument Management System\)](#)



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## Braskem, Rio Grande do Sul, Brazil



### World's First Large-scale Green Ethylene Plant Uses CENTUM VP, ProSafe-RS, and FOUNDATION™ fieldbus Technology

**Location:** Rio Grande do Sul, Brazil**Order date:** June 2009**Completion:** September 2010**Industry:** Green Ethylene/ Renewable energy

#### Executive Summary



Braskem, Rio Grande do Sul, Brazil

In August 2010, Braskem, a Brazilian petrochemical company, completed the commissioning of a new ethylene plant at the Triunfo Petrochemical Complex in Triunfo municipality, Rio Grande do Sul state, and the plant began production operations the following month. Based on a process that was developed by Braskem, this plant uses ethanol produced from sugarcane as its feedstock to produce 200,000 tons per year of bioethylene, also known as green ethylene. As such, it is the world's first commercial-scale plant of its type to use 100% renewable raw materials.

At an adjacent polymerization plant in the Triunfo complex, the green ethylene is converted into polyethylene (PE) resin and plastic, and is sold to companies like Acinplas, Toyota Tsusho, Procter & Gamble, Shiseido, Tetra Pak, Petropack, Johnson & Johnson, and Natura.

As the main automation contractor (MAC) for this plant construction project, Yokogawa Brazil engineered, installed, and commissioned an integrated control and instrumentation solution that included the CENTUM VP process control system, the ProSafe-RS safety instrumented system, FOUNDATION™ fieldbus devices, and the Plant Resource Manager (PRM) package. Under the terms of the MAC contract, Yokogawa Brazil also provided training on the new systems to Braskem's operators and engineers. Yokogawa Brazil completed the commissioning of these systems ahead of schedule and the production of green polymer was started just one week later.

Since this fully automated green ethylene plant came online in September 2010, operations have been running smoothly and no major problems have been reported.

#### The Challenges and the Solutions

##### 1. Asset maximization

To get the most out of its assets, Braskem decided that all the field devices at this new plant should be interconnected using FOUNDATION fieldbus, the most reliable field digital technology in use in the industry today. For a solution, Braskem turned to Yokogawa, a recognized leader in this field with deep global experience in implementing FOUNDATION fieldbus solutions.

Yokogawa Brazil configured Yokogawa EJX pressure transmitters, d/p transmitters, AXF magnetic flowmeters, ROTAMASS Coriolis flowmeters, YTA temperature transmitters, and YVP valve positioners as well as other vendors' devices in about 200 segments throughout the plant. Prior to plant startup, all device configuration was done using FieldMate and FDT/DTM technology. By using PRM's function view window, engineers working in the control room were able to speed up the process of checking loops and confirming valves.

With the plant now fully operational, Braskem efficiently receives a steady flow of data from field devices, from which status of both process conditions and field devices can be confirmed on the PRM display by an operator in the control room. An added benefit of the PRM package is its ability to manage and perform partial stroke tests for a specific SIL level, as calculated through HAZOP studies. This can thus confirm whether a safety valve will perform as specified in a plant emergency. This not only makes the plant safer, it saves operators considerable time and effort in the testing process.

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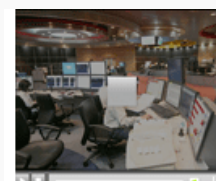
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## 2. Total system integration

Braskem's challenge in this project was to integrate all systems in order to facilitate the visualization of operations throughout the plant. Braskem understood that if operators could remain constantly apprised of what was happening around the plant, they would be able to quickly take the correct action when required. The same engineering environment can be used to configure and integrate Yokogawa's CENTUM VP and ProSafe-RS systems. During normal operations, operators can view and operate the SIS faceplates, providing they have the required permission. This ensures smooth and safe operations. Other vendors' sub-systems such as an MCC PLC system are completely integrated through modbus interfaces. A continuous environment monitoring system (CEMS) monitors oxygen levels in the furnace as well as NOx and SOx levels in exhaust gases to minimize harmful emissions, and also monitors pH and conductivity. All of this data is readily available to operators thanks to the integration of these systems.



Central control room

## Customer Satisfaction

Regarding the startup of the Braskem Triunfo plant, a Braskem production manager commented as follows:

"This green ethylene plant is the first industrial unit in the world to use sugarcane ethanol to produce ethylene from a 100% renewable source on a commercial scale. The implementation of this project confirms Braskem's commitment to contributing towards development of the Brazilian petrochemical sector, Rio Grande do Sul, and sustainable processes."

"The unit has the capacity to produce 200,000 tons/year of ethylene, which is transformed into an equivalent volume of polyethylene at existing industrial units within the Triunfo Complex. The green polymer project is part of the strategy to access competitive renewable raw material sources in line with the company's vision of sustainability. It also contributes towards society's sustainable development since the green plastic removes more carbon from the atmosphere than it emits over its entire lifecycle, from growing the sugarcane crop to post-consumption recycling. We are very happy to use Yokogawa's systems and products, because their reliability is so high. This minimizes our maintenance costs. We will continue to work with Yokogawa Brazil as our partner in the future."



### For further information

- Renewable Energy: → Biofuel
- Industry: → Chemical
- Products & Solutions: → CENTUM VP (Production Control Systems)
- ProSafe-RS (Safety Instrumented Systems)

- [PRM \(Plant Asset Management\)](#)
- [FOUNDATION fieldbus \(Field Digital Solutions\)](#)
- [YTA \(Temperature Transmitters\)](#)
- [EJX \(Pressure Transmitters\)](#)
- [ADMAG AXF \(Magnetic Flowmeters\)](#)
- [ROTAMASS \(Coriolis Mass Flowmeter\)](#)
- [ValveNavi™ YVP \(Management Software\)](#)



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Success Stories

## Lakeside EFW Ltd., Berkshire, England, UK



### Modern Waste to Energy Facility in UK Uses CENTUM CS 3000 and ProSafe-RS

**Location:** Berkshire, England, UK  
**Order date:** January 2007  
**Completion:** April 2008  
**Industry:** Renewable energy



#### Executive Summary



Lakeside EFW Ltd., Berkshire, England, UK

As existing fossil fuel reserves have become unviable or unreliable, the challenge of providing a secure energy supply for power generation within the UK has increased significantly in terms of both financial and environmental cost. At the same time, landfills lack the capacity to handle the increasing amount of household and municipal waste. While efforts to reduce, re-use, or recycle waste have made some headway, other options have had to be explored. One such effort underway that is making a valuable contribution toward providing a balanced and secure energy portfolio for the UK involves the extraction of energy from residual (non-recyclable) waste.

Lakeside EFW Ltd. operates an EFW (energy from waste) facility near London that is staffed by experts in energy recovery technologies who are working hard to ensure the plant remains efficient, technologically up to date, and above all, safe. The plant has the capacity to consume 410,000 tons of household and municipal waste per year and exports at least 34 MW per hour to the country's National Grid. This process diverts the majority (over 97%) of waste from landfill.

Lakeside EFW uses a mass-burn process to generate high temperature that is then used to produce high pressure steam. The steam in turn drives a turbine to produce electricity. Residues and flue gases are carefully treated to minimize the release of environmental pollutants. The facility operates under strict environmental controls, within the guidelines of the waste incineration directive (WID) and an environmental permit administered by the environment agency.

For Lakeside EFW, Yokogawa UK installed a CENTUM CS 3000 distributed control system and a ProSafe-RS safety instrumented system to automate control of the facility's boilers, burners, and balance of plant facilities. The facility has operated safely with no major system failures since coming online in 2008.



#### The Challenges and the Solutions

Lakeside EFW is continually looking for ways to operate this incineration facility more efficiently. Waste is trucked to the facility, with the vehicles being weighed on entry into the site and again on exit to calculate the amount of delivered waste. Grab cranes mix the waste in a 7,500 ton capacity bunker to obtain a more controllable calorific value, then load the waste into a hopper from where it is pushed into the incinerator by hydraulic rams. The initial firing of the boiler is achieved using an approved low sulfur diesel. Once the waste is burning inside the incinerator, the diesel burners are switched off and the waste becomes the fuel.

Superheated, dry steam created from the boiler process is used to drive a steam turbine,

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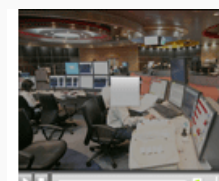
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→ Merck Serono Biotech Center, Vevey, Switzerland

→ Map Ta Phut Olefins Company Limited, Rayong, Thailand

→ Miyazaki Biomass Recycle, Miyazaki, Japan

→ PTT LNG Company Limited, Rayong, Thailand

→ Adriatic LNG Terminal, Porto Viro, Italy

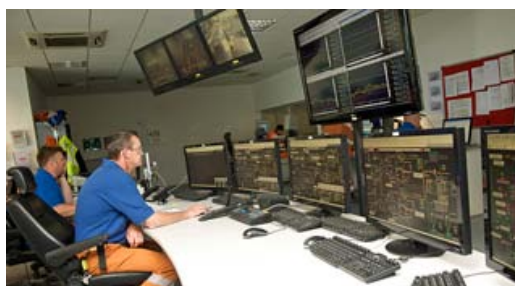
→ PUB, Singapore

which in turn drives a generator set. The generator produces enough electricity to power the Lakeside facility and export 34 MW onto the National Grid. Spent steam from the turbine is condensed and pumped back to the boiler, making a closed-loop steam/water circuit. The facility has also been designed so that off-site district heating (combined heat & power - CHP) can be provided to local consumers in the future.

The bottom ash from the waste incineration process is transported by moving belts to dedicated bunkers. Ferrous metals are removed from the bottom ash for recycling. The ash is removed from the site and processed into an approved aggregate material for road building and construction.

The hot gases from the incineration process that were used to heat the water contain various compounds and chemicals that need to be treated. These gases and chemicals are cleaned in a flue gas treatment process. This uses slaked lime to absorb sulfur gases and HCL. Activated carbon to absorb dioxins and heavy metals, and ammonia to reduce NOx gases. The air is subsequently passed through a bag filter before it is released from the stacks. The emissions are monitored in real time using state of the art, independently calibrated measuring instruments to ensure compliance with permitted emissions limits.

With the integration of the Yokogawa CENTUM CS 3000 and ProSafe-RS systems, operators in the central control room enjoy ready access to operations throughout the plant. Ergonomically designed CS 3000 human interface stations (HIS) provide a window into all of this facility's processes, giving operators real-time access to all the information they need to make quick and timely decisions.



Central control room

## Customer Satisfaction

In his comments to Yokogawa, Danny Coulston, General Manager of the Lakeside EFW facility, touched on the following points:

- Everyone at Lakeside EFW is pleased with the high reliability of the Yokogawa systems and their ease of operation and engineering.
- The new plant was designed to meet the requirements of the European Waste Incineration Directive, which mandates tight controls on the atmospheric release of dioxins, heavy metals, acid gases, nitrogen oxides, particulates, and other products of the combustion process. This reduces environmental impact and protects human health, and the facility's emissions of dioxins and other health related pollutants are low compared to common air pollution sources such as outdoor burning and vehicle exhaust.
- Lakeside EFW well recognizes the importance of water conservation and has designed the facility so that all process water and water from maintenance activities is collected in a tank to be reused as "grey" water for non-critical purposes.
- The company has built an education center that extends out over a nearby lake. This is used to educate the public on the efforts that Lakeside EFW is making toward a sustainable future.



Lakeside Education Centre

**For further information**

- Renewable Energy: → [Waste to Energy](#)
- Industry: → [Power](#)
- Products & Solutions: → [CENTUM \(Production Control Systems\)](#)  
→ [ProSafe-RS \(Safety Instrumented Systems\)](#)



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## Responsibility to Stakeholders

The Standards of Business Conduct for the Yokogawa Group call for the realization of the Yokogawa Philosophy, enhancement of customer satisfaction, observation of laws and regulations, respect for human rights, and maintenance of the order and safety of communities and society. We have also outlined our basic stance on environmental conservation and stakeholder relations. Based on these standards, we promote activities to meet to stakeholders expectations, such as employees, customers or shareholders.

We view all Yokogawa employees as valuable assets, and work proactively to maintain a sound work environment and provide opportunities for skill development. We also respond to our customers by putting quality first. Moreover, in accordance with our principle of good citizenship, we interact with the community, encourage employees to participate in volunteer activities, and engage actively in other activities to contribute to society.

### Environment

Yokogawa promote environmental management while providing solutions that will help our customers reduce their energy consumption and protect the environment.

[→ more](#)

### Safety and Health

Yokogawa have taken safety and health management to a higher level by constantly carrying out assessments to eliminate or minimize potential risks.

[→ more](#)

### Customer and Quality Assurance

We are engaged in activities that maintain high quality in every aspect of our business — from product sales to maintenance — and take the customer perspective to ensure high satisfaction with our products and services.

[→ more](#)

### Supplier Relations

We have put in place a management system that covers each of our business processes, including purchasing, to ensure that social and environmental concerns are given proper consideration in all our dealings with suppliers.

[→ more](#)

### Employees

Employees are a valued Yokogawa resource. We respect human rights and support our diverse workforce by providing career development opportunities and fostering open communication in the workplace.

[→ more](#)

### Community Involvement

Around the world, the Yokogawa Group is working to benefit local communities and address specific needs.

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### Environmental Activity Data

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## Environmental Reporting



We at Yokogawa regard conservation of global environment as an important management issue and strive to implement the environmental management needed to address it. Specifically, we help our customers be "green" by, for example, developing products that allow for harmonious coexistence of mankind with nature and providing environmental solutions that help analyze/improve environmental impact generated through their business activities, just as we actively endeavor to reduce the environmental impact in our business operations.

### Promoting Environmental Management

- Environmental Policy
- Organization
- Environmental Milestones
- ISO 14001 Certifications

### Reducing Environmental Impact of Products

- Environmental Friendly Products
- LCA Label
- Guidelines for Environmental Friendly Design

### Reducing Environmental Impact within Yokogawa

- Global Warming Prevention
- Chemical Substances Control and Reduction
- Waste Reduction and Resource Saving

### 2012 Environmental Performance

- Goals and Achievements
- Environmental Impact
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## Environmental Policy of the Yokogawa Group

Based on the Yokogawa philosophy which states, "Our goal is to contribute to society through broad-ranging activities in the areas of measurement, control, and information," and recognizing that environmental conservation of the precious earth is a critical issue for the whole of humanity, each site of the Group shall strive, in all its activities, to:

1. **Establish, maintain, and improve its environmental management system.**

Each site promotes and continuously improves its global environmental conservation activities, strives to prevent environmental contamination, and establishes an environmental management system. To maintain and improve the system, each site accurately evaluates the burden of its activities on the environment including climate change, biodiversity and water resources, sets environmental objectives and targets that are technically and economically viable, and carries out environmental audits.

2. **Provide environmental training.**

Each site actively provides training for global environmental conservation to ensure that employees understand the Environmental Philosophy, Code of Conduct for Environmental Conservation, and Environmental Policy of the Yokogawa Group to improve their environmental awareness, and to act autonomously with consideration of the environment in both their work and life in the local community.

3. **Abide by legal regulations.**

Each site abides by laws, legal regulations, and other requirements applied to environmental aspects, in order to proactively conserve the global environment.

4. **Carry out resource recycling-based operations.**

Throughout its activities, each site endeavors to utilize energy and resources efficiently, to prevent global warming, to reduce waste, and to promote the reuse and recycling of resources with the aim of eliminating emissions.

5. **Minimize environmental pollution.**

Each site strives to eliminate the use of substances that adversely impact the environment, such as toxic chemicals, and ozone-destroying substances, by using safe substitutes or employing safe technologies to avoid the risk of environmental pollution.

6. **Create environmentally friendly products.**

Each site develops and produces environmentally friendly "green" products in consideration of the environmental burden throughout the products' lifecycles, from material purchase, manufacture, and distribution to their use and disposal.

7. **Supply society with environmental solutions.**

Each site supplies society with value-added products and services for conserving the earth's environment through measurement, control, and information technologies.

8. **Contribute to local communities.**

Each site encourages its employees to participate in environmental conservation activities under their own initiative as good corporate citizens.

9. **Make environmental information available to the public.**

Each site actively makes environmental information, including its environmental policy and conservation activities, available to the general public.

**Shuhei Sakuno**

Senior Vice President

Audit & Compliance Headquarters  
Yokogawa Electric Corporation

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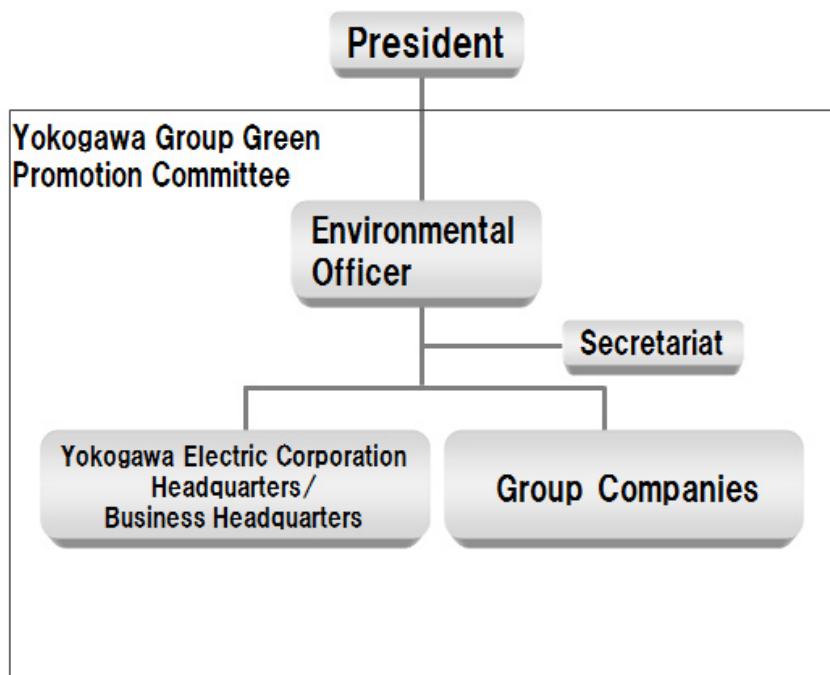
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## Organization

To promote the environmental management principle of the Yokogawa Group, we established the "Yokogawa Group Green Promotion Committee" with the aim of stepping up group-wide efforts to conserve the global environment and prevent climate change. The Committee, chaired by the Yokogawa Group's Environmental Officer, provides leadership the Yokogawa Group companies throughout inside and outside Japan in order to drive environmental management and implement various measures designed to conserve the global environment and prevent climate change.

### Organization of Environmental Management Promotion



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## Environmental milestones

Various global environmental conservation activities had been carried out before Yokogawa Kofu office was certified with the ISO14001 certification in 1997 followed by officially implementing the environmental management system across the entire Yokogawa group. The environmental practices of Yokogawa group since 1971 are listed below in chronological order.

### History of Environmental Practices of Yokogawa (in time series)

[↓ 1971~](#)   [↓ 1980~](#)   [↓ 1990~](#)   [↓ 2000~](#)   [↓ 2010~](#)

1971		Yokogawa establishes a pollution prevention organization
1974	July	Yokogawa completes construction of wastewater treatment facilities to comply with ordinance of Tokyo compliant with municipal bylaws
1987	May	Yokogawa begins environmental assessment studies
1989	October	Yokogawa establishes a chlorofluorocarbon (CFC) reduction committee
1991	April	Yokogawa sets up an organization to promote an Environment management
	August	Yokogawa starts "Save the Earth" campaign
1993	February	Yokogawa appoints a Vice President of Environmental Management and forms a Global Environment Committee
	July	Yokogawa establishes a voluntary environmental activities plan
1994	August	Yokogawa reports the results of voluntary environmental activities in fiscal year 1993
	December	Yokogawa completely eliminates specific CFCs and trichloroethane for cleaning
1995	June	Yokogawa Board of Directors decided to obtain ISO14001 certification and merge a voluntary environmental activity plan into ISO14001 plan.
	October	Yokogawa reorganize a Global Environment Committee
1996	March	Yokogawa establishes corporate rules for environmental management
	May	Yokogawa forms a Global Environment Committee at Yokogawa Electric Headquarters & Main Factory, Kofu Office (current Yokogawa Manufacturing Kofu Factory), and Komine Factory (current Yokogawa Manufacturing Komine Factory).  Solar power generators for disaster use installed at Yokogawa Electric Headquarters & Main Factory. Yokogawa signs a disaster prevention accord with Musashino City.
1997	April	Issued "Green Times", a company newsletter
	July	The Kofu Office (current Yokogawa Manufacturing Kofu Factory) obtains ISO14001 certification
1998	February	Yokogawa Electric Headquarters & Main Factory and the Komine Factory (current Yokogawa Manufacturing Komine Factory) obtain ISO14001 certification
	May	Two co-generation power generators (585 kw,2 units) go online at the new main building of Yokogawa Electric Headquarters & Main Factory
	June	Yokogawa begins publishing Yokogawa Environmental Catalogue
1999	September	Yokogawa publishes Yokogawa Environmental Report 1999. Also the company introduces environmental accounting and makes data available to public.

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	November	Yokogawa introduces environmental labeling (Type II)
2000	July	Yokogawa Electric Headquarters & Main Factory reached its goal of generating zero landfilled waste
	August	Yokogawa introduces Japan's first returnable container recycling service for customers
	September	Yokogawa publishes Yokogawa Group Environmental Report 2000 and introduces third-party verification system
	November	Suzhou Yokogawa Meter Co. joins the China-Japan 3E (Energy, Environment, and Economy) Research Project and is selected as a model company for environmental accounting study
2001	March	Yokogawa establishes The principles of Yokogawa Group Environmental Management Standards.
	July	Yokogawa publishes Yokogawa Group Environmental Report 2001
	September	Three Yokogawa sites receive comprehensive ISO14001 certification
	November	The Kofu Office (current Yokogawa Manufacturing Kofu Factory) reached its goal of generating zero landfill waste
2002	February	The Yokogawa Manufacturing Akiruno Office (current Yokogawa Manufacturing Komine Factory) accomplishes its goal of generating zero landfill waste. The Kofu Office (current Yokogawa Manufacturing Kofu Factory) installs a light through type solar power generating system
	July	Yokogawa publishes Yokogawa Group Environmental Report 2002
	August	Four Yokogawa sites receive comprehensive ISO14001 certification
2003	February	The Econo-Pilot energy-saving system for water pumps receive the Agency of Natural Resources and Energy Director-General's Award at the Energy Conservation Award ceremony.  The Kofu Office (current Yokogawa Manufacturing Kofu Factory) receives award from the Director-General of the Kanto Bureau of Economy, Trade and Industry in recognition of its achievements in reducing energy consumption.
	July	Yokogawa publishes Yokogawa Group Environmental Report 2003
	October	The Plant of newly established Yokogawa Electric China starts operations in Suzhou as an environmentally aware manufacturing site
2004	March	New environmentally optimized facilities at the Yokogawa Manufacturing Komine Factory and Kofu Factory start operations
	June	Yokogawa publishes Yokogawa Group Environmental Management Report 2004
	August	Yokogawa Electric Headquarters & Main Factory obtain a separate ISO14001 certification
2005	March	Energy Conservation Guided Tours start at the Yokogawa Manufacturing Kofu Factory
	April	Yokogawa joins the Team Minus 6% national campaign
	June	Yokogawa publishes Yokogawa Group Environmental Management Report 2005
2006	March	Yokogawa Manufacturing Kofu Factory and Komagane Factory attain zero CO2 emissions
	September	Yokogawa publishes Yokogawa Group Sustainability Report 2006
	October	Yokogawa introduces the Green Power Certification System (300,000kwh)  The Kanazawa Office receives the New Office Promotion Award, Environment Award and Good Design Award for architectural design
2007	June	Yokogawa publishes Yokogawa Group Corporate Social Responsibility Report 2006
	September	Yokogawa Group establishes the Energy Conservation and Environment Protection Solution Division in order to promote environmental management solutions to customers
2008	June	Yokogawa publishes Yokogawa Group Corporate Social Responsibility Report 2007

2009	May	Yokogawa completely abolishes the usage of HCFC
	June	Yokogawa publishes Environmental Report 2009 on its website.
	October	The Kofu Office receives "Green IT Award 2009 Minister of Economy, Trade and Industry Award" for its energy-saving activities
2010	February	The ESCO business receives the 2009 Energy Conservation Grand Prize
	September	Yokogawa established the "Yokogawa Group Green Promotion Committee"with the aim of stepping up group-wide efforts to conserve the global environment and prevent climate change.
2013	April	Joined the Keidanren (Japan Federation of Economic Organizations)'s "Commitment to a Low-Carbon Society ."

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## ISO14001 Certifications

Yokogawa Group's ISO 14001 -certified sites (including KES\*) are as follows:

### ISO14001

As of the end of June 2013

Factories		Date Certified
Yokogawa Electric Corporation Headquarters & Main Factory		July 1997
Yokogawa Manufacturing Corporation (Komine, Kofu, Ome, Uenohara and Headquarters Factories)		July 1997
Yokogawa Meters & Instruments Corporation		July 1997
Yokogawa Solution Service Corporation		February 2000
Yokogawa Denshikiki Co., Ltd.		November 2000
Yokogawa Digital Computer Corporation		September 2007
Suzhou Yokogawa Meter Company	China (Suzhou)	May 1998
Yokogawa Shanghai Instrumentation Co., Ltd.	China (Shanghai)	March 2000
Yokogawa Sichuan Instrument Co., Ltd.	China (Chongqing)	December 2000
Yokogawa Electric China Co., Ltd.	China (Suzhou)	May 2004
Yokogawa Electric Asia Pte. Ltd.	Singapore	October 1998
Yokogawa Engineering Asia Pte. Ltd.	Singapore	August 2001
P.T. Yokogawa Manufacturing Batam	Indonesia	April 2000
Yokogawa Corporation of America	USA	June 2005
Yokogawa Electronics Manufacturing Korea Co., Ltd.	South Korea	December 2004
Yokogawa Philippines, Inc.	Philippines	June 2007
Rota Yokogawa GmbH & Co.KG	Germany	August 2011
Yokogawa Middle East & Africa B.S.C.(c)	Bahrain	June 2013

\* "KES" refers to the KES Environmental Management System Standard. <\_extended="true" ul>

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## Environmentally Friendly Products

Yokogawa actively develops environmentally friendly products through the implementation of its own strict standards of design and assessment for long-term usability, energy-saving performance and other aspects. New products are evaluated for energy consumption as well as the emission of carbon dioxide (CO2), nitrogen oxide (NOx) and sulfur oxide (SOx) based on our "Lifecycle Assessment (LCA) standards".

Some of the evaluated products are LCA-labeled, and the LCA results are disclosed. Products carrying the LCA label provide outstanding environmental features that meet various standards and help customers reduce the environmental burden.

[→ Guidelines for Environmentally Friendly Design](#)

[→ LCA Label](#)



## Green Procurement

Various laws and regulations have been put in place, such as the Home Appliance Recycling Law and Law for Promotion of Effective Utilization of Resources in Japan, as well as the Waste Electrical and Electronic Equipment (WEEE) and Restriction of Hazardous Substances in EEE (RoHS) Directives outside Japan. With this background, Yokogawa aims at building a sustainable society in various areas of its business activities.

Based on the principle "Resource procurement with less environmental load = Offering environmentally friendly products", Yokogawa proactively promotes green procurement activities that are environmentally friendly.

### Green Procurement Guidelines

Under the philosophy to contribute to building a sustainable society in various areas of business activities, Yokogawa has created the "Green Procurement Guidelines" to promote green procurement activities.

[Yokogawa Group Green Procurement Guidelines version 4.0](#)

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## LCA Label

Yokogawa began to conduct the life cycle assessment (LCA) in 1999 in the design phase of all new products as part of efforts to minimize our products' environmental impact. Some of the results of the LCA are disclosed on our website. When LCA data is disclosed for a product, the applicable product is "LCA-labeled" in the product webpage and/or sales brochure .



### Reference

The "Environmentally Friendly" label will be attached to our products that meet Yokogawa's environmental assessment standards for product design and that are designed with greater environmental consideration than our previous products or those of competitors.

→ [Environmentally Friendly Products](#)

### Requirements for LCA Labeling

















A product will be LCA-labeled if it meets all the requirements described below:

1. Life cycle assessment has been conducted according to Yokogawa's engineering specifications.
2. The results of life cycle assessment are disclosed on the Yokogawa website according to the company's internal rules.

### Concept/Implementation of the LCA

Yokogawa has set its unique LCA standards based on JIS Q 14040 "Environmental management -- Life cycle assessment -- Principles and framework." We compare a new product with its previous product for assessment purposes. The results of the LCA of the previous product are multiplied by the "functional factor" to compare the environmental impacts based on the equivalent functionality of the new product. When the results of the LCA on the previous products clearly suggest how these products would impact the environment, we may only conduct LCA on the elements significantly affecting the environmental impact.

### List of LCA-Labeled Products

Model	Products	LCA result
CENTUM CS3000 Model System	<a href="#">Integrated Production Control System</a>	 PDF: 419KB
Prosafe-RS Model System	<a href="#">Safety Instrumented System</a>	 PDF: 192KB
STARDOM Model System	<a href="#">Network-based Control Systems</a>	 PDF: 263KB
EJA110E	<a href="#">Pressure Transmitter (DPharp EJA-E Series)</a>	 PDF: 157KB
CSU-X1	<a href="#">Confocal scanner unit</a>	 PDF: 212KB
AQ 1200A/B/C	 <a href="#">AQ1200 MFT-OTDR Optical Time Domain Reflectometer</a>	 PDF: 167KB
AQ2200-131	 <a href="#">AQ2200-131 Grid TLS Module</a>	 PDF: 226KB
DLM4038/DLM4058	 <a href="#">Mixed Signal Oscilloscope DLM4000 Series</a>	 PDF: 179KB
WT310/WT310HC	 <a href="#">WT300 Series Digital Power Meters</a>	 PDF: 180KB
WT332/WT333/		 PDF: 179KB
2558A	 <a href="#">AC Voltage Current Standard</a>	 PDF: 231KB

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## Guidelines for Environmentally Friendly Design

### (1) Environmental Assessment Standards for Product Design

We have established assessment standards in eight areas: ease of recycling and treatment, resource conservation, energy conservation, long-term usability, ease of collection and transport, safety and environmental protectiveness, information disclosure, and packaging. These standards are used in conducting assessments during each inspection (initial design, intermediate design, and final design).

### (2) Lifecycle Assessment (LCA) Standards

The LCA standards are used for preliminary assessments of energy use, CO2 emissions, NOx emissions, SOx emissions, and the like throughout the lifecycle of a product. These standards are used in conducting assessments during each inspection (initial design, intermediary design, and final design).

### (3) Environmentally Friendly Product Design Guidelines

These guidelines establish design and machining and assembly methods that incorporate long-life design, energy conservation design, resource conservation design, and materials and parts selection guidelines, as well as standards for the recycling and disposal of products.

### (4) Standards on Toxic Substances in Products

These standards guide the selection of environmentally friendly parts and materials in the design stage. The standards stipulate the elimination or reduction of substances a total of 44 substance groups: 15 prohibited substance groups and 14 voluntarily controlled substance groups specified in the Green Procurement Study Standardization Guidelines, and substances in 15 voluntarily controlled substance groups nominated by the Group.

### (5) Recycled Product Design Standards

These standards encourage the three Rs: the reduction of waste and the reuse and recycling of used products.

### (6) Environmentally Friendly Material Selection Standards

These standards state that the use of halogen-based flame retardants is to be avoided. The standardized specifications of materials also state that the use of structural steel plates containing hexavalent chromium is to be avoided and assign chrome-free steel plates as a substitute.

### (7) Energy-saving Design Guidelines

These guidelines state that energy is to be conserved in the manufacturing and product use stages. They introduce energy conservation design technologies for products and manufacturing.

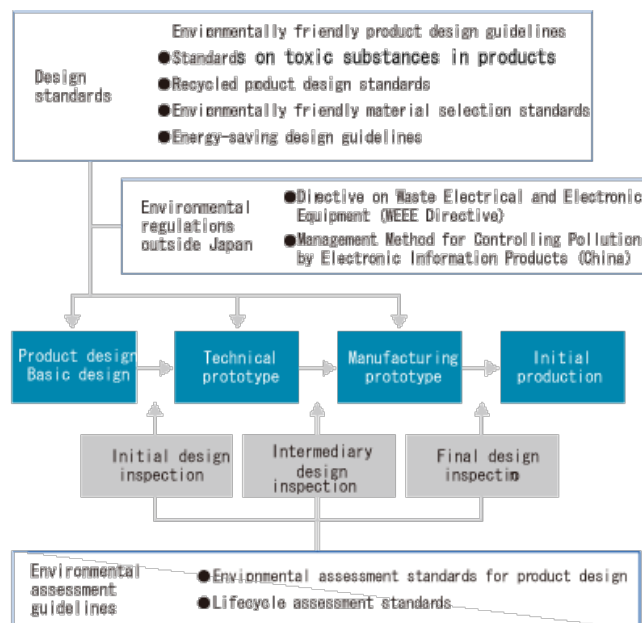
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### Environmental Assessment Standards for Product Design

(1) When	Initial design inspection/intermediate design inspection/ final design inspection
(2) Assessment items	Twenty-nine items in eight fields; ease of recycling and treatment, resource conservation, energy conservation, long-term usability, ease of collection and transport, safety and environmental protectiveness, information disclosure, and packaging.
(3) Evaluation criteria	Score is zero points if legal regulations are not satisfied, four points if legal regulations are satisfied and an improvement of 30% or more is achieved, three points for an improvement of 15% or more, two points for an improvement of 5% or more, and one point for an improvement of less than 5%.
(4) Pass/fail judgment criteria	In order to pass, there must be no assessment items with a score of zero points, and the total score must be greater than that of the old model. A “failed” judgment is given if any of the assessment items has a score of zero points or if the total score is the same as or lower than that of the old model. The improvement guidelines target an improvement of 25% or more, and more than anything seek to incorporate environmental-burden reduction into design.

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## Global Warming Prevention

The "Yokogawa Group Green Promotion Committee" was formed to step up our efforts to preserve the global environment and enhance our programs to counter global warming. We have set CO2 emission reduction targets for the Yokogawa Group (Japan) for the phases 2010-2014, 2015-2019 and 2020, and are implementing emission reduction programs to achieve those targets. Our ongoing CO2 emission reduction programs include the introduction of high-efficiency heating/cooling equipment, the installation of inverter-driven lights, LED lights and the use of green power.

For our offices and factories, we have employed "InfoEnergy," Yokogawa's proprietary energy conservation support system designed to visualize energy data, in order to reduce CO2 emissions.

Yokogawa Electric and Yokogawa Manufacturing participate in the Keidanren's Commitment to a Low-Carbon Society (an industry action policy established subsequent to the first commitment period of the Kyoto Protocol). Specifically, the companies are working on improving their production processes in order to realize greater energy efficiency in production processes, such efficiency being a common goal of the electrical and electronics industry. (Our target is to improve the average annual energy consumption rate by 1% by 2020.)

### CO2 Emission Reduction Targets and Performance for Yokogawa Group (Japan)

The Yokogawa Group (Japan) has set its CO2 emission reduction targets toward 2020, and is directing its efforts to achieve the targets. By using the annual average of emissions measured over the 2005 to 2007 period as the baseline (56,560 tons of CO2), we have set different reduction targets for three phases with the ultimate objective of achieving the goal set for 2020. Specifically, we are implementing a range of activities to achieve the reduction targets described below:

- 2010 to 2014 period: A 7% reduction in total emissions  
(263,005 tons of CO2, with an annual average of 52,601 tons of CO2)
- 2015 to 2019 period: An 18% reduction in total emissions  
(231,895 tons of CO2, with an annual average of 46,379 tons of CO2)
- 2020: 20% reduction  
(45,248 tons of CO2)

The Yokogawa Group (Japan) produced 41,266 t-CO2 of carbon dioxide emissions in 2012, achieving its CO2 emission reduction target. Overseas, each of our group companies overseas sets its voluntary reduction target and is working to achieve the target.

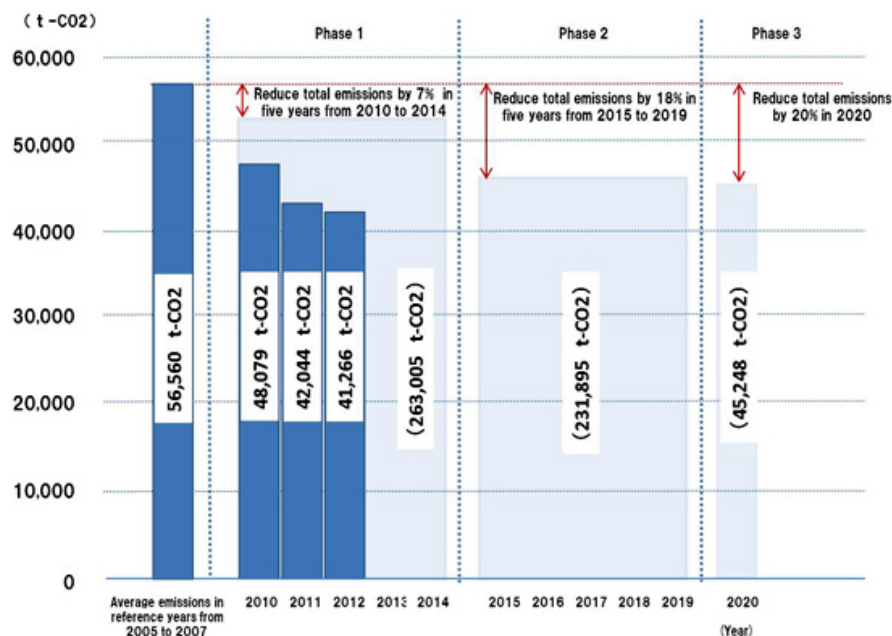
Graph of CO2 Emission Reduction Targets and Performance for Yokogawa Group (Japan)

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### Scope 3 CO2 Emissions

In addition to the direct CO2 emissions generated from our use of fuels and manufacturing processes (Scope 1) and indirect CO2 emissions generated through the use of purchased electricity, heat and other sources of energy (Scope 2), we also track and calculate other indirect CO2 emissions (Scope 3).

Category			Emissions (t-CO2)
Upstream	1	Purchased Goods & Services	-
	2	Capital Goods	-
	3	Fuel- and Energy Related Activities Not Included in Scope 1 or 2	56,051
	4	Transportation & Distribution	-
	5	Waste Generated in Operations	1,836
	6	Business Travel	30,742
	7	Employee Commuting	2,520
	8	Leased Assets	-
Downstream	9	Transportation & Distribution	-
	10	Processing of Sold Products	-
	11	Use of Sold Products	-
	12	End-of-Life Treatment of Sold Products	-
	13	Leased Assets	-
	14	Franchises	-
	15	Investments	-

(The above figures apply to the headquarters of Yokogawa Electric.)

(-) indicates that the calculation method is still being examined or the figure is not included.

### CO2 Reduction Program through "Electricity Data Visualization" with the Use of "InfoEnergy" Energy Conservation Support System

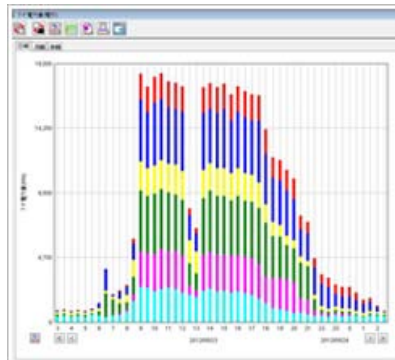
We have been promoting the visualization of electricity use within the premises of Yokogawa's headquarters since 2010 by installing new and additional units of our proprietary "InfoEnergy" energy conservation support system.

In 2012 we initiated the management of "InfoEnergy" data by dividing it into smaller categories--buildings, floors and electrical systems--in an effort to further reduce power consumption. Specifically, an Energy Conservation Coordinator appointed for each of the buildings and floors monitors the electricity consumption in the area under his/her charge in order to discern any improper use of electricity. Any unnecessary or excessive usage is eliminated through corrective measure(s) designed to accommodate the work performed

on the applicable floor and the requirements of the equipment being used, as part of our proactive effort to reduce energy consumption.



"InfoEnergy" Monitor



"InfoEnergy" Screen

This screen allows us to monitor the hourly electricity consumption per electrical systems such as lighting and air conditioning.

### Various energy conservation activities (Singapore)

Yokogawa subsidiaries, both in Japan and abroad, are engaged in energy conservation. Yokogawa Engineering Asia Pte. Ltd. (YEA) in Singapore promotes energy conservation through the following activities;

- Turning off lights and air conditioners during the lunch hour, after office hours, and after using meeting rooms, washrooms and pantries.
- Setting all PCs and printers to energy saving mode.
- Phasing in LCD monitors when existing PCs are replaced in most departments.
- Implementing motion sensors in all wash rooms of new building.
- Promoting disc cleaning and defragmentation practices.
- Increasing the indoor temperature (for air conditioning) by 1 degree.
- Using timer controls for air conditioner package units.
- Reducing operating hours of all perimeter, landscape, and rooftop lights and exhaust fans.
- Consolidating facilities and equipment that require 24-hour (round-the-clock) air conditioner cooling into the same areas, such as SIC staging/YAS factories.
- Installing split air conditioner units in meeting rooms to eliminate the need to turn on the central air conditioner after office hours and on weekends.
- Involving security staff in energy saving programs, especially after working hours.

### Geothermal system in office building (Netherlands)

We reduce the environmental impact of our activities whenever possible. For example, Yokogawa Europe B.V. (YEF) features a special system to cool and heat the building, designed to reduce energy consumption. The climate control equipment is connected to a 'ground heat pump' that has a hot and cold source in the ground. In summer, this device channels the heat from the building to the groundwater in an aquifer (an underground water-bearing layer of sand) and extracts the cold to cool the building. In winter the warmth is extracted from the ground to heat the building, and the cold from outside is channeled back into the ground. This system saves a lot of energy compared to normal heating or air-conditioning installations, and therefore reduces CO<sub>2</sub>-emissions.

### Implementing Energy-saving Lights

Yokogawa companies outside Japan are also implementing efforts to reduce CO<sub>2</sub> emissions.

Yokogawa Corporation of America (YCA) has replaced all of the lights used in the manufacturing area of its factory with energy-saving ones. YCA has reduced the power consumption of the lighting by replacing the 400-watt metal halide lamps it formerly used with 135-watt LED lights. Because the LED light generates less heat, it also helps reduce the power used for air conditioning.

The light at the top of the picture is a 135 watt LED fixture.





The light at the bottom of the picture is the old metal halide 400 watt fixture.

LED lights at YCA factory

### Efficiency Improvement of HVAC Control (Japan)

The Komagane site updated the heating and cooling units of its HVAC systems that provide heating, ventilation and air conditioning within the factory.

HVAC heating/cooling units include outdoor units (which adjust the temperature and humidity of fresh air as it is taken in) and indoor units (which adjust the indoor temperature and humidity).

The control of temperature and humidity within the factory is "visualized" by means of "InfoEnergy," an energy-conservation support system Yokogawa uses on its products. Specifically, the temperature and humidity of each chamber are displayed at all times, and any problematic temperature/humidity variation is identified on an hourly basis .



InfoEnergy monitor for temperature control

In its latest improvement effort, the Komagane site updated the heating/cooling coils and changed the arrangement of coils in the outdoor units to achieve greater heating and cooling efficiency in regard to fresh air. A dehumidifying function to help maintain constant room temperature and humidity was added to the indoor units. These updates and functional additions to the HVAC systems have allowed the Komagane site to reduce cooling-water consumption and the electricity needed to supply water.

### Improvement of Indoor Environment Through Better Treatment of Exhaust Heat from Equipment (Japan)

The Ome site uses large drying furnaces and spot coolers on its lines to dry and cool printed wiring boards. The site had been suffering from a deteriorating work environment due to high room temperatures of 30°C or more due to exhaust heat from these large drying furnaces and spot coolers.

Consequently, the factory enclosed each drying furnace with plastic curtains and guided air inside the enclosure to prevent hot air from remaining at the work site. To deal with the exhaust heat from spot coolers, a duct leading to the outside was connected to the hot-air outlet of the spot cooler so that the exhaust heat would no longer blow off into the work site as before.

These improvements brought the work site temperatures to consistently below 30°C and helped reduce the consumption of electricity.



Countermeasure to exhaust heat from large drying furnace



Countermeasure to exhaust heat from spot cooler

### Countermeasure to Exhaust Heat from Equipment (Japan)

The Komine factory implemented a countermeasure to deal with the heat exhausted from



its chillers, which are used to cool the large laser processing machines.

Due partly to their location, the chillers would elevate room temperatures by allowing their exhaust heat to stay indoors. In the summer months, the average room temperature exceeded 35°C, even when the indoor air-conditioning temperature setting was lowered to 20°C. This prevented the sufficient cooling of the laser processing machines and caused the machines to stop several times a day on various occasions. To cope with the heat, the operators wore vests lined with cooling agent, but their discomfort level increased.

To improve the situation, the factory ducted the chillers to guide their exhaust heat--the cause of rising room temperatures--out of the building. Additionally, fans were installed to ensure that the exhaust heat would not remain indoors. Moreover, because the laser processing machines generate powder dust, filters were installed in the ducts to improve the containment of powder dust.

Thanks to the countermeasure, the operators no longer need to wear cooling vests and the indoor air-conditioning temperature is now set to 25°C. As a result, the factory has saved approximately 3,300 kWh of electricity during the summer months of July to October. In a way, the countermeasure achieved both higher work efficiency and lower electricity consumption.

To help them work in a hot indoor environment, the factory had supplied the operators with vests lined with cooling agent, but the vests created secondary problems such as the difficulty of movement.

Needless to say, an improved environment enhances the efficiency of work. It is important for the operators on the production floor to identify inefficiencies and make improvements.



Hiroyuki Adachi  
Komine F P&C Machining Dept.  
Plate Metal Sec.,  
Yokogawa Manufacturing

## Reducing Energy Consumption with the Use of "Enerize E3" (Japan)

### Yokogawa Manufacturing Kofu Factory

Our Kofu factory, one of Yokogawa's leading manufacturing facilities in Japan, is taking a range of measures to reduce the use of electrical power.

Power monitoring devices are installed at nearly 500 different locations throughout the factory in order to capture and manage data on power usage. The data retrieved from the power monitoring devices is used to calculate the energy costs of the factory's different departments. The departments are required to bear their own energy costs, and this motivates them to identify any wasteful energy consumption they may cause and thus solve problems for improvement.

Yokogawa's proprietary "Enerize E3" has previously been used to calculate the power usage per production equipment from the energy and production data and thereby reduce energy consumption on a per-unit basis. However, we are now taking advantage of such energy data by processing it so that it can be used in the management of daily power usage in the respective departments, areas and production lines within our factory. The processed data is released to the applicable departments.

One department had a question about the energy use incurred by a production line that was normally shut down on non-business days. The department investigated the cause of such energy use and found that, even after the transition from the three-shift day to two-shift system on the manufacturing floor, the air conditioner remained on during the hours in which it wasn't needed. This finding led to a cost reduction of approximately 1.8 million yen. In short, we have a system in place to promptly identify any waste of energy consumption due to a change and make the necessary improvement.

Quality, delivery schedule and cost are important factors on the manufacturing floor. Because I'm in charge of factory energy management, I've always wondered how I could encourage the manufacturing-floor personnel to be more conscious of energy conservation.

And I decided to bring the energy bill, as a part of the cost that needs to be allocated, into play. I put in place a system that allows the respective departments to cut down the energy cost they bear as much as their energy usage is reduced.



Tetsuro Tanaka  
Kofu Admin. Dept.  
General Affairs Sec  
Environment & Safety Tm,

By allowing the departments to lead the effort to resolve issues, we're able to identify wasted resources and make improvements more quickly than ever before.

## Introduction of the "Green Power Certificate" System

### Yokogawa Electric

A portion of the electricity used by the headquarters building of Yokogawa Electric come from "Green Power" harnessed through "biomass power generation" (300,000 kWh/year).



Biomass  
power generation

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## Chemical Substance Control and Reduction

Yokogawa strictly manages chemicals that are harmful to the global environment and the human body. Furthermore, to comply with RoHS directives restricting the use of certain chemicals in electrical and electronic equipment in Europe, as well as with the REACH Regulation (Registration, Evaluation, Authorization and restriction of Chemical substances), we are implementing efforts for the reduction and management of such chemical substances.

→ [Product-Related EHS Compliance Activity: REACH Compliance](#)

### Improvement of Hydrochloric Acid/Caustic Soda Control Method and Reinforcement of Safety Measures

#### Yokogawa Electric Komagane Factory

The Komagane factory has revised the control method and reinforced its safety measures for 35% hydrochloric acid (4 tons) and 25% caustic soda (4 tons) held in large storage tanks used in pure-water manufacturing and wastewater treatment.

The pure-water manufacturing process uses undiluted hydrochloric acid and caustic soda for the regeneration of ion-exchange resins. Because those undiluted solutions are used in small amounts, the suction units were installed so that those solutions can be purchased in polyethylene drums, which are then installed directly on the lines.

For the wastewater treatment process, the factory used to dilute hydrochloric acid and caustic soda to 10% each for the purpose of pH adjustment. This was changed to directly sending hydrochloric acid and caustic soda in the necessary concentration from the tank trucks to storage tanks, thus eliminating the dilution step. Those measures eliminated the need to store large amounts of highly concentrated hydrochloric acid and caustic soda in the large storage tanks, consequently reducing the risk of damage in the event of leakage.

Hydrochloric acid and caustic soda are classified as poisons/deleterious substances, and therefore caution is required in the handling of such chemicals. Now that the step of diluting these liquids to the necessary concentration in large storage tanks has been eliminated, the work has become safer and more efficient.

We will continue to check our facilities for deterioration, etc., on a regular basis and consider ways to further increase the safety.

Shouichi Andou,  
Semiconductor Headquarters  
Silicon Device  
Development Dept.,  
Yokogawa Electric



### Reduced Use of Caustic Soda Through Additional Ducting

#### Yokogawa Manufacturing Ome Factory

The plating and etching processes employ units that release acid-containing gases, which must be made harmless through means of acid scrubbers. The Ome factory has endeavored to reduce the amount of caustic soda in those acid scrubbers for the sake of pH adjustment.

The factory has approximately 13 affected units, including plating tanks and etching devices. The acid gases released from those units are ducted, as mist, to the acid scrubbers. The acid gases collected in the acid scrubbers are pH-adjusted using a water or caustic soda (alkali) shower and are then released to the atmosphere. The interiors of the acid scrubbers are set to pH9, with caustic soda automatically fed to the scrubbers. Therefore, in the past a large amount of caustic soda had to be used to treat highly concentrated acid gases. Also, the copious use of caustic soda often caused the bubbling of water in the acid scrubbers.

Ducting was therefore added in order to ensure that the acid mist released from each unit

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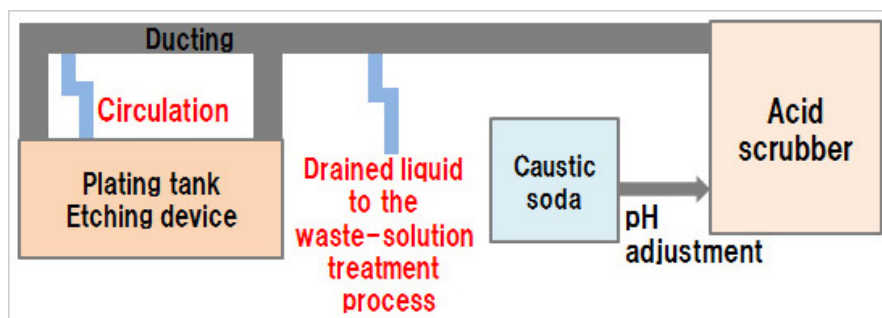


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was returned to the unit. Another improvement was that ducting was added in those locations along the ducting route where mist tended to collect, so that acidic liquid could be drained directly and forwarded to the waste-solution treatment process. As a result, highly concentrated acid gases no longer flowed to the acid scrubber in large amounts, so the factory was able to halve the use of caustic soda for its acid scrubbers, going from 12 tons a year to just six tons. Because less caustic soda is used, the bubbling of water no longer occurs in the acid scrubbers. This has the benefit of reducing the load on the facilities.

**Main Flow to Acid Scrubber**



Circulation



Drained liquid is forwarded

**PRTR Substances**

The amount of substances reported under PRTR\* requirements (1,000 kg/year or more handled) is shown in the table.

\*PRTR System:

PRTR SYSTEM...The PRTR, or Pollutant Release and Transfer Register, was established to enable society as a whole to manage chemical substances through the disclosure of toxic chemical emissions data and other information.

**Fiscal Year 2012 PRTR Data**

Factory	Factory substance	Amount used (kg)	Amount emitted (kg)				Amount transferred (kg)	
			Air	Public water area	Soil	Landfill	Sewage system	Outside site
Yokogawa Electric Komagane Factory	Hydrazine	1,161	0	130	0	0	0	1,000
	Hydrogen fluoride and its water-soluble salt	1,072	0	120	0	0	0	910
	Ferric chloride	1,359	0	0	0	0	0	0
Yokogawa Manufacturing Kofu Factory	Toluene	1,498	1,362	0	0	0	0	136
	Lead	2,800	0	0	0	0	0	0
	Ferric chloride	4,514	0	0	0	0	0	4,514
Yokogawa Manufacturing Komine Factory	Xylene	1,156	717	0	0	0	0	439
	Toluene	1,526	946	0	0	0	0	580
	Ferric Chloride	5,125	0	0	0	0	0	0
	Water-soluble copper salt (except complex salts)	14,482	0	0	0	0	23	15,100

Yokogawa Manufacturing Ome Factory	1,3,5-Tris(2,3-epoxypropyl)-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione	1,779	0	0	0	0	14	1,100
	Formaldehyde	2,334	400	0	0	0	10	1,500
	2-aminoethanol	2,142	210	0	0	0	13	1,400
	Peroxydisulfuric acid water-soluble salt	4,675	0	0	0	0	15	760

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## Waste Reduction and Resource Saving

The "3R" concept (Reduction, Reuse, and Recycling) promoted by the Yokogawa Group is indispensable to global environmental conservation. Up to now, six main factories including the Yokogawa Electric's headquarters have met the goals of zero emissions.

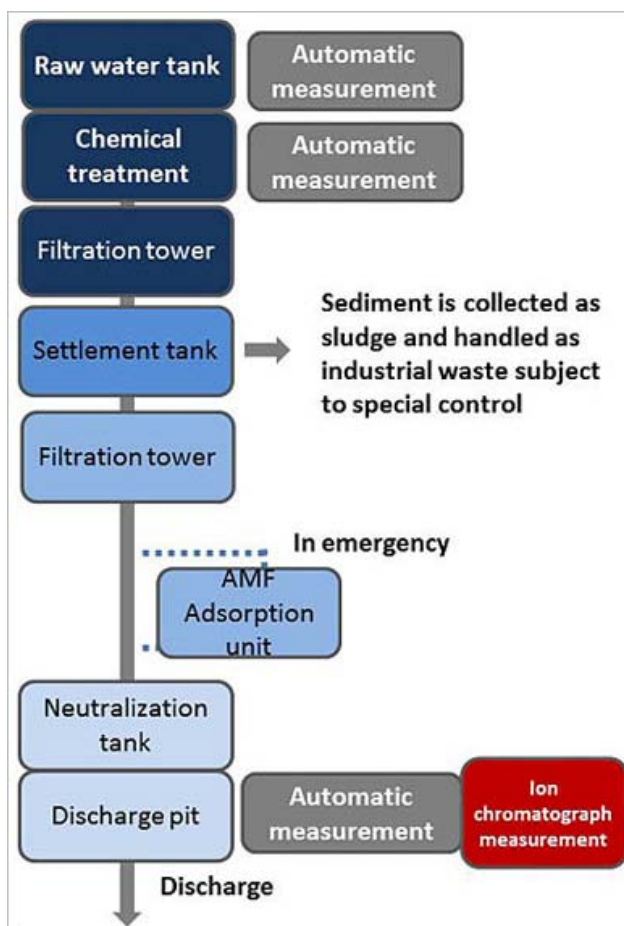
### Comprehensive Management of Wastewater Treatment

#### Yokogawa Electric Komagane Factory

The wastewater treatment process for fluorinated acid (hydrofluoric acid) used during the semiconductor manufacturing process has been improved.

Factories must comply with the fluorine effluent standard (8 mg/L) when discharging used fluorine into rivers. Accordingly, the concentration of fluorine effluent from the factory has been automatically monitored using the ion electrode method. However, that method was prone to measurement inaccuracies due to the entry of interfering substances such as aluminum. Therefore, the Komagane factory reinforced its automatic monitoring using the ion electrode method (through the addition of monitoring locations), and it introduced an "ion chromatograph" capable of measuring the true value even when interfering substances are intermixed. By double-checking the measured values through ion chromatography, the Komagane factory stepped up its measurement management of wastewater treatment.

Additionally, an "AMF adsorption unit" was introduced to the pickup tower system in the wastewater treatment process in the event of an emergency. Compared to the conventional unit, as designed to adsorb only fluorine, the AMF adsorption unit uses a column filled with an anion-adsorbing agent (AMF) whose main constituent is iron oxide, and wastewater is passed through this column to continuously adsorb and collect fluorine, phosphorous, arsenic, etc., in the wastewater treatment. Consequently, the wastewater (treatment) system will never release the wastewater that deviates from the effluent standard, particularly when an abnormal value is detected.



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## Main Flow of treatment



Ion chromatograph measurement screen



AMF Adsorption unit

## Reduction of Waste-Solution Through an Improved Drilling Line

### Yokogawa Manufacturing Kofu Factory

The Kofu factory introduced the high-speed drilling method to the cutting-and-drilling line and achieved a substantial reduction in the amount of waste solution.

The factory, in 2010, considered ways to accommodate increased production, including the introduction of new facilities. Those facilities were introduced on a step-by-step basis, starting in 2011, thus automating the turning process, drilling process (3 mm/1 mm) and cleaning process--which were conducted in two distinct locations--and allowing them to operate continuously.

The original 3-mm cutting-and-drilling process used cutting oil and thus required a hot-water cleaning step. The 1-mm cutting-and-drilling process, in addition to hot-water cleaning, needed supersonic cleaning, spin cleaning and precision cleaning for the removal of deposits.

The latest introduction of high-speed drills has allowed the factory to switch the cutting oil to a water-based cutting fluid and use only high-pressure steam for cleaning. Moreover, the waste solution generated by the high-pressure steam cleaning is circulated and reused as a diluent for the cutting fluid used for the high-speed drills, effectively eliminating the waste solution that would otherwise be generated in the cleaning step. By introducing the new facilities, optimally controlling the concentration of cutting fluid, and circulating and reusing the waste solution from the cleaning step, the Ome factory now generates approximately a ton of waste solution annually instead of approximately 24 tons, which was the case previously.

We have achieved an improvement in productivity along with the stabilization of quality and a significant reduction in waste solution.

The facility must be operated in an appropriate way whenever a new facility is introduced. To achieve the cutting of fine shapes and structures, it is vitally important to control the concentration of cutting fluid and the drill-bit temperature. The employees at our production site think of ways to reduce the cutting resistance and follow the detailed procedures, such as by checking the drill bits. We are committed to the assurance of stable quality through reliable operation and the control of our facilities.



Shinsaku Hayashi,  
Manufacturing Engineering Dev. Dept  
Yuzo Yasaki, Manufacturing Dept.  
Tutomu Okuda,  
Manufacturing Engineering Dev. Dept.  
Kofu factory, Yokogawa Manufacturing

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## Goals and Achievements

### Goals and Achievements in Fiscal Year 2012

Environmental Policy of the Yokogawa Group	Fiscal Year 2012 (main sites)		Self Evaluation
	Target/Gol	Results	
EMS establishment, maintenance, and improvement	Confirm and achieve the environmental conservation action targets that are closely integrated with our business practices. *1	<ul style="list-style-type: none"> <li>154 themes closely integrated with business operations</li> <li>An internal audits conducted and effective environmental system confirmed</li> </ul>	Good
	Promote 31 useful environmental activities in line with existing business.*2	31 useful environmental activities promoted	
Implementation of environmental education	<ul style="list-style-type: none"> <li>Provide all employees with basic environmental education that can be applied to activities undertaken on their own initiative.*3</li> <li>Provide specialized environmental education to those who are engaged in business activities that have a particularly significant impact on the environment.*3</li> </ul>	100% achieved	Good
Legal compliance	Continue with the preventive maintenance and management of wastewater treatment facilities. *2	Reviewed emergency training and procedures.	Good
	Reduce risk in environmental facilities and equipment. *2	Reduced risk in the exhaust gas scrubber and storage tank.	
	Conduct audits with focus on legal compliance to ensure compliance. *2	<ul style="list-style-type: none"> <li>Completed corrective measures and reviewed management methods for noncompliant items</li> <li>Conducted mutual audits by expert members.</li> </ul>	
Promotion of resource recycling-based management	<b>Reduce energy consumption and CO2 emissions (domestic group companies).</b> Total CO2 emissions: 52,601 t-CO2/year (Reduce emissions by 7% from the average of reference years from 2005 to 2007.)	<b>Reduced energy consumption and CO2 emissions (domestic group companies).</b> Total CO2 emissions: 41,266 t-CO2/year	Good
	<b>Reduce total waste</b> <ul style="list-style-type: none"> <li>by 35 % compared to fiscal year 2003 (494 t/year in total generation)*1</li> <li>Reduced to 3,103 t/year*2</li> </ul>	<b>Reduce total waste</b> <ul style="list-style-type: none"> <li>57% reduction compared to fiscal year 2003 (326 t/year in total generation)</li> <li>Reduced to 2,974 t/year</li> </ul>	Good
	<b>Resource saving</b> Deploy green production lines and make improvements at 6 lines*2	<b>Resource saving</b> Achieved resource-saving improvements, including on manufacturing lines and for equipment, at 7 lines (Reduced waste solution, power consumption, etc.)	Good
Minimization of environmental pollutants	Reduce toluene and xylene by 2,500 kg.*2	2,723kg reduction	Good
	Promote lead-free soldering and achieve 100% application in planned products.*2	Application to all planned products achieved	
	Modify the chromium-free equipment.*2	Completed construction of related equipment.	

	Study solutions to the irregularity of black chromate on products with large surface areas. *2	Created and evaluated samples. Continue in 2013.	
Development of environmentally friendly products	Apply the assessment standards to reduce CO2 emissions of developed products by more than 25%. *1	Registered 7 product models to which the assessment standards are applied, and conducted their design reviews according to the respective schedules.	Good
	Promote green procurement for parts. *2	Implemented 3 cases of green procurement, including the introduction of returnable tote boxes.	
Provision of environmental solutions	<ul style="list-style-type: none"> <li>■ Increase sales of environmentally friendly products*1</li> <li>■ Show visitors energy-saving efforts at the Kofu Factory*1</li> </ul>	Achieved	Good
Contribution to society through environmental conservation	Promote contributions to society through participation in nature conservation and social and community activities.*1	Participated in community clean-up activities etc.	Good
	Carry out at least 15 social contribution activities. *2	A total of 19 social contribution activities carried out by each factory.	
Disclosure of environmental conservation information	Promote information disclosure and enhance efforts to communicate with communities.*1	Published CSR report, Web edition	Good
	Improve the corporate website and intranet. *2	Updated information posted on the corporate website and intranet.	

Main sites: Yokogawa Electric Corporation Headquarters & Main Factory and Yokogawa Manufacturing Corporation

\*1: Goals of Yokogawa Electric Corporation Headquarters & Main Factory

\*2: Yokogawa Manufacturing Corporation

\*3: Common goals

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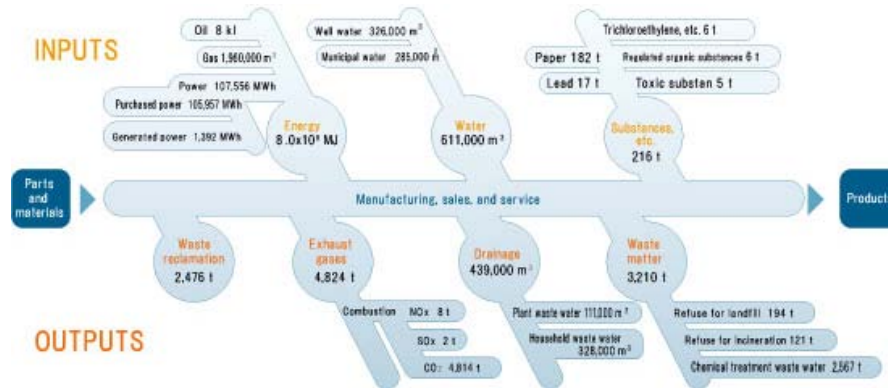
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## Environmental Impact

The Yokogawa Group calculates the annual volume of the energy and material inputs for its business activities (including manufacturing, sales, and service) as well as their annual output of waste and other matter into the air and water. This analysis helps the Group effectively use resources, improve energy efficiency, and improve the waste recycling rate.

### Overview of Environmental Impact

Click the image below to enlarge



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## Environmental Accounting

In accordance with the Ministry of the Environment's **Environmental Accounting Guidelines** (2005 edition), Yokogawa calculates the costs of its environmental activities and quantifies their economic impact.

### Environmental Conservation Costs

Category	Item	Main Initiatives	Capital Investment	Related Costs
Costs for reducing environmental impact of factories (areas of operation)	Pollution prevention costs	Monitoring and measurement	129.2	144.9
	Global environmental conservation costs	Energy savings	103.0	217.7
	Resource recycling costs	Minimize generation of waste matter	0	229.0
Costs for reducing environmental impact of procurement and logistics		Green procurement	0	5.3
Environmental conservation costs in EMS activities		EMS updates, education	0	198.2
Environmental conservation costs in community activities		Environmental events	0	28.8
Costs for correcting damage to the environment		Soil recovery	0	0
Total			232.2	823.9

(Millions of yen)

### Environmental Conservation Effects

Category	Description of Effect (unit)	FY2011	FY2012	Effect
Resource expenditure	Total amount of energy consumed (108 MJ)	10	8	-2
	Total amount of water resources consumed (km <sup>3</sup> )	663	611	-52
Global warming prevention	CO2 emissions (t)	6,483	4,814	-1,669
	CO2 emissions on unit sales (t-CO2/100 million yen)	2.2	1.6	-0.6
Air pollution	NOx emissions (t)	10	8	-2
	SOx emissions (t)	2	2	0

### Economic Effects of Environmental Conservation Measures — Intrinsic Effect

Description of Effect	Amount
Reduction in expenditure due to recycling (sale of valuable resources, etc.)	97.3
Reduction in expenditures due to energy savings (power, etc.)	20.7
Reduction in expenditures due to resource savings (reduced use of paper and water, etc.)	2.6
Total	120.6

(Millions of yen)

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\* Data was taken from ISO14001-certified manufacturing sites.

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## Compliance with Environmental Laws and Internal Audit

Yokogawa is doing everything possible to switch to alternative technologies to ensure full compliance with the laws, agreements and regulations designed to prevent environmental pollution and reduce substances that place a burden on the environment. In 2012 we again endeavored to ensure full compliance with the environmental laws, regulations, agreements, etc., and had no major violations. Each year we regularly receive inspections by external auditors and internal audits.

### Conserving Water and Soil

The Yokogawa Group has conducted soil and water studies at former production sites in accordance with its proprietary control standards, starting before the enactment of Japan's Soil Contamination Countermeasures Law. The Group comply with the revised Soil Contamination Countermeasures Law put in effect in April 2010.

### Environmental Auditing

#### Internal Audits

The environmental internal audits for ISO14001 consist of systems, legal compliance, and performance audits. Internal audits were conducted at all departments at least once during the year. Although some inconsistencies and items to be watched were identified, these were quickly addressed and corrected.

#### Internal Audit Inspection Items

Systems audit	Audit of organizations/systems, target management, education, operations management/corrections, and other data to check whether the system is functioning effectively
Legal compliance audit	Audit of the operation and monitoring of regulated values (qualifications, notice submissions, and measurement data) and other data to check whether legal and other requirements are being followed
Performance audit	Audit of targets and actual results, regulated values, and other data to check whether the self-determined operation items are being implemented properly

#### Annual Surveillance

Regular inspections (renewal inspection or surveillance) were conducted at each of Yokogawa's ISO14001-certified group companies by an ISO14001 certifying organization in order to maintain ISO14001 certification.

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## Promoting Biodiversity

In line with the environmental policy of the Yokogawa Group, all group companies are working to preserve biodiversity.

### "Tokyo Greenship Action": A Collaborative Effort Between Local NPO and Residents to Protect the Woodlands

#### Yokogawa Electric

Since 2009, Yokogawa has been a participant in "Tokyo Greenship Action," a collaborative effort among the city of Tokyo, local NPOs, and businesses to conserve and revive the woodlands in the hills of Tokyo, and contribute to their biodiversity.



Tokyo Greenship Action

### Participation in the Tenryu River Water Quality Survey

#### Yokogawa Electric Komagane Factory

At our Komagane factory, situated along the Tenryu River in Nagano Prefecture, employees and their families are participating in the "Family Water Quality Survey" organized by the Nagano Techno Foundation. The survey was initiated under two themes: "Restoring the Tenryu River where we can swim" and "Building a recycling-oriented society". Every participating family uses a simple water quality analyzer called "Pack Test" to study the water quality at a nearby area of the river and submit a report. The items examined by the water quality survey include water clarity and life forms in the river.



Water Quality Survey List

### Artificial Hill Built in the Headquarters in the Image of the Woods in Musashino

#### Yokogawa Electric

In an empty lot, which was left after part of the building was torn down at the headquarters campus, an artificial hill was made by planting a green lawn and plants. The artificial hill has 37 types of plants such as serrata oak, sawtooth oak, and storax, which are designed in the image of the woods in Musashino. In addition, the azaleas planted along the walkway bloom in the spring, welcoming visitors.



Artificial Hill in the Yokogawa headquarters

### Protecting Large Trees in the City of Musashino

#### Yokogawa Electric

In the city of Musashino, where Yokogawa Electric's headquarters is located, there are approximately 2,000 large

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trees in the city designated as "environmentally protected." It is under a program called "2000 Large Trees/Symbolic Trees Plan", which has been in place since 1994. Fifty large trees within the premise of Yokogawa Electric's headquarters have been designated under this program and are protected as such.



Protected Large Trees

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## Occupational Safety and Health

In 2006, the Yokogawa Group established the "Yokogawa Group Safety and Health Policy" and began implementing the Occupational Safety and Health Management System (OSHMS). Since 2007, the Yokogawa Group has implemented the OSHMS in each of its companies to promote a higher level of safety and health by making continual improvements through risk assessment and other methods.

 [Yokogawa Group Occupational Safety and Health Policy Statement](#)

### Operation of the Occupational Safety and Health Management System (OSHMS)

Recognizing that "occupational safety and health are a basic responsibility of the management," the Yokogawa Group implements OSHMS to ensure the occupational safety and health of all of its employees and its sub-contractors. Improvements are made in phases, with constant assessments to eliminate or minimize potential risks. Regular evaluations and reviews of the activities are also done through audits. The effectiveness of the system has improved by combining conventional activities, such as safety patrols, and countermeasures against occupational incidences and near misses.

The Yokogawa Group companies in and outside Japan share the same occupational safety and health objectives for all workers, including subcontractors. Moreover, seventeen Yokogawa Group companies have acquired certifications in compliance with OHSAS18001\*1, which is internationally recognized.

\*1. Occupational Health and Safety Assessment Series. A certification standard for Occupational Safety and Health Management System.

 [FY2013 Yokogawa Group Occupational Safety and Health Objectives](#)

### Yokogawa Global QHS (Quality, Health & Safety) Meeting

Yokogawa 3rd Global OSH Meeting was organized with participants from Yokogawa group companies at Yokogawa Tokyo on October 25 & 26, 2012.

In the meeting, responsible section of OSHMS provided OSH status in Yokogawa group companies and expectations.

Then the participated affiliates (in China, Europe, Korea, Middle East, Russia, SE. Asia and US) presented OSH activities in the region and discussed on kinds of OSH KPI status, common OSH training materials and Global Audit Check-sheets.

The meeting was ended successfully.



Discussion at the meeting

### Occupational Safety and Health Education

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Safety month at Yokogawa Saudi Arabia office



Fire Evacuation Drill at Yokogawa Sichuan Instrument

To ensure that the "Yokogawa Group Occupational Safety and Health Policy" is adhered to across the entire Yokogawa Group, the "Safety and Health Handbook," which contains basic information and day-to-day rules regarding occupational safety and health, has been created and distributed to all staff and engineers at every Yokogawa Group company. To maintain and improve all levels of activities throughout, persons in charge, committee members and newly appointed personnel are educated through safety and health committee workshops, as well as on-site safety training at customer plants and factories.

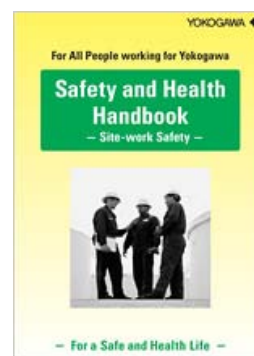
In 2011, Yokogawa Safety and Health Handbook for Site-work Safety Electric version of addition to Safety and Health Handbook specifically focused to Site-work Safety was compiled and distributed throughout Yokogawa group companies.

This includes prohibition against use of a mobile phone or pager or hands-free mobile phone device by drivers at any time while driving.

Drive safety training program is also covered by the latest Handbook and the same is conducted in all Yokogawa companies in China, as the thread of traffic accidents is raised these days.



Safety and Health Handbook



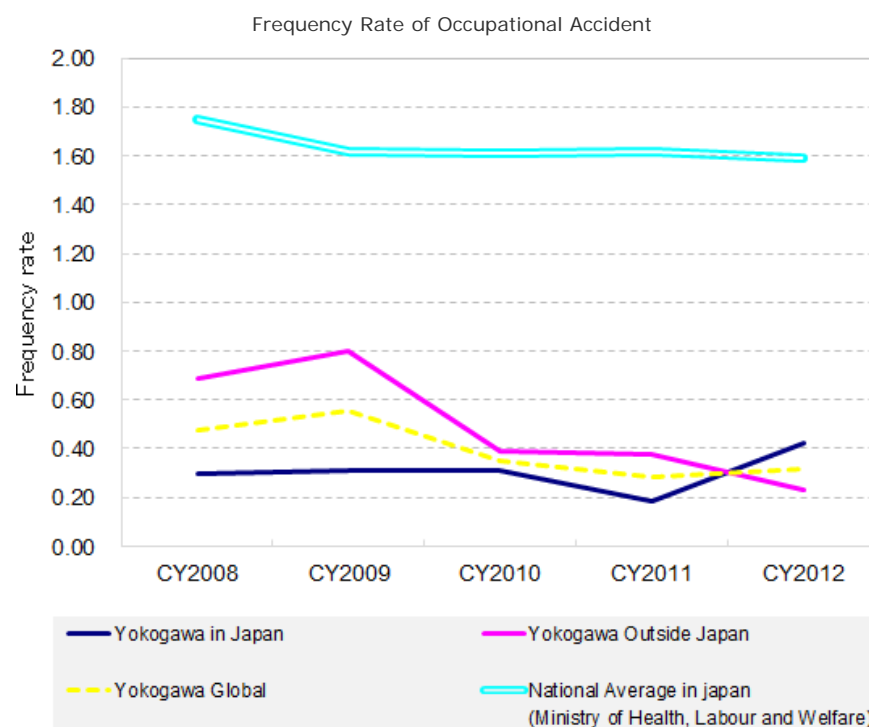
Safety and Health Handbook for site-work safety version

## Occupational Incident and Accident Data

The Yokogawa Group has been gathering and analyzing information on occupational accidents experienced by Group companies in and outside Japan on a quarterly basis since 2007, when it introduced OSHMS, as part of an effort to eliminate/reduce occupational accidents and improve the quality of activities thus implemented.

A few major account customers, globally active, require their vendor OSH monitoring. Yokogawa provides Occupational Incident Index of Yokogawa group companies quarterly for their analysis.

Yokogawa group companies being responsible for their projects, conduct project safety program including Risk Assessments at various milestones of project engineering and services.



Frequency Rate of Occupational Accident=(No. of workers having occupational accident with lost days / total working hours) × 1,000,000

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# Yokogawa Group

## OSH Policy Statement

In recognition that occupational safety and health are a basis for the management of the Yokogawa Group, the Group shall pursue the following initiatives to promote, create and maintain safety and health for its personnel involved.

- Establish and promote an occupational safety and health management system
- Observe the laws and regulations relating to occupational safety and health
- Seek to eliminate or lessen risks to occupational safety and health by first assessing their danger level
- Promote open communications with Yokogawa Group personnel, customers, shareholders, members of the local community, and contractors to maintain occupational safety and health system
- Provide the education and training to Yokogawa Group personnel
- Invest management resources appropriately, perform audits on a regular basis and make continual improvements in the Yokogawa Group occupational safety and health system.

**Shuhei Sakuno**

Senior Vice President

Audit & Compliance Headquarters

Yokogawa Electric Corporation

# FY2013 Yokogawa Group OSH Objectives

## 1. Establishment, Maintenance and Improvement of occupational safety and health management system (OSHMS) is ;

- (1) To make continual improvements in OSH activities, through implementation of PDCA cycle and sharing OSH activity information
- (2) To conduct risk assessments in all Yokogawa Group companies, for eliminating or reducing risks
- (3) To maintain OSH at its current level or improve it by carrying out OSHMS audits

## 2. Observation of laws and regulations

Observe all OSH related laws and regulations

## 3. Elimination or reduction of occupational accidents

## 4. Conduct of OSH activities is ;

- (1) To maintain and/or improve OSH control level
- (2) To build awareness of traffic safety
- (3) To provide OSH training
- (4) To conduct fire and evacuation drills

## 5. Disclosure of OSH information

Communicate openly with Group personnel and the local community about OSH activities and results

**Shuhei Sakuno**

Senior Vice President

Audit & Compliance Headquarters

Yokogawa Electric Corporation

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## Customers and Quality First

### Activities to Improve Customer Satisfaction

We at Yokogawa strive to achieve greater customer satisfaction at our offices and factories around the world.

Yokogawa Electric (Japan) has conducted a customer satisfaction survey since 2008 on all customers who have received a product seminar at our training centers in Japan. In 2012, 1270 questionnaires were collected, and the results were compiled and analyzed. Concurrently, a system was put in place to share the survey responses and comments among all employees on the company's intranet in order to help improve product functions and services.

In its customer services, Yokogawa Electric Asia Pte. Ltd. in Singapore places an emphasis on flexibility and speed in addition to quality, delivery schedule and cost. It measures and monitors its customer satisfaction through completion and delivery ratio and corrective action request (CAR). Moreover, it conducts Customer Satisfaction Survey to identify the customer satisfaction level every two years.

The Group companies are also obtaining feedback from customers through e-mailed surveys, customer visits, mailed questionnaires and conversations at product seminars, so as to provide more satisfactory products and services.

### Quality First Approach

Since the establishment, we have implemented our quality management system across all processes, as we are convinced that Quality First Approach is the basis of customer satisfaction. All the main Group companies have attained ISO9001 certification starting with Yokogawa Electric in 1992 and working on delivery of the same quality worldwide.

We have continuously valued our customers' feedback to develop satisfactory products, and have gained a high level of satisfaction from our customers with respect to the accuracy and functionality of our products.

### The basic quality policy

1. Quality management is carried out in order to implement customer focus based on "Quality First," which is the spirit of foundation, and "Healthy and Profitable Management" through improvements in management quality.
2. Products that meet statutory and regulatory requirements as well as customer requirements are supplied.
3. Appropriate quality management systems conforming to the International Standard ISO 9001 requirements are established and implemented. In addition, the effectiveness of those systems is continually improved.
4. Customer requirements are fulfilled and customer satisfaction is increased through the results of quality activities in all organizations and personnel. For this purpose, each employee must feel that the quality of his or her work has a direct bearing on product quality, and that the company believes in "Quality First".
5. The head of each organization is responsible for the quality of the relevant businesses. The responsibilities include ensuring that adequate resources are made available.

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## Supplier Relations

### Improvement of the Management Structure as Part of Internal Control

As part of the Yokogawa Group's internal control, Yokogawa's management structure governs the overall business processes, including its relationship with customers and suppliers. For the procurement processes in the supply chain, Yokogawa Group's "Group Procurement Code" has been defined based on its Corporate Philosophy and Standards of Business Conduct, to ensure fair and equitable transactions. Yokogawa observes the local ordinances of the country and regions with whom we do business, began working on the issue of conflict minerals, and focuses on establishing a supply chain that considers environmental protection.

The Yokogawa Group Supply Chain CSR Guideline, which is compliant with JEITA\*, was created and published. In addition, Yokogawa's basic procurement policy, which is summarized in three points, is used as a set of principles to guide its every day operations. A network of responsible parties of Yokogawa Group's sales and procurement processes was built as a foundation for all supply chain CSR activities.

### Three Basic Procurement Principles

1. Create an ethical, clear, and open corporate culture and establish ourselves as a company that can be trusted by society.
2. Promote socially responsible procurement activities throughout the supply chain, including not only the Yokogawa Group, but also the suppliers of Yokogawa.
3. Comprehensively evaluate and select suppliers, giving priority to our commitment to being a good corporate citizen.

[→ Yokogawa Group Supply Chain CSR Guideline](#)

### Strengthening of Partnerships with the Suppliers

Yokogawa Electric, in order to reinforce its partnerships, is actively organizing events on a regular basis to promote discussion and deepen trust with key suppliers and their management teams.

For example, each year we host the "Supplier Policy Presentation Meeting", in which we explain our management policy, business plan, purchasing strategy, etc., to the suppliers.



Additionally, we organize "Component Exhibitions" and "Technical Seminars" through the Purchasing Department in order to introduce the products of suppliers, along with market trends, component trends and other relevant information, to the product development teams of companies within the Yokogawa Group.

### Reinforcement of Compliant Procurement

Yokogawa regularly organizes education programs for group companies in Japan so that they can learn about the "Act Against Delay in Payment of Subcontract Proceeds, Etc., to Subcontractors" as it applies to purchasing processes. Furthermore, we have added a new chapter on compliance to the Master Transaction Agreement in order to reinforce compliant procurement. As part of this effort, we are working to build greater ties/partnerships with the suppliers and prevent the establishment of ties with antisocial forces in order to eliminate such forces from society.

We have set up a "help line" as a channel for reporting and inquiry that can be contacted by suppliers, should they find an actual or potential violation of compliance.

### Promotion of Green Procurement

Under the philosophy to contribute to building a sustainable society in various areas of

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business activities, Yokogawa has created the "Green Procurement Guidelines" to promote green procurement activities. Specifically, we have established a system for promoting the control of chemical substances contained in our products and are also investigating/controlling chemical substances in materials/components.

[→ Yokogawa Group Green Procurement Guidelines](#)

## Initiatives on Conflict Minerals

Certain minerals (tin, tantalum, tungsten and gold) produced in the Democratic Republic of the Congo and nearby nations, and distributed via supply chains might be used to fund armed forces engaged in illicit activities involving human-rights violations, acts of violence, etc., and consequently such materials are referred to as conflict minerals.

We at the Yokogawa Group consider it a group-wide challenge to cut off such funding of armed forces at every point and stage in our supply chain, and thus we pledge not to use conflict minerals in any of our products.

As a preparatory step to meet the aforementioned challenge, in 2011 the Yokogawa Group put in place dedicated structures in the relevant departments. We are also a member of the "Responsible Minerals Trade Working Group" run by the Japan Electronics and Information Technology Industries Association (JEITA), whereby we coordinate our efforts with those of other corporations and obtain the latest information. As of 2013 we are cooperating with our suppliers to investigate the use of conflict minerals in certain products.

The Yokogawa Group is committed to addressing the issue of conflict minerals by implementing the following initiatives:

- Complete an investigation on our procured gold and tantalum by the end of 2013.
- Conduct individual investigations on the parts and processed components used in our products by reflecting the requests and other requirements of our customers.

In July 2013 we added our requirements on conflict minerals to the "Yokogawa Group Supply Chain CSR Guidelines" and the guidelines are freely available and accessible to the public on our website.

The Yokogawa Group will continue to do its utmost to ensure the responsible procurement of minerals.

\*JEITA: Japan Electronics and Information Technology Industries Association

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# **Supply Chain CSR Guideline**

July 11, 2013

Revision 1

Yokogawa Manufacturing Corporation



## **Preface**

With the rising interest of stakeholders in the topic of Corporate Social Responsibility (CSR), CSR promotion activities by enterprises and industry associations have gained significant momentum in recent years.

The Yokogawa Group has been working proactively to set up a CSR promotion organization, publish a CSR policy, and make CSR reports available to the public. This guideline was made to promote procurement activities based on CSR throughout the supply chain, including not only the Yokogawa Group but also Yokogawa suppliers.

Yokogawa suppliers are expected to comply with this Guideline..

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## **I Human Rights and Labor**

### **[I-1] Prohibit forced labor**

**Suppliers are requested to employ all employees on a voluntary basis, and not to commit forced labor.**

Above-mentioned forced labor means all non- voluntary labor.

The followings are examples of typical forced labor:

- Labor that is against one's will
- Labor for debt that limits the freedom of job turnover due to unpaid debt, etc.
- Slave labor practiced as a result of trafficking of humans
- Inhumane prison labor in harsh environments including cases of prisoners

The following are also regarded as forced labor:

- Prohibition of voluntary job turnover
- Obligation to deposit identification cards/passports/work permit cards with employers

### **[I-2] Prohibit inhumane treatment and infringements of human rights**

**Suppliers are requested to respect human rights of employees and to prohibit harsh and inhumane treatment such as maltreatments and/or various harassments.**

Typical inhumane treatments are abuses, physical punishments, sexual harassments, and intimidating harassments (harassment by verbal abuse and intimidating acts).

**[I-3] Prohibit child labor**

**Suppliers are requested not to employ children who are under the lowest labor age and not to assign such jobs that impair children's development.**

Generally, child labor means employment of persons who are under the lowest labor age and negligence of young laborer protection as specified in the treaty and/or recommendations of International Labor Organization (ILO).

For example, employment of persons who are under fifteen years old and violations of the law to protect young laborers are prohibited as the case of child labor in Japan. Limitation of night-shift work and dangerous work are concrete examples of protecting young laborers from employment that may impair their health, security, and morality.

Also, as for international cases, employments of persons who are under the lowest labor age and the violation of the obligation to protect as specified in each country's law apply to child labor.

In countries where there are no relevant laws, acts violating the lowest age treaty and/or recommendations of ILO are regarded as child labor (The rule of the lowest employment age is fifteen years old: ILO treaty No.138.)

**[I-4] Prohibit discrimination**

**Suppliers are requested to prohibit discrimination during the process of job offering and hiring, and to endeavor the equal opportunity and fairness of treatment.**

Discrimination means provision of differences in opportunities and/or treatment such as recruitment, promotion, reward and participation in trainings due to elements other than rational elements such as one's ability, competence, and achievement.

Typical elements of discrimination are race, ethnicity, nationalities, birthplace, color, age, gender, sexual orientation, disability, religion, political affiliation, union membership, marital status, and so on.

Additionally, when health examinations and pregnancy tests impair the fairness in equality of opportunity or treatment, such act is considered as discrimination.

**[I-5] Pay appropriate wages**

**Suppliers are requested to pay legal minimum wage or more, and not to practice unfair wage deduction as means of a disciplinary action.**

The minimum wage means the lowest wage specified in each country's wage-related laws. In this item, payment of other allowance including overtime compensation and legal payment are included.

Improper wage reduction means the wage reduction violating labor-related laws, etc.

**[I-6] Regulate working hours**

**Suppliers are requested to regulate employee's working hours/holidays/vacations not to exceed the legal ceiling.**

In this item, the following are the examples of proper control:

- Scheduled working days per year do not exceed the legal ceiling
- Working hours per week including overtime (except for emergency cases) does not exceed the legal ceiling
- Providing employees with at least one holiday per week
- Providing the rights of a vacation leave on an annual basis as specified in the law

**[I-7] Respect the rights to freedom of association**

**Suppliers are requested to respect the rights to freedom of association of employees, as means of employer-employee consultation, in order to settle working conditions and/or wage issues, etc.**

Respecting the rights of employees to organize means of considerations for freedom of association, freedom to participate in labor unions according to laws, freedom to stage a protest, and freedom to participate in workers' council without revenge, threats, and/or harassments to employees.



**[I-8] Establish survey system and disclose information on conflict minerals**

**Suppliers are requested to establish a survey system on the use of “conflict minerals” which become a source of funds for armed groups, and to disclose survey results.**

Mineral resources which are mined for the production of tin, tantalum, tungsten, and gold in the Democratic Republic of the Congo or its adjoining countries become a source of funds for armed groups who commit human rights violation, violence, and so on. Such minerals are called conflict minerals and distributed through supply chain.

Actions are required all through the supply chain. Source of funds for armed groups will be cut off by stopping the use of conflict minerals and replacing them with conflict-free minerals as soon as possible in case conflict minerals are found to be used.

## **II Occupational Health and Safety**

### **III-1] Apply safety measures for equipment and instruments**

**Suppliers are requested to apply appropriate safety measures for equipment and instruments used in their company.**

Appropriate safety measures mean the management to prevent accidents and health problems occurring on the job.

The following are examples of appropriate control:

- Adoption of safety mechanisms such as called fail-safe, foolproof, and inter-lock
- Installation of safety devices and protective barriers
- Periodical inspection and maintenance of machinery

### **III-2] Promote safe activities in the workplace**

**Suppliers are requested to evaluate their own safety risks and to ensure safety in the workplace with appropriate design, technique, and control method.**

The risk to safety in the workplace means potential risks of accidents and health problems on the job such as electric shock or other energy-caused accidents, fire, vehicles, slippery floor, or falling objects.

The following are examples of appropriate design, technology and control method:

- Monitoring dangerous places with sensors
- Blocking off sources of power to machinery by locking it (lock out)
- Setting the tag that specifies the prohibition of manipulating energy blocking device while the source of power is blocked (tag out)
- Provision of protective equipments such as glasses/hard hat/glove etc.

**[II-3] Promote hygiene in the workplace**

**Suppliers are requested to grasp the condition in the workplace related with biological and chemical harms, noise, and odor, which are harmful to health, and to provide appropriate measures.**

Chemical substances that are harmful to the human body include smoke, mist, dust, poison, nuclear radiation, and substances that cause chronic diseases (lead, asbestos etc.). And gross noise and odor are elements of this section are deemed as being harmful to the human body.

And the following are examples of the appropriate measures:

- Identification of chances to contact these harmful things and assessment
- Establishment and operation of management criteria
- Appropriate education on hygiene for workers
- Provision of protective devices to workers etc.

**[II-4] Apply appropriate measures for occupational injuries and illnesses**

**Suppliers are requested to grasp the situation of occupational injuries and illnesses in the workplace, and to provide appropriate measures.**

The following are examples of appropriate measures:

- Rules and programs that enable promotion of reporting by employees
- Classification and record of injury/illness
- Provision of required medical treatment
- Investigation of injury/illness
- Execution of measures to correct and exclude the cause
- Promotion of returning affected-employees to workplace etc. (workers' accident insurance is also included)

And performing required procedure to the government according to the law is also included.

**[II-5] Properly manage disasters and accidents**

**Suppliers are requested to prepare the emergency response measures for possible disasters and accidents in order to protect human lives, and to inform all-out to people in the workplace.**

Typical examples of emergency response measures are as follows:

- Prompt reporting during an emergency
- Notification to employees
- Clarification of evacuation procedure
- Installation of evacuation facilities
- Storing of emergency medical products
- Installation of fire detecting system and fire containment device
- Securing external communication method
- Development of recovery plan etc.

The following are ways to keep employees in the workplace informed:

- Implementation of emergency response education to employees (including evacuation drill)
- Storing or posting emergency response procedure etc. within the reach of employees in the workplace is included

**[II-6] Be careful about physically demanding work**

**Suppliers are requested to define the physically demanding works, and to control appropriately to prevent injury and illness.**

Operations that require physically demanding work include not only hard labor such as manually carrying tasks of heavy objects but also long-term repetitive work and continuous work such as assembly work and data entry work.

Appropriate control means periodical break, provision of assistive device, burden share, and cooperation of multiple workers etc.

**[II-7] Promote safety and hygiene in all company facilities**

**Suppliers are requested to keep safety and hygiene appropriately in all company facilities provided for employee's living (ex. Dormitory, canteen, restroom.)**

The facilities provided for employee's living include the ones provided in the workplace for the employees (restrooms, drinking fountains, locker rooms, canteens etc.), facilities provided for employees outside of the workplace (Dormitories, etc.)

Along with keeping cleanliness/sanitation, typical examples are measures for safe drinking water, fire, air ventilation, temperature control, emergency escape route (exit), and secure storage of personal belongings.

**[II-8] Promote health maintenance programs for employees**

**Suppliers are requested to provide appropriate health maintenance programs for all employees.**

Appropriate health management tries to prevent and detect employees' illness early by providing medical checkup at least according to the standard of law. Prevention of health problems due to overwork and care for mental health also need to be considered adequately.

### III Environment

#### **III-1] Control hazardous chemicals in products**

**Suppliers are requested to control chemical substances (contained in products) defined by laws and regulations.**

The products must be under control not to include chemical substances that are specified as to not to be included by the law. Additionally, mandatory labeling and testing must be performed.

#### **III-2] Control hazardous chemicals in manufacturing**

**Suppliers are requested to control chemical substances (used in manufacturing processes) defined by local laws and regulations.**

The manufacturing process must be under control not to utilize the chemical substances that are specified as not to be included by the law. And grasping amount of emission to the external environment and reporting it to government, and trying to reduce the amount of emission of relevant substance are also necessary actions.

#### **III-3] Establish and apply an environmental management system**

**Suppliers are requested to establish and implement an environmental management system.**

The environmental management system means the part of overall environmental management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources to promote environmental activities.

Environmental activities mentioned here forth means to develop, implement, achieve, review, and to maintain the environmental policy in order to promote the continuous improvement program using the so-called PDCA (Plan Do Check Action) closed-loop.

One of typical environmental management systems is ISO14001, which can receive a third-party certificate.



**[III-4] Minimize environmental pollution (water, soil, air)**

**Suppliers are requested to be in compliance with local laws and regulations of drainage, sludge and air emissions, and to improve such environmental pollution by voluntary criteria as needed.**

Voluntary criteria are required to have goals in order to reduce the environment impacts more than the standard defined by laws.

Besides preventing the occurrence of common nuisance, the following activities are good practices for further improvement: improvement of monitoring, controlling, processing of drainage/sludge/exhaust etc. and reduction of their amount.

**[III-5] Obtain environmental permits**

**Suppliers are requested to obtain necessary environmental permits defined by local laws and regulations, and to submit necessary reports to the government.**

In the case of Japan, the following are examples of legal obligations to install officers who have legally-defined qualifications:

- Waste Disposal and Public Cleaning Law: Responsible officer of specially controlled industrial waste
- Law Concerning the Rational Use of Energy Qualified person for energy management in factories that use more than a certain level of energy
- Air Pollution Control Law etc.: Officer in charge of pollution control in the factories that emit chemical substances, dust, exhaust, and so on.

Officers in charge of poisons, specified chemical substances, and hazardous materials are also obliged to be installed depending on the chemical substances used in the business.

Government permits/licenses concerning environmental influence evaluation and facilities dealing with hazardous material may be needed depending on the contents of the business and location of the factory.

**[III-6] Promote resource and energy saving by reusing, reducing, and recycling (3R)**

**Suppliers are requested to define a voluntary goal of natural resources and energy saving, and to implement continuous activities for efficient usage.**

A resource saving is to strive to effectively utilize resources. Typical programs are as follows:

- Reduction of waste and material usage to make the product
- Utilization of recycled resource and parts etc.

Energy saving is to strive to save the use of heat and electric energy. By saving energy, fuel resource such as oil, natural gas, coal, coke etc. can be used effectively.

3R stands for Reduce, Reuse, and Recycle.

**[III-7] Promote green-house gas reduction**

**Suppliers are requested to define a voluntary goal of the green-house gas reduction, and to implement continuous activities for further reduction.**

Although there are various types of greenhouse gases, the following six types of substance groups are specified particularly in the Kyoto Protocol: carbon dioxide, methane, nitrogen dioxide, HFC, PFC, and SF6.

Setting voluntary goal for reduction, making plans, and surely implementing the plans for these six types of greenhouse gases are good practice of continuous reduction activities.

**[III-8] Promote waste reduction**

**Suppliers are requested to define a voluntary goal of the eventual waste reduction, and to implement continuous activities for further reduction.**

The eventual wastes are defined as wastes for which earth filling or incineration is required.

Setting voluntary goal of reduction, making plans, and surely implementing the plans for the eventual wastes are good practice of continuous reduction activities.

**[III-9] Disclose environmental preservation activities**

**Suppliers are requested to disclose outcomes of environmental activities appropriately.**

Typical outcomes of environmental activities are as follows:

- Measures implemented for environmental preservation
- Emissions to air/drainage/lands
- Amount of used resources, wastes, and so on

Also, environmentally harmful outcomes that business establishments have caused are included.

To summarize outcomes regularly, it is good practice to define the organization and to assign responsible officers to conduct environmental preservation activities, who continuously take records concerning management indicators of environmental preservation activities, achievement of the activity objectives, and important matters relating to other environment.

Disclosures of environmental reports and/or necessary reports to stakeholders are examples of disclosing methods.

## IV Fair Trading

### **IV-1] Prohibit corruption and bribery**

**Suppliers are requested to maintain a sound and normal relationship with politics and government administration without committing bribery and/or making illegal political donations.**

“Bribe-giving” means acts of offering money, entertainment, gifts, or other benefits/conveniences to public servants or equivalent persons (hereafter called public employees), in pursuit of some business advantage in return, such as approval and license, acquisition/maintenance of trading, or access to nondisclosure information.

In addition, “bribe-giving” includes entertainment or gift-giving that is beyond social discipline even if it does not solicit any business reward.

“Illegal political donation” means acts of contributing political donation requesting some business advantage in return, such as approval and license, acquisition/maintenance of trading, or access to nondisclosure information. The political donation not following the proper legal procedures is included.

### **IV-2] Prohibit abuse of a superior position**

**Suppliers are requested not to create disadvantage for their suppliers by abuse of a superior position.**

Abuse of a superior position means acts of unilaterally determining or changing trading conditions with suppliers or imposing irrational requests or obligations on suppliers by taking advantage of their superior position as a purchaser or outsourcer.

Procurement deals shall be fairly and faithfully conducted based on contracts without abuse of a superior position. In countries with legislation relating to abuse of a superior position, the relevant laws shall be observed. (E.g. National Contract Act in Japan)

**[IV-3] Prohibit the offering and receiving of inappropriate profit and advantage**

**Suppliers are requested not to offer and/or to receive inappropriate benefits to/from stakeholders.**

Typical examples of “Inappropriate benefit offering/receipt” are as follows:

- Bribery activity such as offering or receiving a gift, award, prize money, etc. beyond the bounds of the law to/from a customer
- Providing or accepting money/valuables or entertainment beyond the social discipline
- Act of supplying inappropriate benefit to an antisocial force (criminal organization, terror organization, etc.) that adversely affects public order or sound activities.
- Insider trading by which stock of a company is traded based on the critical nondisclosure information about operations of a customer, etc.

**[IV-4] Prohibit impediment to free competition**

**Suppliers are requested not to impede fair, transparent, and free competition.**

“Competition restrictive activities” mean acts of making prior agreements among companies in the same trade about product/service prices, quantities, sales areas, etc. (cartel), or prior arrangements with other bidders about a winning bidder and successful tender price (collusive bidding).

Furthermore, obtaining and utilizing trade secret of other companies in an illegal way, showing false indication and showing indication that confuses customers about other companies’ products are also referred as acts of unfair competition.

**[IV-5] Provide accurate information on products and services**

**Suppliers are requested to provide accurate information on products and services to consumers and customers.**

Typical examples of the accurate information are as follows:

- Accurate specification, quality, and handling procedures about products/services.
- Accurate information on substances contained within products and their components.
- Sales promotion such as catalogs and advertisements for a product/service shall not use untruthful/incorrect expressions and descriptions that mislead consumers/customers, and shall not include information that slanders or infringes other companies or individuals.

**[IV-6] Respect intellectual property**

**Suppliers are requested not to infringe upon intellectual property rights.**

“Intellectual property rights” (IPR) includes patent rights, utility model rights, design rights, trademark rights, copyrights, trade secrets, and so on.

Prior to development, production, sale, and/or provision of a product/service, preliminary IPR survey shall be sufficiently conducted about the intellectual properties of third parties. The usage of a third party’s intellectual property without permission constitutes an infringement of IPR, except for cases that have valid reasons,

Furthermore, illegal reproduction of computer software or another copyrighted work constitutes an infringement of IPR.

Likewise, illegal procurement and utilization of a trade secret of a third party also constitutes an infringement of IPR.



**[IV-7] Use appropriate export procedures**

**Suppliers are requested to streamline the clear-cut control system and execute proper export procedures, regarding exports of technologies and goods defined by laws and regulations.**

“Technologies and goods regulated by laws and regulations” include parts, products, technologies, facilities, and software of which exports are stipulated by international treaty/agreement/regulations (such as Wassenaar Arrangement) and domestic laws.

Exporting may require specific procedures such as acquiring permission from the regulatory governmental authorities.

**[IV-8] Disclose appropriate company information**

**Suppliers are requested to positively disclose company information for stakeholders, regardless of legal obligation.**

The information to be provided/disclosed for stakeholders includes business activities content, financial status, business performance, risk information (e.g. damage by a large-scale disaster, occurrence of an adverse effect on the environment and society, discovery of a serious law violation), and so forth.

Disclosing and offering information of serious risk status to customers every time is an example of positive information provision.

**[IV-9] Detect injustice promptly**

**Suppliers are requested to perform activities to prevent improper act, and to streamline the system to discover and to respond to improper act in an early stage.**

“Activities to prevent improper act” means to train and enlighten employees as well as to create a rich communication in workplace.

Typical examples of measure for “system to discover and respond to improper act in an early stage” are as follows:

- Assign in-house and outside contact persons who handle improper act so that the top management can discover an improper act in an early stage.
- Try to ensure privacy of the whistleblower and protect the whistleblower appropriately.
- Quickly respond to an improper act, and provide the response result to the whistleblower.

## V Product Quality and Safety

### **[V-1] Ensure product safety**

**Suppliers are requested to satisfy safety standards defined by laws and regulations by each country, for products when they develop/design on their own responsibility.**

In the product design phase, the product safety shall be sufficiently ensured with consideration of the product liability and responsibility as a manufacturer. On product safety, normally requested safeties as well as compliance with laws are considered.

The followings are examples of laws on product safety in Japan:

- Electrical Appliance and Material Safety Law
- Consumer Products Safety Law
- Household Goods Labeling Law

Safety standards are defined in detailed regulations of laws, JIS, etc. International safety standards include UL, BSI, and CSA.

Securing of product safety includes management of traceability (history of materials, parts, processes, etc.) and prompt response for problem solving.

### **[V-2] Establish and apply a quality management system**

**Suppliers are requested to establish and implement a quality management system.**

The quality management system is a part of the overall quality management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources to promote quality assurance activities.

Quality assurance activities here mean to develop, implement, achieve, review, and to maintain the quality policy in order to promote the continuous improvement program using the so-called PDCA (Plan Do Check Action) closed-loop.

Some of the typical quality management systems are ISO9000 family, ISO/TS16949, and ISO13485.

## VI Information Security

### **[VI-1] Secure computer networks against threats**

**Suppliers are requested to take protection against threats on the computer network, and to prevent damages to their company and others.**

Threats on computer network refer to, as examples, computer viruses, computer worms, and spy wares.

If a computer connected to the Internet should get infected to computer threats, customer information and confidential information may be leaked out and/or these computer threats may attack computers of other companies, resulting in serious damages such as suspension of business or loss of credibility.

Therefore, it is important to take effective measures against such threats on computer network so as to avoid harmful influence inside and outside the company.

### **[VI-2] Prevent the leakage of personal information**

**Suppliers are requested to appropriately control and protect personal information of employees, customers, and third parties.**

Personal information means information on live individuals that can identify a specific person by name, birth date, and other descriptions in the information (including information that can be easily compared with other information to identify a specific person.)

Appropriate control means construction and operation of the overall management scheme on personal information, including creation of regulations and guidelines to be observed by employees, making plans, implementing programs, internal audits, and reviews based on the management scheme.

Appropriate protection means not unreasonably or improperly obtaining, utilizing, disclosing, or leaking personal information.

**[VI-3] Prevent the leakage of customer and third-party confidential information**

**Suppliers are requested to control and protect confidential information from customers and third parties.**

Confidential information usually means information disclosed from a document, etc. (including electromagnetic- or optically-recorded data information) that that is deemed as confidential, or orally disclosed after confidentiality is notified.

Proper control means construction and operation of the overall management scheme on personal information, including creation of regulations and guidelines to be observed by employees, making plans, implementing programs, internal audits, and reviews based on the management scheme.

Appropriate protection means not unreasonably or improperly obtaining, utilizing, disclosing, or leaking confidential information.

## VII Contribution to Society

### **[VII-1] Contribute to society and community**

**Suppliers are expected to practice proactive voluntary activities to contribute to the development of global society and local community.**

The activities to contribute to the development of global society and local communities mean the support using company's management resources.

Typical approaches are as follows:

- Social contribution using regular business operation and existing technologies.
- No pecuniary social contribution using facilities and human resources, etc.
- Monetary social donation

And the followings are concrete examples:

- Cooperation with communities at a time of disaster
- Employee's volunteering
- Activity support of/donation to/transmission
- Introduction of various information of NPO and NGO

Each company determines the possible activity range and works on such contribution to society positively.

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## Employees

### Developing and Utilizing Global-Minded Human Resources

Employees Are Valuable as Yokogawa's "Human Assets" We at Yokogawa have established a compliance guideline that requires us to comply with the international standards on human rights; consider the different geographical and cultural backgrounds of other employees when working with them; refrain from discrimination on the basis of race, nationality, sex, religion, age or disability of any kind; and drive home these principles to all our Group companies. One of the strengths — actually a requirement — of Yokogawa is the ability to maintain and utilize a pool of diverse talents as we carry forth our global expansion. Thus we capitalize upon the skills of our employees, with their diverse ethnic backgrounds and nationalities, so that we can make decisions from a global perspective. We also provide our employees with various opportunities to help develop their careers, promote a healthful work-life balance, and actively employ persons with disabilities.

[→ Human Rights](#)[→ Career Development and Work Life Balance](#)[→ Supporting Engineers on Deputation](#)[→ Employee Assistance Program](#)[→ Employment of People with Disabilities](#)

### Occupational Safety and Health

In 2006, the Yokogawa Group established the "Yokogawa Group Health and Safety Policy" and began implementing the Occupational Safety and Health Management System (OSHMS). Since 2007, the Yokogawa Group has implemented the OSHMS in each of its companies to promote a higher level of safety and health by making continual improvements through risk assessment and other methods.

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## Human Rights

Yokogawa has explicitly defined respect for human rights as part of the group's overall goals, in its Philosophy, Standards of Business Conduct, and Group Management Standards. The company has also set up compliance hotlines for everyone working at Yokogawa as a way to avoid human-rights violations before they happen.

### Philosophy

Yokogawa's corporate philosophy defines "contributing to society" as a corporate mission, and calls for its employees to be good citizens.

Based on this philosophy, Yokogawa uses measurement, control and information as tools to contribute to social infrastructures that support people's daily living such as energy, communications, waterworks, etc, and to contribute to industry infrastructures, to make them run more efficiently and to help people work more safely. This philosophy is practiced by every employee and in all of the countries where Yokogawa operates, its employees have been willing volunteers, helping out when natural disasters occur.

[→ Corporate Philosophy](#)

### Standards of Business Conduct

One of the five pillars in our Standards of Business Conduct explicitly states that the company will uphold respect for human rights and respect the dignity of all. Some of the particular courses of action that follow from this are preventing harassment, discrimination, privacy intrusions and maintaining an overall healthy workplace.

[→ Standards of Business Conduct](#)

### Yokogawa Group Management Standards

The Yokogawa Group Management Standards, which states in writing the basic policies required of group management, applies to every branch of the Yokogawa group. It gives clear rules and guidelines relating to human rights, obedience to the law, workplace safety, hygiene, etc.

The Yokogawa Group Compliance Guidelines make the following statement regarding human rights.

#### 03 Respect for basic human rights

The Yokogawa Group always respects the basic human rights and personal dignity of every person with whom we are involved.

#### 27 Equal Opportunity

Thanks to our fair and impartial personnel system operating under the basic policy of the Yokogawa Group, each employee is afforded equal opportunities in hiring, placement, promotion, pay rises, training, etc. An employee in a position of management or leadership must have a basic knowledge of the labor laws of the country in question, and must have a thorough knowledge of labor contracts and work regulations. It is important that he or she work on the basis of this knowledge to maintain a workplace free of unfair discrimination, engaging in ample communication with his or her subordinates and ensuring that day-to-day personnel management goes smoothly.

#### 28 Prohibition of forced labor/child labor

Forced labor in any form whatsoever is not to be allowed; nor is any person to be made to work against their will; nor is it acceptable for children below the minimum working age of each country to be employed. Care must be taken to ensure that we do not support inhumane conduct even indirectly, for example through the actions of business partners.

#### 29 Ensuring health and safety

In addition to observing the laws relating to occupational safety and health, we have established our own independent standards and are striving to improve safety and health. We are working on a program of improvements to ensure the safety of every employee working for the Yokogawa Group, promote better health, and create a pleasant working environment. Each and every employee must act to cooperate with the safety and health measures that have been decided upon.

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### 30 Prohibition of harassment

No form of harassment whatsoever is acceptable, whether it be sexual harassment, stalking, or power harassment. We respect each other as individual human beings, and have built up a corporate atmosphere in which harassment is not accepted.

### Ensuring worker's right (Singapore)

As Singapore is a multi-racial country, Yokogawa Electric Asia (YAS) ensures fairness and equality in hiring to all applicants, regardless of race. Also, YAS is a labor-unionized company and has built a good rapport with partner unions. YAS received a Plaque of Commendation (Gold) this May Day from the National Trade Union Congress in recognition of their consistent and significant contributions to good Labor-Management relations, workers' welfare, and Union initiatives.

### Promoting employment of colored people (South Africa)

South Africa has adopted Black Economic Empowerment (BEE) as a program to put racial equality into practice, thus encouraging the employment of blacks and other historically disadvantaged South Africans (HDSAs). Yokogawa South Africa (YMA-SA) has striven to promote the employment of blacks and other peoples of color and has increased the number of such employees by 2% over the past year.

### Attention to human rights in the supply chain

Following its Group Management Standards, Yokogawa upholds their philosophy for human rights throughout its supply chain. The Supply Chain CSR Guidelines include guidelines prohibiting forced labor, inhumane treatment and infringements of human rights, child labor, and discrimination, while ensuring appropriate wages, regulated working hours, and the right to freedom of association, and vendors are asked to follow these guidelines.

→ [Supply Chain Responsibility](#)

### UN Global Compact

Yokogawa has declared its support for the UN Global Compact. The company respects the human-rights guidelines proclaimed in the Global Compact, and upholds international human-rights standards.

→ [UN Global Compact Index](#)

### ISO 26000

ISO 26000 is an international standard for an organization's social responsibility which the International Organization for Standardization (ISO) published in November 2010. It provides seven core subjects, such as Organizational Governance, Human Rights, Labor Practices or The Environment.

Yokogawa respects the ISO 26000 guidance in our CSR actions as a global company and pay attention to the human rights in our all business conduct.

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## Career Development and Work Life Balance

### Career development for the growth of both employees and organization

We carry out HR measures to realize "the right person on the right job" so that each employee is able to perform at their full capacity.

We have created a system where the employees are able to notify their short-term and mid-term career plans to their managers and also promote their acquired skills and experiences to the managers of other department. These systems allow the employees to autonomously build their own careers.

Under the job opportunity system, employees are able to submit their career plans without approval from his/her superiors. Such a system helps to expedite the speedy deployment of the resources especially under the circumstances where there is a manpower requirement due to new business or project.

Additionally, with the goal of providing opportunities for its Japanese employees to develop global competence more quickly, Yokogawa has established a program to send young and mid-career workers to its group companies abroad on expatriate assignments for about a year. We are doing this as part of our effort to enhance human capital development. Furthermore, in order to develop a global mindset within Yokogawa Electric, we are bringing more employees from our group companies abroad to work in our Japanese facilities.

### "Refresh & Challenge" Program to Support Employees Work-Life Balance

We provide a program to help the employees design their career and life when they reach a turning point in his or her career. This is an awareness program for managing health and for building future life plan.

As the program name "Refresh & Challenge" suggests, participants are given a fixed number of off days after the training for refreshing themselves physically and mentally. The program provides ideas to support the employees in setting new goals.

In particular, in the training provided for employees at the age of 45, participants are able to take 15 days of leave from work. They can utilize this leave freely. Some of the participants join the training course to obtain qualifications and others review their future plans on private life and career. These 15 days of leave help the employees to regain their motivation and energy.



"Refresh & Challenge" Seminar at Yokogawa Electric

### Improving Employee Motivation by Promoting Work-Life Balance

We make an effort to provide a work environment where the employees are able to gain satisfaction while maintaining a good balance between their work and private life.

For instance, the employees are able to utilize work hours for child-care and nursing of elderly family members, in additions to the number hours specified under the statutory benefit. We have also introduced a system to provide financial support to our employees who are raising children. Employees under such conditions are able to receive 100,000 yen annually per children.

Many of our employees, both male and female, are making full use of other company supports such as flexible working hours or paid maternal leave. These systems are helping increase employees' motivation.

In September 2006, we opened a day care center near Yokogawa Headquarters.

The center is contributing to the local communities as it can be utilized by both the employees of Yokogawa and the people living in the vicinities.

In fiscal year 2007, Yokogawa was certified by the Chief of the Tokyo Labor Bureau as an

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Enterprise Supporting Balanced Work and Family life.

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## Enhancing Support for Engineers on Deputation

Yokogawa's increasing volume of global project has been supported by our engineers across our organization. Some engineers leave their home countries on deputation in order to work on-site for long-term as is required for their roles and the length of their involvement in a project.

Engineers on deputation require special attention due to their separation from home and placement in isolated working environments. These distances necessitate that such special attention be given from both the Home and Host Companies.

The Engagement Guidelines for Engineers on Deputation—which contain specific points and rules for engineers on deputation—are now being prepared for release in 2012. After a trial period, the guidelines will be introduced at all group companies.

The guidelines are intended to enhance support for personnel management of engineers on deputation. It defines the shared role and responsibilities of managers at both Home and Host Companies. It also defines avenues for consultation and communication when there are issues and concerns that need to be addressed.

For instance, a Home Manager shall maintain constant communication with an engineer by checking the engineer's progress reports as a starting point for monitoring work progress. Special attention should be paid to the level of induction, adaptability and well-being of the individual engineer. The Home Manager shall also keep engineers posted on events and news of the Home consistently reinforcing close tie between the engineer and the Home Company.

A Host Manager must be able to handle grievances and the welfare of the employee by maintaining close communication with the employee. The Host Manager shall also try to make the deputation a learning and growing opportunity for engineers by actively supporting them in their development.

The guidelines also specify what needs to be agreed upon and what needs to be followed in order to help ensure mutual understanding and systematic operation between concerned parties.

Regardless of where we work or how far we are separated, we support our employees as a part of One Global Yokogawa family.



Engineers from various home countries are collaborating in a global project.

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## Employee Assistance Program

### Promotion of EAP for a healthy, rewarding company life

We have introduced the Employee Assistance Program (EAP), which is designed to help employees more fully demonstrate their skills instead of being too stressed to conduct their work as effectively as possible.

Yokogawa's EAP, in particular, provides a comprehensive set of mental-health support programs, such as those for the prevention and early detection of stress, early care and treatment, and assistance for returning to work after a leave of absence for recuperation. It is our goal to ensure a healthy, fulfilling work environment for all our employees.

#### Key activities under EAP

Education/PR	Utilize e-mail and web pages to provide relevant information that will help employees gain a better understanding of mental health.
Group training	Conduct company-wide training programs (based on voluntary participation) and level-specific training programs to promote the prevention and early detection of stress.
Stress check	Based on the results of the stress check, identify causes of stress in the workplace. Implement employee-led programs and activities, with the Company's support, in order to prevent, contain and remove these causes so as to ensure a more comfortable workplace.
Assistance for returning to work	To care for the employee who suffers from mental health problems or takes a leave of absence for recuperation, and to ensure the smooth reinstatement of those who return to work after recovery so as to prevent them from falling into the same problems again, we have implemented a system to provide proper support for each individual or workplace depending on the seriousness of the condition or situation.
Consultation	We have a system to help our employees seek consultation within the company or from external institutions specialized not only in mental health but also in various areas of concern including career issues.

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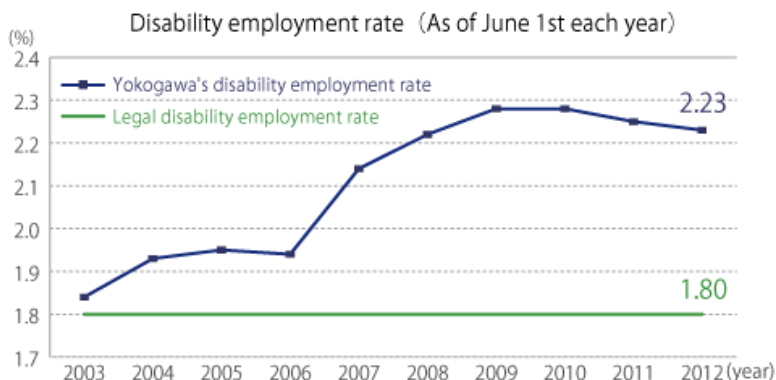
## Employment of People with Disabilities

### Employing and developing people with disabilities

Yokogawa has hired persons with disabilities since the establishment of its Normalization Project in 1992. We continue to meet the legal employment rate for such individuals, and our skilled employees with disabilities are engaged in all areas of our business, from engineering and manufacturing to administration.

The Yokogawa Group promotes the employment of disabled persons, with each company hiring and utilizing people facing different physical and mental challenges who can better contribute to the specific business of the company. Over the past several years, the ratio of employees with disabilities within the Group has, to a significant degree, exceeded the legal requirement.

Yokogawa will continue to provide employment and career opportunities for people with disabilities.



### A special subsidiary for the employment of disabled persons

Since the 1999 establishment of Yokogawa Foundry Corporation with the purpose of hiring persons with mental disabilities, we have provided a range of training programs for our employees with disabilities so that they can try different types of work and thereby discover their unique value as contributors to the success of our business.

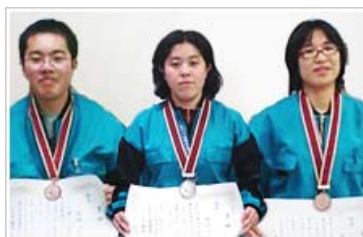
### Taking on challenges to receive public qualifications and participate in external events (fy 2012)

#### National Skills Competition for People with Disabilities (Abilympics 2012)

Many of our employees have actively participated in the Abilympics every year. Their results have been phenomenal, including a silver medal at the 2007 International Abilympics and a silver medal at the 2008 National Abilympics.

#### Tokyo Meet (February 16, 2013)

- Bronze medal winner (Word Processor Category) --- Atsuhiko Takahashi
- Silver medal winner (Office Assistant Category) --- Kumi Mizukami
- Bronze medal winner (PC Data Entry Category) --- Yumeno Chishima



#### Osaka Meet (July 7, 2012)

- Silver medal winner (PC Data Entry Category) --- Takehiko Adachi
- Bronze medal winner (PC Data Entry Category) --- Masakazu Yasuda
- Bronze medal winner (PC Data Entry Category) --- Shizuko Tsuji

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### **The Japan Data Processing Skill Test**

Passed 1st grade --- Takehiko Adachi (July 2012)

### **Visitors to Yokogawa Foundry**

In 2012, a total of 272 visitors from 64 organizations visited Yokogawa Foundry. By cooperating with these visitors, Yokogawa foundry contributes to the government's measures and policies to job assistance of people with disabilities.

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## Community Involvement

Yokogawa's corporate citizenship is rooted in the company's philosophy of being pioneers and good citizens. Yokogawa sees its fundamental duties as going above and beyond benefiting society through its normal business activities and complying with the law—it is actively engaged in addressing serious social issues, regional vitalization effort, etc.

### Cultivating Future Human Resources

Yokogawa Science Classes addressing the fundamental technologies that are the basis for Yokogawa's business-optics, electrics, radio, etc.

[→ more](#)

### Corporate Citizenship

The Yokogawa Group's various locations each work to benefit their local communities in ways to address their own specific needs.

[→ more](#)

### Achieving the United Nations Millennium Development Goals

Yokogawa is working with an NGO to promote "reduction of infant mortalities" and "improvement of health of pregnant and parturient women," both of which are among the Millennium Development Goals (MDGs) set forth by the United Nations.

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## Cultivating Future Human Resources

Yokogawa's business is built on its technical strengths in measurement, control, and information, and thereby supports cultivating future human resources in the relevant field.

### Guest lecturing and teaching in schools and universities (Germany)

At the request of universities and schools, Yokogawa provides guest lectures.

Our Rota Yokogawa manufacturing facility in Germany (RYG) has established training partnerships with many nearby schools. One of the closest partners is the technical college (Gewerbeschule) in Bad Säckingen. Many students there are interested in everything to do with metal and are engaged on a one or two year metalworking course. They are regularly made aware of Rota Yokogawa through a number of targeted actions. For example, each class goes on an excursion that ends with a tour of our company. Shortly afterwards our vocational training courses are presented directly to classes at relevant schools by our trainees and trainers. Also, we award the three 'best' students in each year a prize and a paid internship. The internships are aimed at stimulating interest in undertaking vocational training with us at a later stage.

Cooperation is made possible through joint projects. A good example of this cooperation comes from the educational partnership between the business school in Bad Säckingen and Rota Yokogawa. During the two-year metalworking course, students can produce devices that will actually be used by Yokogawa.

This particular project was designed to help Rota Yokogawa prepare its manufacturing facility to produce an improved version of a component used in a process flow meter. The students were tasked with producing a new tool which could provide formers for manufacture several coils at a time.

The results were impressive. The prototype former tool produced by the students worked properly the first time. After some minor adjustments were made to the tool, sanding and rounding edges, to improve performance, the final tool went into production and is currently in use.

The students were highly engaged with this project, and learnt first-hand a lot about project management and organization.



Guest lecturing and teaching in schools and universities

### Human Resource Development in the Middle East (Middle East)

Yokogawa has regional companies in Bahrain, Saudi Arabia and UAE, and these companies handle many large-scale energy development projects involving oil, gas, etc., throughout the Middle East.

Yokogawa Middle East & Africa (YMA), a regional hub of the Yokogawa Group, is contributing to human resource development in the Middle East, by partnering with universities and educational institutions in the Middle East and passing on measurement and control related engineering skills to students through sending lecturers or receiving interns.



Human Resource Development in the Middle East in schools and universities

### Saudi Arabia

King Fahd University of Petroleum and Minerals (KFUPM) a leading university in the region focused on the needs of the Oil & Gas Industry. YMA has a long-standing relationship with KFUPM. In order to facilitate effective collaboration, YMA established an engineering facility in the Dhahran Techno Valley, a technology park established by KFUPM. Yokogawa Saudi Arabia (YMA-KSA) launched a Graduate Engineer Training Program in 2007, and in 2012, 17 graduate students participated in this program. KFUPM students also

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participated in a three-day training course on “Essentials of Multi Variable Control Techniques”.

YMA participated in both the Open Day Exhibition and the Career Day Exhibition at the KFUPM premises, giving more than 400 students an opportunity to learn about Yokogawa’s measurement and control business.

### **Bahrain**

University of Bahrain (UOB) is the national university of Bahrain. YMA enjoys a long and solid relationship with the College of Engineering in particular. Several collaborative efforts have been successfully completed, including having 3 trainees participate in summer internships at YMA in 2012. Additionally, 8 graduate engineers were inducted into the 2-year training program, which includes on-the-job training.

In addition, YMA regularly participates in the Open Career Day, in which more than 100 students participate, and, in conjunction with the University, delivers special training courses for various industries as part of the continuing education program.

### **Dedicated to improving students’ vocational education (China)**

Yokogawa Sichuan Instrument (CYS) is dedicated to improving vocational education at the Sichuan Instrument Industry School with Yokogawa products.

CYS has donated such YOKOGAWA products as a Differential Pressure Transmitter, a Handheld Terminal and valves to the school. The donated products were equipped in the newly constructed training room and used for instrument alignment skill training.



Dedicated to improving student’s vocational education

### **Internship Program (South Africa)**

Yokogawa South Africa (YMA-SA) also has an internship program. Although 1 year of work experience is required for students from Technical Universities in South Africa to validate their diploma, it is very difficult to find companies to assist them. Every year, YMA-SA brings in 8 students who follow an internship program which ensures that they receive their national diploma in process control. It is not a requirement to provide a salary to these students, but YMA-SA does so to enable them to improve their living conditions and to help them commute to work.

### **Yokogawa Science Classes (Japan)**

Concerned that children were not being sufficiently educated in science, Yokogawa started offering the Yokogawa Science Classes in 2006 for primary-school children. The classes are currently offered on several weekends each year in Tokyo. These classes address the fundamental technologies that are the basis for Yokogawa’s business—optics, electrics, radio, etc. Instructors are employee volunteers, who often find that their contact with children helps them grow as well. Programs like this are a way to deepen the company’s ties with its surrounding communities, as well as a way to encourage an interest in science and technology in the next generation.



Yokogawa Science Classes

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## Corporate Citizenship

The Yokogawa Group's various locations each work to benefit their local communities in ways to address their own specific needs.

### Community Work for People in Need (The Netherlands)

In Amersfoort, Netherlands, Yokogawa Europe B.V. (YEF) carried out a one-day activity to support people in need of help. This is an activity in collaboration with a Foundation "Present" based in The Hague. Three groups of YEF employees stayed for one day with people in the community; they visited the zoo with residents of a crisis center, painted with a woman who had a hearing disability, and worked in a garden for an immobile woman. Every participant worked hard with sympathy and positive energy.



Community work for people in need

### Weekend Foster Family Activity at Social Welfare Home (China)

Yokogawa Electric China Co., Ltd. dedicated continuously "weekend foster family" activity at the Suzhou Municipal Social Welfare Home. The volunteer employees of Yokogawa Electric (Suzhou) enjoyed picking fruit with the children at the home, acting as "weekend dads and moms". This activity gave the children, who rarely have a chance to feel the warm affection of parents in their daily lives, an opportunity to enjoy a fun, happy day filled with smiles as a family.



weekend foster family activity at social welfare home

### Blood donation (Middle east, China)

Some subsidiaries call on employees to participate in blood donation activities.

Yokogawa Middle East & Africa B.S.C.(c) held a blood donation campaign at the offices in Bahrain and Saudi Arabia. Yokogawa China Co., Ltd. employees voluntarily participate in the blood donation activity at the Shanghai Blood Center every year.



Blood donation

### Donation for historically disadvantaged people (South Africa)

Yokogawa South Africa (Pty) Ltd. (YMA-SA) contributes a value equivalent to 1% of its net profit after tax annually in the form of donations of Yokogawa equipment to learning institutions (trade centers and skills centers within companies) that are predominantly used by individuals previously disadvantaged in the context of South African history. In 2012, YMA-SA donated to the Click Foundation, which assists black children with education.

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## Achieving the United Nations Millennium Development Goals (MDGs)

### Working for Improvement of the Health of mothers and children in Indonesia

Yokogawa has been working to improve the health of mothers and children through Peoples Hope Japan (a certified NPO) in Serang, Indonesia.

The province of Serang is located 80 km west of the capital, Jakarta. Generally, the people of Serang live in poor villages scattered throughout the state. Two of the most serious problems in Serang are that many pregnant women and babies are dying due to complications at childbirth, while infants and children under five years old suffer from malnutrition.

Peoples Hope Japan trained midwives, and educated expectant women and women of child-bearing age on the guidelines for healthy pregnancy. In 2009 the group built a regional health center to help with safe deliveries of babies. Staffed by resident midwives, the center can handle deliveries 24 hours a day. The region has approximately 500 women of child-bearing age, and each year about 100 babies are born.

In 2012, Peoples Hope Japan supported the construction of new clinics as part of its program to enhance the local medical and health care system. It also hand-dug deep wells to provide safe water in areas that had neither water nor sewer systems. Moreover, in its educational program to improve nutrition, the organization developed nutritional farms to provide fresh, affordable food and was able to produce better crop yields than it had expected.

These activities are part of greater efforts to achieve the United Nations' Millennium Development Goals.

Millennium Development Goals	
Goal 4 (Reduction of infant mortality)	Reduce, by 2015, the mortality of infants under five months to one-third the level in 1990.
Goal 5 (Improved health of pregnant and parturient women)	Reduce, by 2015, the mortality of pregnant and parturient women to one-fourth the level in 1990.



The health center



Harvests in nutritional farms



Maternal and child health education



Staff of the regional health center and Yokogawa Group employees (back row left)

 [Peoples Hope Japan \(a certified NPO\)](#)

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## Data Summary

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– Environmental activity data over the last five years

Total CO2 emissions  
 Water consumption volume  
 Waste emissions  
 Natural energy

### Personnel-related and Social Data

– Personnel-related and Social data over the past five years

Personnel-related data  
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## Environmental Activity Data

### Total CO2 emissions

Total CO2 Emission and unit-sales-basis CO2 emissions for Yokogawa Group data coverage: Yokogawa companies in Japan and outside Japan

#### Total CO2 emissions

	2008	2009	2010	2011	2012
In Japan	55,165	48,580	48,079	42,044	41,266
Outside Japan	20,764	21,789	23,962	27,122	27,722
Total	75,929	70,369	72,041	69,166	68,988

(unit: t-CO2)

#### Unit basis (Unit-sales-basis CO2 emissions)

	2008	2009	2010	2011	2012
In Japan	16.54	17.65	16.71	14.56	15.37
Outside Japan	8.7	10.79	11.47	11.97	11.07
Total	13.27	14.75	14.5	13.42	13.29

(unit: t-CO2/100M¥)

### Water consumption volume

Water consumption volume and sales-unit-basis water consumption for Yokogawa group data coverage: Yokogawa companies in Japan and outside Japan

#### Amount consumed, Total emissions

		2008	2009	2010	2011	2012
In Japan	Amount consumed	672	592	599	555	541
	Total emissions	621	536	521	404	355
Outside Japan	Amount consumed	170	147	179	178	228
	Total emissions	124	120	131	90	108
Total	Amount consumed	842	739	778	733	769
	Total emissions	745	656	652	494	463

(unit: kilo m<sup>3</sup>)

#### Unit-basis (Unit-sales-basis water consumption volume)

	2008	2009	2010	2011	2012
In Japan	0.20	0.22	0.21	0.19	0.20
Outside Japan	0.07	0.07	0.09	0.08	0.09
Total	0.15	0.15	0.16	0.14	0.15

(unit: kilo m<sup>3</sup>/100M¥)

### Waste emissions

Total waste emissions and unit-sales-basis waste emissions for Yokogawa group data coverage: Yokogawa companies in Japan and outside Japan

#### Total waste emissions and final waste volume

	2008	2009	2010	2011	2012

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In Japan	Total emissions	4,537	3,927	4,536	4,356	3,796
	Final waste volume	134	164	156	170	166
Outside Japan	Total emissions	1,315	1,302	1,845	1,950	2,547
	Final waste volume	468	401	449	405	851
Total	Total emissions	5,852	5,229	6,381	6,306	6,343
	Final waste volume	602	565	605	575	1,017

(unit: ton)

#### ■ unit-basis (Unit-sales-basis total waste emissions)

	2008	2009	2010	2011	2012
In Japan	1.36	1.43	1.58	1.51	1.41
Outside Japan	0.55	0.64	0.88	0.86	1.02
Total	1.02	1.1	1.28	1.22	1.22

(unit: ton/100M¥)

#### ■ Natural energy

Natural energy consumption for Yokogawa group  
data coverage: Yokogawa Electric and Yokogawa manufacturing

	2008	2009	2010	2011	2012
Solar power generation	89,599	89,607	81,601	89,066	96,856
Green electricity certificates	300,000	300,000	300,000	300,000	300,000

(unit: kWh)

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## Personnel-related and Social Data

### Personnel-related data

#### Number of employees

	2008	2009	2010	2011	2012
Consolidated	20,247	19,574	19,334	19,437	19,685
Non-consolidated	4,848	5,713	4,723	4,211	4,298

As of the end of each fiscal year

#### Disability employment rate

	2008	2009	2010	2011	2012
Yokogawa's disability employment rate	2.22	2.28	2.28	2.25	2.23
Legal disability rate	1.80	1.80	1.80	1.80	1.80

(%)

[→ Employment of People with Disabilities](#)

As of June 1st each year

#### Frequency rate of occupational accident

Frequency Rate of Occupational Accident = (No. of workers having occupational accident with lost days / total working hours) × 1,000,000

	2008	2009	2010	2011	2012
In Japan	0.30	0.31	0.31	0.18	0.42
Outside Japan	0.69	0.80	0.39	0.38	0.23
Total	0.48	0.55	0.35	0.29	0.32

(%)

### Social data

#### Yokogawa Science Classes

	2008	2009	2010	2011	2012
Number of classes	4	6	5	5	6
Number of children	130	153	129	115	129

[→ Yokogawa science classes](#)

#### Visitors for Yokogawa Foundry (special subsidiary for the employment of disabled persons)

	2008	2009	2010	2011	2012
Number of visitors	541 ppl 99 org	325 ppl 44 org	371 ppl 51 org	365 ppl 76 org	272 ppl 64 org

[→ Employment of People with Disabilities](#)

#### Welfare vending machine

By purchasing a drink in this vending machine, a part of proceeds is utilized to support employment of people with disabilities through SELP, a Non-profit organization.

	2008	2009	2010	2011	2012
Number of drinks sold from welfare vending machine (bottles)	19,949	57,563	105,573	123,732	115,775

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Amounts contributed by welfare vending machine (Yen)	79,796	165,500	344,016	462,252	430,304
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In cooperation with Japan SELP center, specified non-profit corporation

#### Participants in "Tokyo Greenship Action"

Tokyo metropolitan government has conducted nature conservation activities in cooperation with companies, non-profit organization, etc. in some areas. Companies use these occasion as social contribution activities of companies.

	2008	2009	2010	2011	2012
Participants from Yokogawa	–	13 ppl 7 family	32 ppl 16 family	27 ppl 12 family	26 ppl 12 family

Promoted by Environmental Bureau of the Tokyo Metropolitan Government  
In cooperation with Midori Support Hachioji, non-profit organization

#### Donation by "Book Magic"

Book Magic is a program that JEN, a non-profit organization, operates. JEN sells book, CD, DVD, etc., donated by companies' employees, to a used book shop and utilize the sales fund to support the education in developing countries.

	2008	2009	2010	2011	2012
Number of CD and book contributed	–	2,530	5,675	2,386	1,505
Donation from selling of CD and books (Yen)	–	54,087	98,717	47,122	28,193

In cooperation with JEN, specified non-profit corporation

#### Donation to "Sending School Bags across the Sea"

"Sending School Bags across the Sea" is a program of international cooperation under which Kuraray Co.,Ltd. send school bags once used by Japanese elementary school students along with letters to children in Afghanistan and other countries.

	2008	2009	2010	2011	2012
Number of donated school bags	72	41	100	55	39

Promoted by Kuraray Co.,Ltd.

#### Donation by "Heartfelt Healthy Menu"

In the canteen of Yokogawa Electric headquarters, a special menu with fundraising, "Heartfelt Healthy Menu" is offered every Monday. Per meal, donation of ¥ 20 is presented to developing countries, such as Afghanistan through JOICFP, international cooperation organization. It becomes the money to buy vitamins or seedling crop. Menu is friendly nutritional balance and calories. As well as help to promote health of our employees, we support independence and food self-sufficiency in developing countries, and the promotion of health of expectant mothers.

	2008	2009	2010	2011	2012
Number of "Heartfelt Healthy Menu" eaten at Yokogawa's cafeteria	233	1,159	1,711	1,851	2,455
Number of orange seedling contributed by donation	39	193	285	–	–
Number of expectant mother we could contribute to their nutritional support	–	–	–	370	491

In cooperation with Japanese Organization for International Cooperation in Family Planning (JOICFP), international NGO

#### Bottle caps to fund vaccines for children in developing world

Used bottle caps collected by companies are brought to designated organizations. The Ecocap Movement office receives the caps when a certain amount has been accumulated, and sells them to recyclers. The money is donated to the Japan Committee for Vaccines for the World's Children (JCV). 800 caps earn 20 yen, which covers, for example, the polio vaccination of one child.

	2008	2009	2010	2011	2012
Number of bottle caps collected	111,329	793,984	681,270	742,384	636,650
Number of polio vaccines contributed	222	1,273	1,245	1,114	1,032

Reduced CO2 emissions (kg)	877	6,245	5,846	5,364	5,013
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In cooperation with Ecocap Movement, non-profit organization, and the Japan Committee for Vaccines for the World's Children (JCV), non-profit organization

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## Independent Opinion



### Mizue Unno Managing Director, So-Tech Consulting Inc.

After graduating from Chiba University Graduate School of Horticulture, Ms. Unno worked for various consulting firms including Roland Berger Strategy Consultants until she founded So-Tech Consulting Inc. in 1996.

At present she provides Japanese firms advice and support in practical corporate activities in the areas of sustainability and CSR from a global management perspective.

She is also a part-time graduate school lecturer of the University of Tokyo and serves as a member in various government committees. Publications include "Understanding the Basics of Corporate Social Responsibility (CSR)" (Chuokei Publishing Co.).

## Business Strategies and CSR

Yokogawa Electric Corporation (Yokogawa), reevaluating the company's CSR system and incorporating CSR into business strategies, has made its stand clear; solving social challenges through its business operations. Yokogawa's business is heading for creating not simply its own value but also social value.

Accordingly the company takes a more proactive approach in its contribution to society.

The energy conservation and safety/environmental management have been realized in the company's core business; measurement, control, and information. Clearly, the company places an emphasis on providing solution services by reaffirming its benefit to community and refocusing on sustainability (i.e. a sustainable community). It is recommended that the company continue to promote such efforts as a pillar of its "Evolution 2015" Midterm Business Plan.

Additionally, through the implementation of CSR under the concept of "B to B to C" (Business to Business to Community), Yokogawa has established a relationship with community as a B to B corporation. Thus the management of the company should aim not only toward the client companies with which it has direct contracts but also the communities (stakeholders) that have earnest needs.

Yokogawa has to date mainly worked on presenting the CSR concept. However, it would be better if the company showed how its business can create value to the communities in the areas of energy, safety and environment by focusing on the communities, and then explained Yokogawa technologies, products, and examples of actual projects it has undertaken.

"B to B to C" also includes community activities and efforts made by individual employees. I would like to know how these activities are helping to create value in the community from the stakeholders' perspectives, who are on the receiving end of the results of such activities.

## Sharing the Results of Its Efforts, and the System on Global Basis

Yokogawa continues to expand its overseas operations, which in turn makes the globalization of its business management a high-priority issue. With respect to CSR, the company has gradually engaged collaborations with the group companies worldwide, but it is still being systematized.

Yokogawa should first establish collaborative relationships within European and Middle Eastern regions where CSR is implemented actively and voluntarily, and then increase its communication with the internal resources in those regions while seeking to establish relationships elsewhere. As for information disclosure, it is important that the Yokogawa headquarters CSR website serves as a liaison to the regional websites to integrate CSR information. I expect all members in charge of CSR from all the Yokogawa group companies worldwide will be able to hold global meetings and share understanding each other on this field.

## Fundamental CSR

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## Human Resources

The respect for human rights has, in recent years, become a growing issue on concern globally. At Yokogawa, the operations outside Japan is on the increase, and consequently the company will be expected to further accord with international movements. The term "human rights" encompasses not just the rights of the company's employees but also those of various stakeholders. It is necessary to fully understand such a concept and pay careful consideration to human rights in regions that hold particular significance for the company's business. In operations in Middle Eastern and African nations, where the social infrastructures are insufficient, the company could get involved in unpredictable circumstances, which, the company should note, are also considered a human-rights issue.

This human rights issue extends to supply chains, and Yokogawa, as its business expands into emerging markets, must understand the actual situations surrounding the employment and labor in such markets. Although the Yokogawa group has supply-chain CSR guidelines, it may be difficult to implement and practice everything according to the guidelines. In spite of such situations, I encourage Yokogawa to continue the endeavor step by step.

## Community Development

Yokogawa, in the process of expanding its global operations, has been engaged in various activities that are rooted in local communities. If each of those activities can be effectively explained on its websites, the company will be able to attain greater understanding among its users.

It is also recommended that the areas and topics be sorted out for its community activities a little more in order to determine where Yokogawa should place its primary focus. Based on this, it can then be explained how these activities are carried out in each country. In doing so, it is important to start with explaining the concept of "B to B to C" and convey the characteristics of these activities as Yokogawa's business operations, along with what Yokogawa intends and hopes for. It must be more than an ordinary activity report that could be given by any type of business or company.

## Environment

As more and more products get LCA-labeled, representing the product has been assessed of its environmental impact, Yokogawa is successfully responding to the needs of customers who are becoming increasingly aware of environmental issues. In consideration of concerns among users and communities, customers are more willing to select products explainable about the environmental impact. From this point forward, it would be helpful for Yokogawa to know how its customers perceive the fact that the company is trying to increase LCA-labeled products. It is recommended for Yokogawa to monitor the evaluations by customers and feedback to the development team with the help of the sales or marketing teams.

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## External Ratings and Recognitions

### CSR Rating by the Dow Jones Sustainability Indexes



Yokogawa Electric Corporation has been selected to the Dow Jones Sustainability Asia Pacific Index (DJSI Asia Pacific).

The DJSI is a leading corporate social responsibility index developed jointly by Dow Jones of the United States and Sustainability Asset Management (SAM) Group, a Swiss research and rating company. The selection of a company to the DJSI is based on a wide ranging analysis of economic, environmental, and social criteria. In 2012, 600 major companies in the Asia Pacific were surveyed for the DJSI Asia Pacific, and of this total 154 companies were selected, including 74 Japanese companies.

### CSR Rating by SAM (Sustainable Asset Management)



Yokogawa was, in January 2013, named "Sector Mover" for the electronic equipment sector in "The Sustainability Yearbook 2013" published by Sustainable Asset Management (SAM), which investigates and analyzes companies listed on the Dow Jones Sustainability Index.

SAM analyzed and assessed 3,000 companies worldwide across 58 major sectors from the three perspectives of economic, environmental and social performance, and, in "The Sustainability Yearbook," listed 464 businesses as companies helping to build a sustainable society. A total of 34 Japanese companies, including Yokogawa, were included in the Yearbook. Yokogawa was selected for the title of "Sector Mover," which is awarded to the company that has achieved the greatest improvement in sustainability performance since the previous year in its sector.

### Socially Responsible Investment Stock Index by Morningstar (Japan)



Yokogawa Electric Corporation, as of April 2013, is one of 150 companies constituting the MS-SRI (Morningstar Socially Responsible Investment Index), which is an SRI stock index established by Morningstar (Japan).

### "Ideal Companies to Work for in 2012" by Nikkei Inc. (Japan)

Yokogawa Electric Corporation, as of October 2012, was ranked 152nd among the 1,581 "Ideal Companies to Work for in 2012," such companies having been selected by Nikkei Inc., based on their personnel administration systems and utilization condition of those systems.

### Science and Technology Awards for Petroleum and Chemical Automation Industry (China)

Yokogawa Electric China Co., Ltd. received the First Class Scientific and Technological Progress Award of the "2011 China Science and Technology Awards for Petroleum and Chemical Automation Industry" in June, 2012 at the "11th Annual Conference of Petroleum and Chemical Automation in China" held in China's Anhui Province. The China Science and Technology Awards for Petroleum and Chemical Automation Industry are prestigious honors given to organizations and individuals that have contributed to progress in science and technology in the Chinese petrochemical industry.

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## Yokogawa Commended for Excellence in Labor Management (China)

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Yokogawa Electric China (Suzhou) Co., Ltd. was presented the "2011 Suzhou Industrial Park Class AA Labor Assurance Rating from the Suzhou Labor and Social Security Bureau in July 2012. This award is given to companies that excel in labor management. From among all 12,000 companies located in the applicable park, 92 companies were selected for commendation. Eight Japanese companies, including YCS, were among them.

## Designation as An "Important Specimen from the History of Science and Technology" (Japan)

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Yokogawa's CENTUM Integrated Production Control System was designated in September 2012 as an "important specimen from the history of science and technology (technical legacy for the future)" for 2012, as selected by the National Museum of Nature and Science. Yokogawa was presented a certificate of designation. CENTUM has been introduced to oil, petrochemical and other plants as well as society's infrastructure, and has helped encourage a transition to distributed control for enhanced productivity. CENTUM was recognized for such contributions.

## 2012 Good Design Award (Japan)

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Yokogawa's ergonomic "Design Consulting on Screens Used for Plant Operations" received a 2012 Good Design Award from the Japan Institute of Design Promotion in the Business Method/Business Management category in October 2012.

## Judges' Special Award in the Green IT Awards 2012 (Japan)

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"Resort Hotel Energy Conservation Utilizing IT," an energy conservation program led by Yokogawa and The Terrace Hotels, received the "Green IT Award 2012 Judges' Special Award" in October 2012. This award commends IT equipment and software that provide exceptional energy saving performance as well as energy saving solutions utilizing such equipment and/or software. The award is intended to accelerate the "Green IT" effort, which moves forward on the wheels of "energy conservation in IT" and "energy conservation in our society by IT."

## "Model Unit" of Suzhou City (China)

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The City of Suzhou awarded Yokogawa Electric China (Suzhou) Co., Ltd. (YCS) the title of "Model Unit" for being a good company in January 2013. This title is awarded to role-model corporations and organizations whose excellence of corporate culture is demonstrated through such things as involvement in community activities. YCS was recognized for its proactive efforts in preserving the global environment and participating in community activities.

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