90th Anniversary

YOKOGAWA

Building a Sustainable Society

Yokogawa Group Environmental Management Report 2005

Yokogawa Electric Corporation

Yokogawa Group
Environmental Management Report 2005

Building a Sustainable Society

Contents

Handing Over Our Precious Global Environment to Future Generations Building a Sustainable Society

In response to the growing seriousness of our planet's environmental problems - global warming, environmental pollution, and ozone layer depletion - we have come to embrace the philosophy of sustainability as a universal idea that relates to all humankind. To set this philosophy into action, governments, private enterprises, and consumers have begun collaborating to build a sustainable society.

One of the most crucial issues that private enterprises face today in their environmental management activities is the achievement of a harmonious balance between their corporate activities and the environment. What is more, as a result of the Kyoto Protocol being put into force in February of this year, the promotion of global environmental conservation activities has become all the more urgent. In keeping with the tenets outlined by this protocol, enterprises are adopting measures to reduce CO_2 and other greenhouse gas emissions, and are seeking particularly in the EU to bring their electronic devices and other equipment into compliance with environment-related laws and regulations.

The Yokogawa Group (the Group) is implementing environmental management practices intended to hand the precious global environment to future generations in accordance with a corporate philosophy that states "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."

To conserve resources, reduce energy consumption, and reduce CO_2 emissions, the Group provides its customers a wide range of solutions such as the CENTUM integrated manufacturing control system and the Enemap energy management package, both of which are featured in this report. In product design, too, we apply environmentally friendly design rules, and in fiscal year 2004 we totally reviewed our Standards for Hazardous Substances Contained in Product to further reduce hazardous chemical substances.

We firmly believe that the Group can help build a sustainable society and reduce the environmental impact of its operations by making effective use of our experience, skills and know-how to provide environmentally friendly product solutions and by collaborating with customers and the communities in which we live. In the future, we will continue to enforce legal compliance and make sure that our standards for business conduct are thoroughly adhered to; expand training and other programs to ensure that these codes are effectively followed; and take steps to ensure that the entire Group is maintaining a healthy and profitable operation.

Environmental management aims to carry out the activities outlined above while ensuring transparency and being fully accountable by disclosing environmental information. The Yokogawa Group Environment Report 2005 represents our efforts to be both transparent and accountable by presenting an overview of our environmental management activities in 2005. We hope that this 2005 edition will facilitate two-way communication with our readers and we welcome your comments on this report.

June 2005

Isao Uchida
President and Chief Executive Officer

Objectives of issuing this report

This Environmental Management Report has been prepared to strengthen our relationship with our stakeholders by communicating the Group's environmental management vision and activities.

Editorial policy

- ○ This report presents an overview of the Group's approach to environmental management and its activities in this field during the past year.
- ○ This report is written in an easy-to-understand format. Headings and brief summaries are used throughout to make the overall ideas easier to understand. Industry jargon and special terms used within Yokogawa are avoided as much as possible.
- ○ We have expanded the Relations with Customers, Employees and Communities section in consideration of our social responsibility as a corporation.
- ○ This year, we are once again including well-received articles that convey the opinions of on-site personnel.

Period covered by this report

April 1, 2004 through March 31, 2005

Date of issue

June 2005 (the next report is scheduled for June 2006)

Data sources

For fiscal year 2004, data was gathered from a total of 20 Group companies in Japan and 23 Group companies outside Japan.

Individually defined data sources, such as environmental accounts, are noted separately in their respective locations.

Referenced guidelines

Environmental Reporting Guidelines (Fiscal Year 2003 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 2002, published by Global Reporting Initiative

Data Sources (43 companies)

Japan

Headquarters, Yokogawa Electric Corp.
Yokogawa AIM Corp.
Yokogawa Digital Computer Corp.
Kokusai Chart Corp.
Yokogawa M&C Corp.
Morioka Tokki Co., Ltd.
Nippon System Gijutsu Co.
Omega Simulation Co., Ltd.
Yokogawa Sertec Co., Ltd.
Waseda University Learning Square Corp.
Yokogawa & Co., Ltd.
YDC Corp.
Yokogawa Denshikiki Co., Ltd.
Yokogawa Denyo Corp.
Yokogawa Field Engineering Service Corp.
Yokogawa Information Systems Corp.
Yokogawa Electronics Manufacturing Corp. *1
Yokogawa Pionics Corp.
Yokogawa System Engineering Corp.
Yokogawa Trading Corp.

Outside Japan

Yokogawa Electric China Co., Ltd.
Yokogawa-Xiyi Co., Ltd.
Shanghai Yokogawa Petrochemical Instrumentation Co., Ltd.
Yokogawa Shanghai Instrumentation Co., Ltd.
Yokogawa Sichuan Instrument Co., Ltd.
Suzhou Yokogawa Meter Co.
Yokogawa Shanghai Trading Co., Ltd.
Yokogawa Electric Asia Pte. Ltd.
P.T. Yokogawa Manufacturing Batam
Yokogawa Engineering Asia Pte. Ltd.
Yokogawa Electric Korea Co., Ltd.
Yokogawa Electronics Manufacturing Korea Co., Ltd.
Yokogawa Measuring Instruments Korea Corp.
Yokogawa Taiwan Corp.
Yokogawa Europe B.V.
Rota Yokogawa GmbH & Co. KG
Yokogawa Marex Limited
Yokogawa Corporation of America
Yokogawa America do Sul Ltda.
Yokogawa India Ltd.
Yokogawa Middle East B.S.C (c)
Yokogawa Australia Pty. Ltd.
Yokogawa Electric CIS Ltd.

*1 In this report, Yokogawa Electronics Manufacturing Corp. is referred to as YMF.

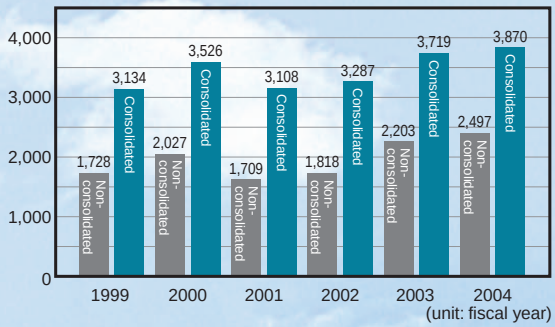
Corporate Profile (as of March 2005)

Company name:	Yokogawa Electric Corporation
President and Chief Executive Officer:	Isao Uchida
Founded:	September 1, 1915
Incorporated:	December 1, 1920
Paid-in capital:	32.306 billion yen
Net sales:	387 billion yen (consolidated) 249.7 billion yen (non-consolidated)
Operating income:	24.7 billion yen (consolidated) 13.7 billion yen (non-consolidated)
Employees:	18,972 (consolidated) 5,112 (non-consolidated)

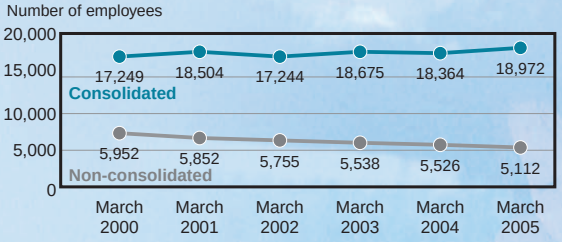
Areas of Operations

- ○ Manufacture and sales of devices and systems relating to measurement, control and information processing, such as electric measurement equipment, measuring instruments, industrial instruments, scientific analyzers, and information systems
- ○ Installation projects relating to devices, and the manufacture and sales of related materials and equipment
- ○ Manufacture and sales of aerospace instruments and other industrial instruments

Net sales
(unit: 100 million yen)



Number of employees



[Yokogawa Philosophy]

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.

The Corporate Strategy VISION 21 & ACTION 21 Excerpt:

The Yokogawa Group will work together with its customers in the industrial, public sector, and individual consumer domains to create systems that add value and contribute toward the realization of a thriving global society.

Basic Environmental Management Rules for the Yokogawa Group Excerpt:

Environmental Philosophy of the Group

This philosophy is based on Yokogawa's corporate philosophy, which states: "As a company, our goal is to contribute to society through broad-ranging activities in the areas of measurement, control, and information." The Group recognizes that protecting the earth's environment for future generations is crucially important for all humankind. We therefore aim to maintain harmony with the environment while contributing to industrial development.

Environmental Policy of the Group

The Group considers protection of the global environment to be a key management objective and has an environmental management system to continuously improve the Group's performance. In accordance with this policy, all firms in the Group will:

- ○ Strive to carry out resource recycling-based operations.
- ○ Contribute to global environmental protection.
- ○ Pursue independent initiatives to protect the environment.

Code of Conduct for Environmental Protection by the Group

The Group will consider the need to protect the global environment in all aspects of its business activities. Therefore, all firms in the Group will:

- ○ Minimize the environmental impact of their activities and promote recycling in their business operations.
- ○ Actively assist customers with their global environment protection activities.
- ○ Actively participate in and cooperate with global environment protection activities wherever they are conducted.

- The Kyoto Protocol Takes Effect

On February 16, 2005, the Kyoto Protocol came into force. This protocol outlines measures to address all environmental issues including global warming. It may, however, be difficult to actually achieve this goal. Yet, it is certain that by this the first step for an international commitment to environmental issues has been taken, and countries around the world will approach and tackle these issues with the ultimate aim of reducing greenhouse gas emissions. It is our intention, too, to redouble the Yokogawa Group's efforts to promote and implement environmental conservation activities.

- From a resource consuming society to a resource recycling society

I think that the major contributing factor in global warming is fossil fuels. Increased CO_2 (greenhouse gas) emissions from the use of these fuels cause a rise in air temperature, thereby melting polar ice caps and raising the sea level. As a result, low-lying areas such as harbors and islands in places like Micronesia face a crisis situation where they could be submerged in sea water. However, man still relies on fossil fuels and has not yet been able to find viable alternatives. So, we should perceive the present as a "time buying" stage until we can build alternative clean energy systems.

Modern society enjoys many conveniences, but I feel that this comes at a large price. We are dependent on numerous chemical substances, but their use in large amounts can lead to the degradation of water quality and cause soil and air pollution, and this can be said to be ruining our global eco-system. It is clear that we must move away as soon as possible from the excess consumption of resources and become a resource recycling society.

- Environmental management practices of the Yokogawa Group

The Group seeks to improve its management efficiency by eliminating the wasteful use of resources and energy, and to contribute in reducing the environmental impact of its activities at customer sites and in society at large while generating a healthy profit. Increased production inevitably leads in some measure to an increase in the amount of energy consumption and CO_2 emissions; however, in line with our mission of handing over our precious global environment to future generations, this increase in energy and resource use should be held to a minimum.

Based on these ideas, the Group is pushing ahead with the following concrete actions.

Firstly, I must mention the activities being conducted by the Group to reduce its environmental impact. Individual work units in each division decide on improvement themes, and set about the task of attaining quantified improvement targets and goals. In this way,

Our corporate goal is to enjoy the complete trust of our stakeholders

Kiyoaki Okino, Vice President of Environmental Management and Head of the Audit & Compliance Headquarters, was interviewed for this report. He shares his thoughts on the Group's environmental management and on corporate social responsibility (CSR).

Kiyoaki Okino
Vice President of Environmental Management and
Head of the Audit & Compliance Headquarters

the Group is practicing energy conservation activities and promoting the reduction of hazardous substances. Naturally, we are also proactively disclosing the results of these activities on an individual achievement basis and by using indices (see Ecopoints on page 12) to ensure the transparency of the entire Group's results.

Secondly, through the solutions that we provide our customers and by working hand in hand with them, we are making steady progress in alleviating environmental problems. Fortunately, in the three areas of measurement, control, and information - our primary business domains - we are able to quantitatively grasp and reduce the environmental impact of our customer's activities, and to help them improve productivity. It can be said that our mission is to continually provide our customers with new products that feature outstanding performance.

Thirdly, everyone in the Group is committed to conserving the environment as corporate citizens and to expanding the scope of his or her environmental activities among friends, acquaintances, and others in the community. I believe that these activities are important, especially now that electrical power consumption in homes is significantly higher than in the public and industrial sectors.

- Towards becoming a more trusted corporation

Unlike in the past, corporations today are not evaluated solely on profitability and sales. They now also face a strong demand to contribute to society. For some time now, the Group has been devoting its energies not only to the environment but also to business ethics and compliance practices, and has been striving to both enhance profit and the value of its stock and to reinforce its image of being a corporation that contributes to society.

Positive efforts to employ the elderly and those who are physically or mentally impaired and to make use of their experience and skills are actual examples of this commitment. The Group also values close contact with people in the communities where its plants are located. For example, Group employees in Japan have participated in activities to clean station front areas and in an initiative to clean up the Tama River and its surrounding environment. As a result of these and other activities, the Group was awarded the Special Harmony Award by the Business Ethics Research Center (BERC) in fiscal year 2004.

The Yokogawa Group's Environmental Management

The Group aims to decrease the burden on the global environment across all its operations, by:

- Proactively implementing environmental activities
- Providing environmental solutions and environmentally friendly products to customers

Through these activities, the Group will contribute to building a sustainable society together with its customers.

All operations: Top management, planning, R&D, design, sales, procurement, production, service, recovery and recycling

Environmental activities: Conserving resources and energy, preventing environmental pollution, reducing the amount of waste products, promoting reuse and recycling, etc.

Fiscal Year 2004 Special Report

The Yokogawa Group's Contribution to Reducing the Environmental Impact

Serving Customers by Ensuring Stable and Reliable Plant Operations and Reducing Their Environmental Impact

CENTUM Integrated Manufacturing Control System

—The Product of 30 Years of Industry and Technology Development Experience

The Yokogawa Group has continually sought to provide products to its customers that use the latest technology and show its commitment to the environment. Such is the case with the CENTUM system, which was first released to the market 30 years ago
In the following article, a CENTUM salesperson discusses the history of this system and shares his impressions with stakeholders.

Thirty Years of Process Automation

The first CENTUM system left the production line thirty years ago. Naturally, we had provided control systems to petrochemical plants and various other types of fluid processing plants before then, but, in retrospect, these systems were relatively unsophisticated.

To illustrate this, in the early 1960s the control of a fluid flow rate involved the use of a flowmeter to measure changes in the flow rate. This data was captured on an analog controller and compared with preset values, and the setting of a valve on the output side was adjusted accordingly. As the control function was handled by a computerized central control system, a system failure could cause the entire production facility to shut down. The first CENTUM distributed control system solved this problem in 1975. Over the past 30 years, CENTUM has evolved into a high-level and world-class control system that meets the latest user needs - adaptation to more and larger applications, enhanced reliability and operability, and openness.

Enhanced Functions Help Reduce Environmental Impact

The design concept of CENTUM has remained consistently up to date since the first model was introduced. It has the reliability vital for stable operation and the flexibility to allow customers to build and expand the system according to their specific needs. Through stable operation and improved production efficiency, CENTUM has helped customers boost profits and reduce energy consumption. The fact that more customers are considering CENTUM to reduce energy consumption and lessen the impact of their activities on the environment is a very welcome development for the Yokogawa Group. CENTUM is highly trusted by the Group's customers for its capabilities in controlling energy and materials. It really is a valuable asset.

My Thoughts as a CENTUM Salesperson

My customers have praised CENTUM as being a system that meets all their expectations. That makes me happier than anything, and each time I hear this I always struck by the greatness of my predecessors who developed the first machine. I feel that the idea of putting the customer first and our company philosophy of contributing to society is well reflected in these products that have been developed over the past thirty years. Yokogawa's stance of aiding society by putting the customer first in everything has not changed at all over the years. From now on, CENTUM will evolve even more. I, too, hope to build on the trust and respect that we have established over the years with our customers and society.

Interview with **TAKANAO TOMIOKA**

Sales Department II (Toyoda), Sales Division III,
Industrial Solutions Business Division I,
Industrial Solutions Business Headquarters

Takanao Tomioka

CENTUM

Installation Case 1

Drastic Improvement in Operation Efficiency in Existing Plants

Hokkaido Mitsui Chemicals, Inc.

External view of plant

Hokkaido Mitsui Chemicals, Inc. is contributing to achieving a recycling society by developing non-formalin adhesives and resins for low-VOC fabrication. When the existing system at this plant reached its limits in terms of capacity and throughput, the company adopted and installed the CENTUM CS 1000 after evaluating it and concluding it had the high performance and reliability needed to meet the demand for an increased number of product types. They were able to shorten the startup time for the new system as the existing product was also from Yokogawa; consequently, the connections between the two systems were highly compatible and the software resources of the existing system could be reused. With the introduction of the CENTUM CS 1000, recipe management packages could be used, and operators were easily able to switch over recipes and operations while patching recipe data. The resulting improvements in operating efficiency and cost reductions were considerable.

Installation Example 2

Energy and Power Savings in Thermal Energy Supply Plants

West Japan Environmental Energy Co., Ltd.

Operations room

As a regional thermal energy supply plant centrally produces and supplies heating for buildings throughout an entire region, stability and centralized management of operations are required. That is why the CENTUM CS 1000, with its outstanding reliability and control capability, was adopted. For example, the system enabled efficient operation by carrying out periodic scanning based on control information. The ability of the central monitoring room to adjust the production and supply of heat according to fluctuations in regional demand also resulted in energy savings. The customer was also highly satisfied that it was possible to achieve a stable supply system with just a few operators even under very demanding supply conditions.

CENTUM CS

Manufacturing Control System
CENTUM CS 3000 R3

First-generation CENTUM

Helping Reduce Costs, Energy Consumption, and CO_2 Emissions at All Kinds of Industrial Facilities

Energy Management Package Enemap

In fiscal year 2004, the energy management package (Enemap) was installed in motive power facilities and regional heating/cooling systems in plants. With the increased need to reduce costs, energy consumption, and environmental impact, Enemap is gaining wide attention. This product has the following features:

Enemap Predicts Future Demand Fluctuations and Proposes the Best Energy Mix

The Enemap energy management package runs on Yokogawa's Exaquantum plant information management system. Enemap packages together a number of powerful functions. These include the prediction of demand for electrical power, steam, and hot and cold water; the deduction of a plan that will enable operating facilities to meet this demand while reducing fuel costs and environmental impact; the analysis of operating efficiency trends based on long-term operating data; the diagnosis of the condition of facilities; and extensive management report functions. Enemap deduces the optimal mix for energy sources (e.g. electrical power, city gas, heavy oil), and automatically plans the number of boilers and heat-source equipment to run as well as startup and shutdown times. It further achieves simultaneous control of multiple facilities according to an operation plan, and energy use can also be managed remotely via the Internet. You could call it a navigation system for the clever use of energy.

Background to the Development of Enemap

Most CO_2 and other greenhouse gasses are from the use of fossil fuels for electrical power generation and other uses. Because of this, conclusive energy savings and the reduction of CO_2 emissions in all industry sectors is being sought in accordance with the Law Relating (Energy Savings law) to the Rationalized Use of Energy and the Kyoto Protocol, which came into effect on February 16, 2005.

Since 2001, the Yokogawa Group has been engaged in the development of energy management software that enables outstanding cost effectiveness and environmental efficiency while achieving maximum production efficiency with minimum investment in energy.

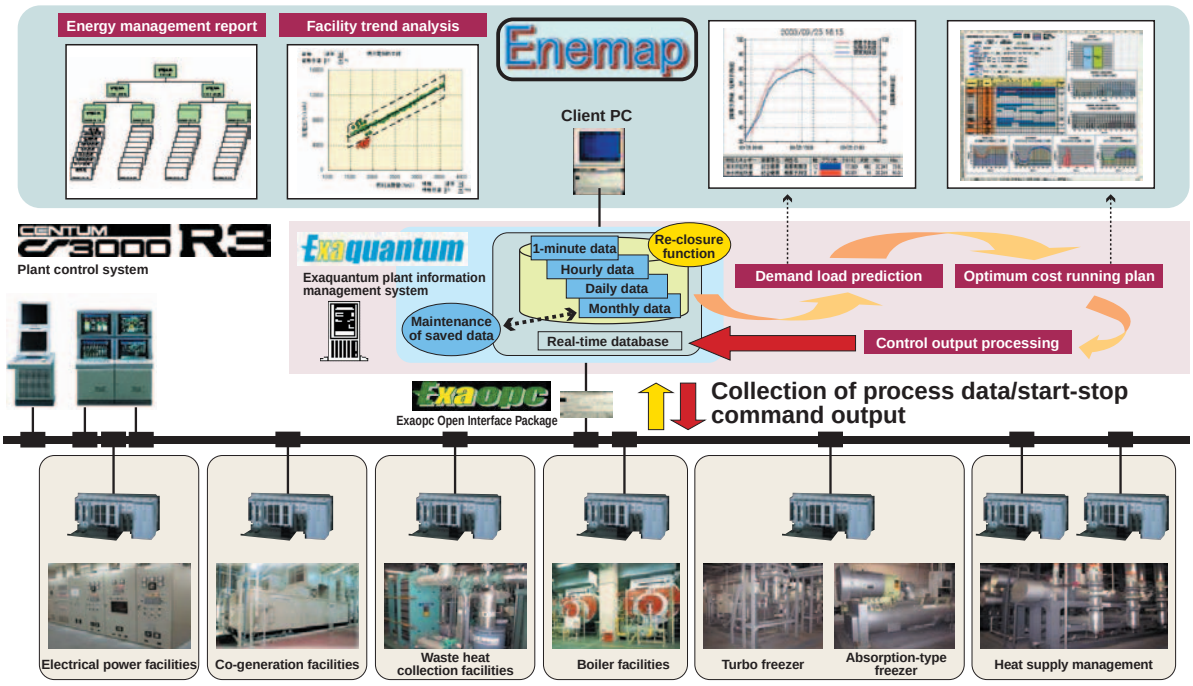
What we focused on in this process were air temperature and humidity, factors that greatly affect the energy demand of industrial facilities. Couldn't these data be periodically read and used to predict demand? At the start of the project, communication costs were expensive. However, recently, various weather services have appeared and have presented us with a wider range of options. As a result, we decided to start utilizing services that automatically upload meteorological data to the system. For load prediction on Enemap, weather forecast data for up to 48 hours ahead is automatically updated every three hours to improve the accuracy of prediction calculation. Although plant process models must be simulated to deduce the operation plan, we devised the software in such a way that this can be achieved very simply. Currently, we are developing engineering tools to facilitate the building of process models that are required for optimization calculations.

As Responsible Corporate Citizens We Shall be Proposing Useful Solutions for Improving the Global Environment

In the planning stage of this project, the combined experience and wisdom of many people was applied, and the product gradually took shape. There was no end to our worries - insufficient time and human resources, and budget restrictions, to mention but a few. After many trials and tribulations, Enemap come into the world as a new Yokogawa product. The Yokogawa Group considers Enemap to be part of the solution to the global-scale issues of reducing energy consumption and environmental impact.

Enemap has been installed in the motive power facilities at many plants including those of Central Japan International Airport Energy Supply Co., Ltd., the energy supplier to the Central Japan International Airport (opened in 2005). In this way, we believe the Group is being a responsible corporate citizen and strongly hope that these activities will lead to greater involvement in global environmental issues.

Configuration of an Energy Management Control System Using Enemap



INTERVIEW

Developed Through Cross-departmental Collaboration

The Group has created a number of successful collaborative cross-departmental project teams, including the one that planned and developed Enemap. This team was formed in 2001 and started out with three members: Hiroto Abe came from systems engineering and Mitsutaka Fukuzawa from R&D, and both were interested in energy management systems. Hitoshi Watanabe was in charge of promoting Exaquantum sales. In this interview they reflect on their tasks in this project.

Abe - In recent years, the spotlight has been on global environmental issues, and energy and cost savings have come to be given even higher priority than before. Because of this, optimum operation in terms of an entire facility or plant is now required in more and more situations. This is why I sought out Mr. Fukuzawa's advice on how we could harness the computer power to provide support for such situations and find the most suitable operations mode.

Fukuzawa - At the time, I sensed major changes were underway in the energy field, and at the outset I was looking for energy solutions with the aim of adding value to remote monitoring systems. I made a point of visiting the co-generation facilities owned by our company, and carefully analyzed the data that they gave me.
One of the themes proposed then was optimized operation. The fact that there was already a test plant for corroborating the effect of this, and that Mr. Abe had provided me with opportunities to talk directly with end users, proved extremely useful in development. Together with Kenichi Ohara and Kota Honjo from the development team, we overcame challenges such as enabling everyone to make optimum use of this system and increasing its speed, while getting down to the task of developing a load prediction engine.

Watanabe - I had just started sales of Exaquantum, and I was looking for a broader solution theme for presenting this new product to customers and in-house sales personnel. Exaquantum is a database for long-term storage of process data. Day in day out, I thought about how this stock of data could be put to effective use and what solutions could be provided to customers. It was through heated discussion with the members of the development team that I became absolutely convinced that Exaquantum would be effective with this new product.

Sakai - I was in charge of screening the development planning for Enemap. I named this product "Enemap" in the hope that it would prove to be a solution in the energy sector. I believe that we succeeded in achieving something good through cross-departmental collaboration.

Core Members of the Development Team
(From left: Hisashi Watanabe, Kenichi Oohara, Kenji Sakai, Hiroto Abe, Kouta Honjou, and Mitsunori Fukuzawa)

An Environmental Management System (EMS) Designed for Global Deployment

The Yokogawa Group is deploying an EMS globally with the aim of building a sustainable society.

EMS Activities for Deployment Throughout the Group

Previously, ISO14001 certification had been acquired at four integrated sites: the Yokogawa headquarters/plant, Yokogawa Electronics Manufacturing (YMF) Kofu Plant, YMF Komine Plant, and YMF Ome Plant. Activities geared to build a sustainable society were conducted using an identical EMS so that each of these organizations could move forward with environmental conservation activities in its respective field of operations. The Yokogawa headquarters/plant separated from these integrated sites in August 2004, and each company underwent assessment inspections for certification and re-certification as an individual site.

From here on, the Yokogawa Group will promote the building of a system where each company will take its own actions to achieve Group environmental targets. At the same time, the Group will promote environmental conservation while it develops its global business operations, thereby helping to build a sustainable society.

Promotion of the EMS Integrated into Existing Businesses

The business headquarters and divisions assume responsibility for providing EMS guidance and support to the consolidated operating companies that they are in charge of. In fiscal year 2004, each organizational unit carried out environmental conservation activities, following target themes that were closely integrated with their business practices. Through these activities, the Yokogawa Group was able to positively promote the establishment, maintenance, and improvement of the EMS at all Group companies, and also promote activities for improving energy savings and reducing industrial waste on an on-going basis.

Economic Use of Water Resources by Improvements at Hazardous Substance Storage Warehouse

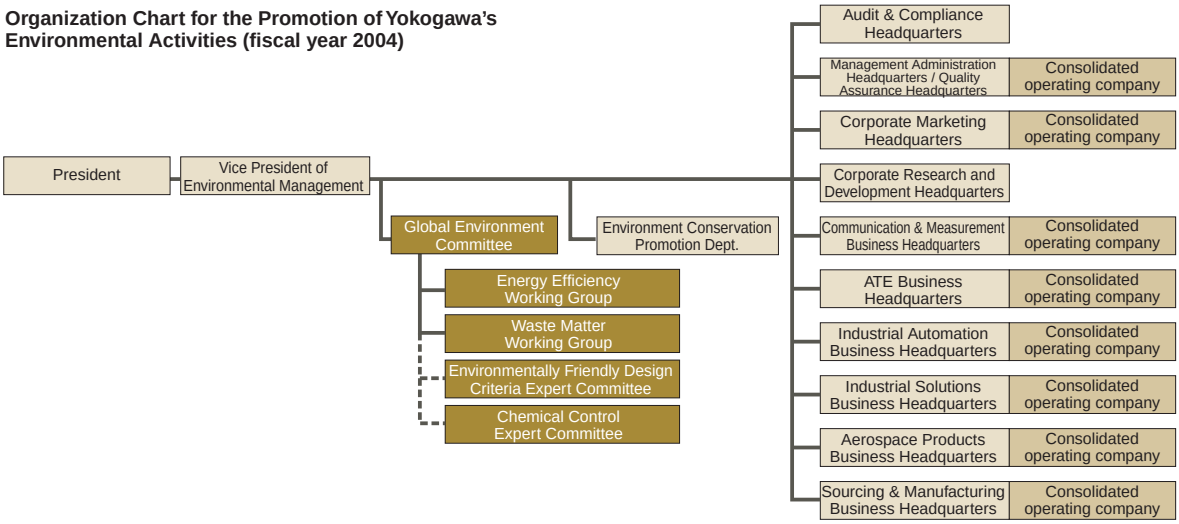
The Suzhou Yokogawa Meter Company used heat-dispersal sprinklers on the rooftop of its hazardous material storage warehouse when temperatures exceeded 35°C. By remodeling the warehouse's rooftop and allowing water to accumulate on the roof, where if functioned as an insulator from the heat, it eliminated the use of the sprinklers and reduced annual water consumption by 98.6%, from 1,600 m^3 to 23 m^3.

Suzhou Yokogawa Meter Company

Reduced Water Consumption Through the Use of NEWater in Air Conditioners

As water sources are scarce in Singapore, the use of NEWater (high-quality treated and recycled water) is recommended. In line with this recommendation, Yokogawa Electric Asia Pte. Ltd. introduced air conditioners that use NEWater in December 2004. This move has helped make effective use of limited water resources.

Organization Chart for the Promotion of Yokogawa's Environmental Activities (fiscal year 2004)



ISO14001 Certification

The establishment of an appropriate EMS is indispensable for the implementation of environmental management practices that are aimed at building a sustainable society. Environmental management activities are based on the Yokogawa Group Basic Environmental Management Rules (see page 3). By fiscal year 2005, each of the Group companies is expected to establish, maintain, and improve an EMS that is tailored to its business operations and organization. As of the end of March 2005, there were nine ISO14001-certified sites in Japan and seven outside Japan.

Environmental Auditing

(1) Internal Audits

The Yokogawa Group conducts system, legal compliance, and performance internal audits. Starting in fiscal year 2004, internal audits were conducted at all sites. Although some inconsistencies and watch items were discovered, these were quickly addressed and corrected.

(2) Periodic Inspections

As a result of the breakup of the four integrated business sites, the Yokogawa headquarters and plant underwent inspections by the certifying organization, and YMF was assessed for re-certification. These sites were found to satisfy the ISO14001 requirements, and YMF maintained its registration. Yokogawa Denshikiki Co., Ltd., Kokusai Chart Corporation, and other sites were judged to be implementing effective EMSs and also maintained their registrations.

ISO14001

As of end of March, 2005

Site		Date Certified
Yokogawa Electric Corporation Headquarters/plant		July 1997
Yokogawa Electronics Manufacturing Corporation *	Headquarters/Komine Plant	July 1997
	Kofu Plant	July 1997
	Ome Plant	July 1997
	Komagane Plant	November 1999
Kokusai Chart Corporation		January 1999
Yokogawa Trading Corporation		February 1999
Yokogawa Field Engineering Service Corporation		February 2000
Yokogawa Denshikiki Co., Ltd.		November 2000
Suzhou Yokogawa Meter Company	China (Suzhou)	May 1998
Yokogawa Electric Asia Pte. Ltd.	Singapore	October 1998
Yokogawa Shanghai Instrumentation Co., Ltd.	China (Shanghai)	March 2000
P.T. Yokogawa Manufacturing Batam	Indonesia	April 2000
Yokogawa Sichuan Instrument Co., Ltd.	China (Chongqing)	December 2000
Yokogawa Engineering Asia Pte. Ltd.	Singapore	August 2001
Yokogawa Electric China Co., Ltd.	China (Suzhou)	May 2004

* The following sites have general certification: YMF Headquarters/YMF Komine Plant, YMF Kofu Plant, YMF Ome Plant

Environmental Audit Inspection Items

Internal Audit	Systems audit	Audit of organization/system, 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 (qualification, 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

Setting and Using Groupwide Indicators to Assess Overall Environmental Impact

The Yokogawa Group assesses and maintains an overview of the environmental impact of its business activities with the aim of building a sustainable society.

Understanding Environmental Impact as a Whole

The Group believes that assessing and managing an "eco-balance*1" of the inputs and outputs in its business activities will help effectively use resources, improve energy efficiency, prevent global warming, and improve the waste reclamation ratio, so as to build a sustainable society.

The figure below illustrates the eco-balance of the Group in fiscal year 2004.

Yokogawa's Eco Point Environmental Burden Indicator

Since fiscal year 2000, the Yokogawa Group has been using the eco point (EP) indicator as a common numerical indicator for measuring environmental impact. Eco points are calculated by multiplying the eco factor*4 used by Switzerland's Ministry of the Environment by the LCA*2 inventory analysis*3 result for each environmental load value. This method enables the Group to uniformly evaluate the effect on the environment. The greater the EP value, the greater the environmental impact.

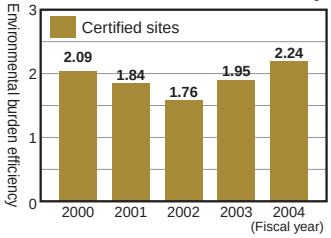
The eco point score for fiscal year 2003 at 14 certified sites was 35,495EP, representing an environmental impact reduction of 1,481EP from the previous fiscal year.

Environmental Management Indicator

The Yokogawa Group uses "environmental burden efficiency" as an indicator for expressing the progress of its environmental management activities. The environmental burden efficiency indicator shows the efficiency of environmental management in generating economic value for a specific environmental impact, and is defined as follows.

$$\text{Environmental burden efficiency} = \frac{\text{Gross profit on sales}}{\text{EP}}$$

Changes over time in environmental burden efficiency



Explanation of Terms

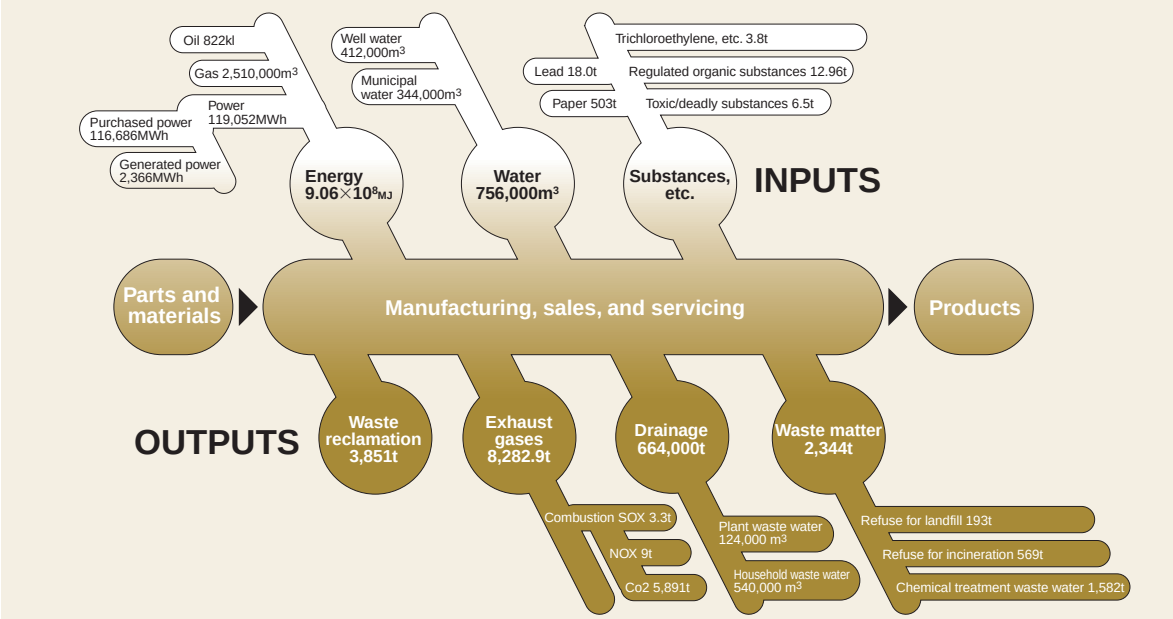
***1 Eco-balance**
The annual balance between energy and resource inputs (consumption) and outputs (emissions), excluding parts, materials, and products

***2 Lifecycle assessment (LCA)**
An assessment which comprehensively evaluates the environmental impact of a specific product throughout its lifecycle, from material purchase, manufacture, and distribution to its use and disposal

***3 Inventory analysis**
A technique which uses LCA data to analyze levels of emissions into the atmosphere and hydrosphere (ground water) from supplied power, natural gas, and chemicals as well as emitted substances, and which also calculates emission amounts (inventory) by category (greenhouse gas, ozone-depleting potential substances, etc.)

***4 Eco factors**
Weighing factors established to evaluate the environmental impact of individual emitted substances determined through inventory analysis

Fiscal year 2004 Eco-balance



Applying Environmental Accounting to Realize Optimal Environmental Management

In fiscal year 2004, the Yokogawa Group applied environmental accounting to 14 sites.

Environmental Accounting for Fiscal Year 2004

The table below shows the environmental accounting of the Group for fiscal year 2004. Calculation criteria in environmental accounting are in compliance with the "Environmental Accounting Guidelines (Fiscal Year 2005 Version)" published by the Ministry of the Environment, Japan.

Up till last year, the estimated effect was factored into the economic effects of environmental conservation. This year, however, only the intrinsic effect is posted as the factoring of the estimated effect is influenced by uncertain

Environmental Conservation Costs (in millions of yen)

Category	Item	Main Initiatives	Investment	Amount
(1) Costs for reducing environmental impact occurring within factories (areas of operation)	1) Pollution prevention costs	Monitoring and measurement	15	339
	2) Global environmental conservation costs	Energy savings	88	47
	3) Resource recycling costs	Minimized generation of waste matter	0	197
(2) Costs for reducing environmental impact from procurement and logistics		Green procurement	0	4
(3) Environmental conservation costs in EMS activities		EMS update, education	0	265
(4) Environmental conservation costs in R&D activities		Development of environmentally friendly products	0	12
(5) Environmental conservation costs in community activities		Environmental events	0	52
(6) Costs of addressing damage to the environment		Soil recovery	0	0
		Total	103	916

Environmental Conservation Effects

Category	Description of Effect (unit)	FY2003	FY2004	Effect
Resource expenditure	Total amount of energy consumed (TJ)	777	797	−20
	Total amount of water resources consumed (km^3)	797	646	151
Global warming prevention	CO_2 emissions (kt)	42	40	2
	CO_2 emissions on unit sales basis (t-CO_2/100 million yen)	16	15	1
Air pollution	NOx emissions (t)	38	38	0
	SOx emissions (t)	36	38	−2

Economic Effects of Environmental Conservation Measures — Intrinsic Effect — (in millions of yen)

Description of Effect	Amount
Reduction in expenditures due to recycling (sale of valuables, etc.)	40
Reduction in expenditures due to energy savings (power, etc.)	21
Reduction in expenditures due to resource savings (reduction of paper and water, etc.)	33
Total	94

Capital Expenditures and R&D Costs (in millions of yen)

Item	Description	Amount
Total capital expenditure for period	All capital expenditure including environmental expenditures	16,451
Total R&D costs for period	All R&D costs including environmental expenditures	29,141

Sales of Environmental Business Products and Total Sales (in millions of yen)

Item	Description	Amount
Sales of environmental business products	Sale of products and systems (for the term) that exclusively contribute to reduction of social and environmental impact, including environmental business products (water purification, atmosphere protection, waste treatment, etc.)	20,160 (7.7%)
Total sales for period	Grand total	261,625

Data was taken from ISO14001-certified sites excluding Yokogawa Electric China Co., Ltd. and Yokogawa Field Engineering Service Corporation (see page 11) during the period April 1, 2004 to March 31, 2005.

Overview of Environmental Activities in Fiscal Year 2004

As a responsible corporate citizen, the Yokogawa Group is engaged in global conservation activities and social activities taking the business operations of each Group company and the regional character of its operations into consideration, in accordance with the "Basic Environmental Management Rules for the Yokogawa Group" (see page 3).

In fiscal year 2004, environmental activities were successfully promoted throughout the Group. In particular, as part of our environmentally friendly product development, we were able to provide customers with a variety of products and solutions including the Enemap Energy Management Package.

Upon the Kyoto Protocol coming into force, it is our intention from fiscal year 2005 onwards to further enhance environmental activities mainly in the area of reducing CO_2 emissions and energy saving measures.

Environmental Policy of the Yokogawa Group		Fiscal year 2004 (main sites)			Ref. page(s)
		Target / goal	Fiscal year 2004 result	Self evaluation	
EMS implementation, maintenance, and improvement	Establish an EMS to promote and continually improve environmental conservation activities. In order to achieve this, it is necessary to	• Promote environmental conscious business activity initiatives (promotion of	• 49 themes close to business operations attained	○	10
	accurately understand the impact of business activities on the environment, establish environmental targets that are technically and	activities closely integrated with business operations)			
	economically feasible, and work to achieve these targets while conducting environmental audits to maintain and improve the system.				
Implementation of environmental education	Provide all employees with environmental education so that they understand the environmental policy, improve their	• Provide basic environmental education (100% target)	• 100% achieved	○	32
	environmental awareness, and consider environmental conservation throughout the corporate and civil activities	• Provide specific environmental education to those engaged in business	• 100% achieved	○	
	under their own initiative.	(100% target)			
Legal compliance	Comply with all legislation, regulations, agreements, and industrial guidelines pertaining to the environment, and	• Improve soil management in line with Group soil management criteria	• Study of installation of a monitoring well in progress	△	25
	strive to protect the global environment.				
Promotion of recycling-based management	Strive to use resources and energy efficiently throughout corporate activities, reduce waste, and promote reuse and	• Reduce CO_2 emissions by 2% on unit sales basis (compared to fiscal year 2003)	• 4.2% reduced	○	23
	recycling, with the aim of achieving zero emissions.	• Reduce total waste matter by 2% on unit sales basis (compared to fiscal year 2003)	• 5.7% reduced	○	28
Reduction of environmental pollutants	Reduce the use of substances that adversely affect the environment, such as toxic, global-warming, and ozone-	• Roll-out of lead-free soldered products	• Lead-free soldered products introduced	○	27
	depleting substances, by adopting alternative technologies as much as possible, thereby avoiding the risk of	• Study alternative plate technologies for hexavalent chromium	• Studied	○	27
	environment pollution.	• Study alternative plate technologies for cyan	• Studied	○	27
		• Reduce toluene and xylene	• Introduced low-toluene and low-xylene paintings	○	24
Environmentally friendly product development	Supply products with low environmental impact by developing and manufacturing products with careful consideration	• Investigate hazardous substances contained in parts and materials	• Primary investigation completed	○	16
	for their impact on the environment throughout their lifecycle, from materials procurement, manufacturing, and	• Establish a plan for the total abolition of six substances according to the RoHS Directive	• Establishment of plan on-going	△	26,27
	distribution, through usage and disposal.	• Apply product assessment standards and LCA standards to reduce CO_2	• Completed for 9 models	○	17,19
		emissions in developed products by 25%			
		• Increase the use of environmentally friendly packaging	• Completed for 33 models	○	29
Providing environmental solutions	Help protect the global environment by supplying value-added products and services, based on measurement,	• Popularize environmental conservation products and promote environmental	• Participated in exhibitions and held seminars	○	36
	control, and information processing technologies.	solutions			
Contributing to society by protecting the environment	Participate in regional environmental conservation activities, support employees who initiate such activities, and strive	• Participate in community and regional activities	• Participated in various regional cleaning activities	○	35
	to maintain harmony with local communities as a responsible corporate citizen.				
Disclosure of information on environmental conservation	Disclose the Environmental Policy and information on the Group's global environmental conservation activities to	• Increased number of data sources	• Data sources expanded to include 46 Group companies	○	36
	broaden communications with communities.		• CSR (corporate social responsibility) related page substantiated	○	30–36

Green Procurement and Purchasing Activities Throughout the Yokogawa Group

To promote the development of environmentally friendly products, the Group has established Green Procurement Guidelines and is pressing ahead with checking and investigating compliance with these guidelines by its vendors.

Green Procurement

Since the Yokogawa Group established its Green Procurement Guidelines in 2000, it has promoted procurement from vendors who are implementing environmentally friendly measures. In fiscal year 2004, the Group reviewed its "Standards for Hazardous Substances Contained in Products" (see page 18) to comply with EU regulations, and consequently investigated all purchased parts.

Upon this investigation, the Development Infrastructure Department set up a hazardous chemical substance management system (see page 26). Vendors of common parts and vendors of special parts for specific divisions were also investigated by procurement/distribution departments and Yokogawa Trading Corporation, and by engineering departments, respectively. In this way, departments are cooperating to reduce hazardous chemical substances contained in Yokogawa Group products.

Vendors are ranked A, B, and C in accordance with the Green Procurement Guidelines. In fiscal year 2004, we conducted a survey of 59 parts and materials vendors and 73 subcontractors. Two of the parts and materials vendors and nine of the subcontractors received a grade C ranking. For those vendors and subcontractors, we provide environmental conservation guidance according to the environmental impact reduction measures outlined in the table below.

Environmental Impact Reduction Measures

Parts and materials vendors	Grade B: Yokogawa sends a letter requesting them to acquire ISO14001 certification or to institute an equivalent management system.
	Grade C: In addition to the above, Yokogawa sends a letter requesting cooperation and rapid improvement in environmental conservation.
Subcontractors	Grade B: Yokogawa sends a letter requesting cooperation and rapid improvement in environmental conservation.
	Grade C: In addition to the above, Yokogawa visits them and gives guidance on environmental conservation.

Green Purchasing

The Yokogawa headquarters/plant, YMF Komine Plant, YMF Kofu Plant, and YMF Ome Plant have made steady progress in achieving their green office supply purchasing targets. In 2003, the purchasing rate was 80%; in 2004 this was 88% (yearly average).

Review of Guidelines

Ever since the Green Purchasing Guidelines were established in 2001, the Group has made an effort to purchase environmentally sensitive products. In fiscal year 2004, a change in controlling departments resulting from a restructuring of the organization prompted an overall review of these guidelines. Controlling departments in each of the Guideline items were reviewed, and the registration of controlling departments for items that required modification was changed.

Eco-cars Adopted for Company Use

At Yokogawa, company cars including those used by sales personnel are all leased. A review of these cars was conducted in fiscal year 2004. Starting in June, company cars are being changed over to 16 "eco-car" models that meet the strict criteria of the Low-emission Gas Vehicle Certification System. This applies to all Yokogawa company cars and will be implemented when the lease on each vehicle expires.

CW240 Power Meter and ST6730 FPD Driver Test System Help Customers Reduce Environmental Impact

The Yokogawa Group is positively promoting the development of environmentally friendly products. Of those developed in fiscal year 2004, the following two models have demonstrated outstanding results.

CW240 Clamp-on Power Meter

Yokogawa M&C Corporation has developed the CW240 clamp-on power meter. This new product boasts a number of greatly enhanced functions including the simultaneous measurement of loads in four systems, a feature previously found only on the CW140; a new voltage fluctuation measurement function; and an increase in the number of harmonic levels from 13 (on the CW140) to 50. At the same time, the new meter uses fewer parts, reducing its environmental impact.

In terms of the overall lifecycle assessment (LCA) of the environmental impact in all processes from selection of raw materials through to product disposal, the CW240 reduces CO_2, NOx and SOx by 59.2%, 58.9% and 59.6%, respectively, in comparison to the CW140 and when identical functions are used.

ST6730 FPD Driver Test System

These days, the ICs that drive the flat panel displays (FPD) used in cell phones must be designed to have more pins and gradations. To respond to this trend and efficiently test these drive ICs, Yokogawa released the ST6730 FPD driver test system in fiscal year 2004. This system makes use of a per-pin digitizer that applies a high-resolution digital image to IC pins in multiples of 1000 or more to measure signals from each pin. This enables all-pin signal testing to be performed at much faster speeds and at higher precision. What's more, the ST6730 helps save space as it has a footprint about one half of other comparable test systems, and helps conserve energy as it consumes less power.

In terms of LCA, the ST6730 reduces CO_2, NOx and SOx by 61.7%, 63.9%, and 58.2%, respectively, compared with previous models.

ST6730

INTERVIEW

When the Hardships of Development Turn into Joy in a Single Moment

CW240 Clamp-on Power Meter

When developing the CW240, we made sure that it had the same operability as the CW140. Consequently, there has been little change in the product's external appearance. We did, however, considerably enhance the CW240's functions, something that normally increases power consumption. In our development of the CW240, we made a painstaking effort to address this problem, and this process was fraught with hardships. Yet, for an engineer, all this is transformed to joy in an instant, when customers say that they really like the new functions. I make a point of relaying that pleasing feedback from the customer to all the members of the development team.

Interview with **MAKOTO KAWASAKI**

Yokogawa M&C Corporation **Makoto Kawasaki**

Setting Proprietary Design Rules for Creating Environmentally Friendly Products

The Yokogawa Group has established design guidelines and assessment standards for long-term use, energy conservation, and other parameters to promote the production of environmentally friendly products.

Guidelines for Environmentally Friendly Design

The Group is developing products based on guidelines and standards it has established for the development of environmentally friendly products.

(1) Environmentally Friendly Product Design Guidelines

These guidelines establish design, machining, and assembly methods which incorporate long-life design, energy conservation design, resource conservation design, materials and parts selection guidelines, recycling, and disposal of products.

(2) Environmental Assessment Standards for Product Design

Yokogawa has 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).

(3) Standards on Toxic Substances in Products

These standards guide the selection of environmentally friendly parts and materials in the design stage. An overall review of these standards was performed in fiscal year 2004. Currently, efforts are being made to eliminate or reduce substances from 15 prohibited substance groups and 14 voluntarily controlled substance groups specified in the Green Procurement Study Standardization Guidelines, as well as substances in 15 voluntarily controlled substance groups chosen by the Group, for a total of 44 substance groups.

(4) Lifecycle Assessment (LCA) Standards

These standards are used for preliminary assessment of energy use, CO_2 emissions, NOx emissions, SOx emissions, and the like. These standards are used in conducting assessments during each inspection (initial design, intermediate design, and final design).

(5) Recycled Product Design Standards

These standards encourage waste reduction, reuse, and recycling.

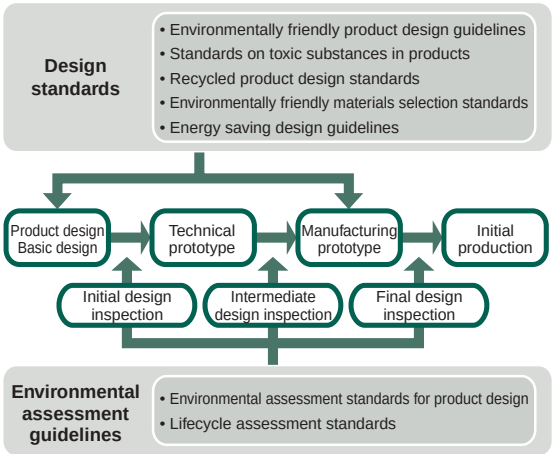
(6) Environmentally Friendly Materials Selection Standards

These standards state that the use of highly toxic hexavalent chromium and halogen-based flame retardants is to be avoided. They also list recommended products for chrome-free steel plates and the like, as well as usage precautions.

(7) Energy Saving Design Guidelines

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

Environmentally Friendly Design Standards and Assessment Standards



Environmental Assessment Standards for Product Design

1. When	Initial design inspection, intermediate design inspection, final design inspection
2. Assessment items	29 items including 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 0 points if legal regulations are not satisfied, 4 points if legal regulations are satisfied and improvement of 30% or better is achieved, 3 points for improvement of 15%, 2 points for improvement of 5%, and 1 point for improvement of less than 5%.
4. Pass/fail judgment criteria	In order to pass, there must be no assessment items with a score of 0, 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 0, or if the total score is the same as or less than that of the old model. The improvement guidelines target an improvement of 25% or better, and more than anything seek to incorporate environmental-burden reduction into design.

Yokogawa Group's Environmental Labels (Type II) for Certifying Environmentally Friendly Products in Accordance with Proprietary Standards

The Group has introduced a system of self-declared environmental labels (Type II), a first in the measuring instruments industry. Only products that demonstrate outstanding environmental performance may display this label.

Environmental Label and WT3000

In 1999, Yokogawa became the first company in the measuring instruments industry to introduce a self-declared environmental label (Type II), as specified in ISO14021. The environmental label was designed based on the "Environmentally Friendly Design Standards and Assessment Standards" presented on page 18. It is used to mark products that are more environmentally friendly than older or similar products, and contribute to customer's global environmental protection efforts.

The environmental label depicts a gauge - a symbol of Yokogawa's business - that is drawn to look like a green leaf. Information on the specific improvements or features of the product are written below the label.

By the end of fiscal year 2004, Yokogawa had introduced ten products with the environmental label. These include the WT3000 precision power analyzer.

The WT3000 boasts the best measurement accuracy in its class, and supports higher energy savings and efficiency in electrical equipment. It is also equipped with four input elements to enable the efficient measurement of 3-phase electrical equipment on a single unit. Compared with conventional models, CO_2, NOx and SOx have been reduced by 34%, 36% and 30%, respectively.

Some of the Products with Environmentally Friendly Label

Capable of high-precision power measurement, supporting higher energy savings and efficiency in equipment  WT3000 Precision Power Analyzer	Consumes 50% less power than Yokogawa's DL2700 (8-channel model)  DL7440/DL7480 Digital Oscilloscopes
Consumes about two-thirds less power than Yokogawa's DL1540C/DL1540CL  DL1640/DL1640L Digital Oscilloscopes	About half the size of the DL716  DL750 ScopeCorder
A useful tool for designing energy saving products  WT210/WT230 Digital Power Meter	Paperless recording  DAQSTATION DX100

INTERVIEW

Use by Other Manufacturers Attests to Our Contribution to Society

WT3000

The WT3000 is a best-in-class precision power analyzer and is capable of measuring current, voltage and power with an accuracy of ±0.06%. Conventional power analyzers for the measurement of 3-phase power are designed so that three elements can be attached for the measurement of each phase. The WT3000, however, incorporates four elements in a single unit to ensure higher efficiency and higher precision measurement of inverters and other devices. This single unit boasts nearly twice the performance of a conventional power analyzer. To do this, we went to great lengths to increase the mounting density of the printed circuit boards, downsize the power supply unit, and configure the analyzer in a space-saving design. We also added on an 8.4-inch liquid crystal display to make measurement values easier-to-view. I know that the WT3000 will help customers improve the energy savings performance of electrical equipment, and through this I feel that I myself am contributing to global conservation. As a product developer, this can give me no greater satisfaction.

Interview with HISASHI IWASE
Development Center II,Communications and Measurement Business Headquarters **Hisashi Iwase**

Providing a Derivative Power Measurement Technology for the Evaluation of Fuel Cells

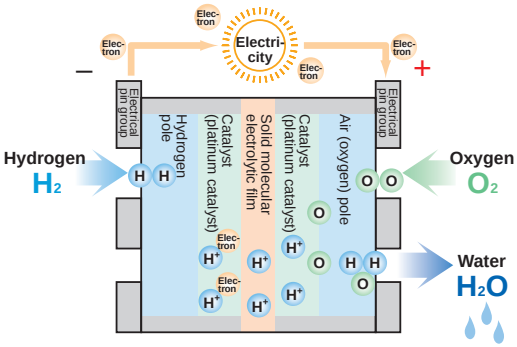
The Yokogawa Group has continued to provide useful solutions to all sectors of industry. It is now focusing on the future of non-fossil fuels.

WT1600FC Impedance Meter

Given the concerns about global warming and the exhaustion of fossil fuels, the full-scale development of fuel cells has become a pressing issue. Fuel cells are an ideal technology as they generate electricity and heat by means of a chemical reaction between hydrogen and oxygen that emits only water. Yet, there still remain a number of major issues including longer service life, environmental resistance performance, and low cost. Driven by this demand, the Yokogawa Group has developed a device for measuring the internal impedance of fuel cells that is indispensable for improving their performance, and has started supplying it to fuel cell developers and manufacturers. Internal impedance must be measured to analyze internal loss, which occurs when current flows out of a fuel cell. This is measured by substituting the loss with an equivalent impedance or resistance. Measurement of internal impedance in this way helps reduce internal loss and maximize the energy efficiency of the fuel cell. We developed the WT1600FC by integrating oscillator and impedance measurement functions into the high-precision, wide bandwidth, and wide range WT1600 digital power meter. Consequently, the internal impedance of low- and high-capacity fuel cells can now be measured efficiently and with high precision.

Long-range Market Development

The WT1600FC is a tool in the technical development of fuel cells. Although fuel cells are gaining attention as a possible effective energy supply source for the future, this does not necessarily mean that they are immediately practical. We must at all costs succeed in the practical application of fuel cells so that the global environment can be made sustainable. Yet, it will take time for the fuel cell market to become fully established for a variety of reasons including the need to improve the performance of the fuel cells themselves, achieve lower pricing of fuel cell vehicles, and set up infrastructure. The Yokogawa Group provides developer manufacturers with development support tools such as the WT1600FC impedance meter in the hope that it will contribute to global environmental conservation.



How the Solid Molecular Fuel Cell Works

INTERVIEW

This is a Completely New Technology Field This Inspires Me All the More to Achieve Something

WT1600FC

It was in 2001 that we got down to the task of developing the WT1600FC. My specialty was power measurement and I volunteered for this development project because I wanted to find new applications for power measurement and take on a new technology challenge.

After we completed the basic design, going out and meeting people became the core of my work. As the evaluation of fuel cells was a completely unknown area to me, I took the product to fuel cell developer manufacturers and got down to actual measurement together with the customer on a daily basis as part of my sales activities.

When customers showed their satisfaction, this stimulated my enthusiasm all the more. Even now, the vivid recollection of having helped our customers is a major source of encouragement for me.

Interview with **MASAHIRO KAZUMI**

Development Center II, Communications and Measurement Business Headquarters **Masahiro Kazumi**

Xancia - A New Product That Will Open up a New Clean Energy Market

A new product, Xancia, facilitates the use of natural power sources and reduces energy consumption, and has opened up an immense new market.

Xancia - A Controller for the Non-FA Market

In fiscal year 2004, the Xancia compact controller has sold steadily. Xancia was developed specifically for the non-FA (factory automation) market and uses lead-free solder technology, as was reported in last year's environmental report. "Non-FA" refers to neither the FA nor the consumer market, and includes, for example, automatic equipment such as vending and fare adjustment machines, ITS, and compact wind power generators.

The Xancia controller is compact and fits in the palm of your hand. Yet, in spite of its size, this all-in-one controller achieves IT functions comparable to those of a PC, and has the control functions and high reliability that Yokogawa is well-known for. What's more, it is the world's first general-purpose controller with the IPv6 Ready logo, which means that it can be used safely in the IPv6 environments that are in the process of gaining acceptance.

Contributing to New-generation Environmental Solutions

Xancia is an environmentally friendly product. It is compact, consumes little power, uses lead-free solder, and has a product design life of ten years. Amid the mounting concern about the environment accompanying the effectuation of the Kyoto Protocol, Xancia is being adopted in equipment, such as compact wind power generators, that use natural energy as a solution to concerns over global warming caused by increased CO_2 emissions as well as other global issues.

For example, Xancia is being used as a windmill controller in a compact wind power generation system manufactured by the NIKKO COMPANY in Ishikawa Prefecture. Xancia functions as a Web server that outputs data on the number of kilowatts produced so that power generation can be monitored and blade pitch controlled. In this example, an average wind speed of 4 m/second can generate 4,200kW of electrical power in one year, enough to power a single household for that period. If you estimate the environmental conservation effect of this based on the CO_2 absorption capabilities of woodlands, this is equivalent to a woodland area of about 0.77 hectares. We look forward to hearing of other practical applications that help our customers generate clean energy and provide other clean energy services, and believe that demand for such environmental solutions will increase in years to come.

INTERVIEW

The Dream of Opening up a New Market Takes Shape in Clean Energy

Xancia

Approved for IPv6 Ready logo

After having spent nearly ten years in engineering development, I transferred to sales, and then returned to development. The first project that I got involved in was the planning of a new product that would open up a new market.

Everyone who worked on Xancia in the planning, development, production, and sales stages saw this as a new-concept, enhanced-specification product that could meet the needs of the non-FA market. With this product, development proceeded as planned from the planning stage, which made us feel a sense of accomplishment. I would like to offer my heartfelt thanks to those customers that aided us in the practical application of clean energy.

Interview with **AKIHITO SUDO**

Product Marketing Dept. Manager, Network-based Control Systems Departmentof the Open Control Solutions Division, Industrial Automation Business Headquarters

Akihito Sudo

Following in the Footsteps of the YMF Kofu Plant, Green Production Line Improvement Activities are Under Way at the YMF Komine Plant

In fiscal year 2004, the YMF Komine Plant followed YMF Kofu Plant's lead and started improvement activities on its casing paint line and LSI tester mounting line.

Green Production Line Improvement Guidelines

The Green Production Line Improvement Guidelines established in 2002 promote improvements that will reduce the environmental impact of production lines.
They are now being implemented as part of Yokogawa's production site improvement activities, together with the New Yokogawa Productivity System (NYPS) that has been in place since 1981.

Improvement Efforts at the YMF Komine Plant

In fiscal year 2004, the YMF Komine Plant got down to the task of improving its production lines for the first time, in accordance with the Green Production Line Improvement Guidelines. On a trial basis, it tackled the challenge of reducing xylene usage on its casing paint line and reducing lead usage on its LSI tester mounting line.

The total annual amount of xylene in the paint used on the casing paint line is on average 2,124 kg. For this line, the plant planned to reduce the amount of xylene used by 184 kg. By switching over to a different paint type having a lower xylene content, they managed to exceed the planned target and reduce xylene usage by 257 kg.

On the LSI tester mounting line, they were only able to achieve a slight reduction in the amount of lead in spite of making extensive efforts. This was because the remaining cream solder, even if not used, had to be disposed of for quality control reasons as it inevitably became unstable after its container was opened due to evaporation of the flux component used in the solder and oxidization of the solder. As a result of these efforts, however, they were able to eliminate one type of solder and reduce costs by about 470,000 yen.

From here on, it is the YMF Komine Plant's policy to apply the results they have gained from attempts so far to successively expand green production line improvement activities.

Activities at YMF Kofu Plant

Following on from fiscal year 2003, the YMF Kofu Plant continued to implement green production line improvement activities.

For example, Manufacturing Department I started reusing waste silicone oil. This resulted in an 11% reduction of silicone oil use from 585 liters to 522 liters.

Manufacturing Department III reduced the amount of hazardous substances at work sites. As part of these efforts, they switched from isopropylalcohol (IPA) to NS Clean 200, a low-hazard product, thereby reducing IPA usage by 400 liters in fiscal year 2004.

The YMF Kofu Plant will continue improvement activities with a view to creating environmentally friendly production lines.

YMF Komine Plant


Paint Line at YMF Komine Plant

Reducing the Yokogawa Group's CO_2 Emissions

The Group is making efforts to prevent global warming through various initiatives that aim to achieve the goals of the Kyoto Protocol.

Effectuation of the Kyoto Protocol

On February 16, 2005, the Kyoto Protocol came into force. To cut emissions of CO_2 and other greenhouse gases, this protocol was adopted by the Conference of Parties III (COP3) at the conference on climate change that was held in Kyoto in December 1997. For the period 2008 to 2012, industrialized countries are committed to an overall 5.2% reduction of emissions of greenhouse gases from the 1990 levels. Japan is obligated to achieve a 6% reduction. The Kyoto Protocol can be said to be a system that employs market principles as it incorporates the joint implementation of a Clean Development Mechanism (CDM) and the trading of carbon emission credits. The Kyoto Protocol will stimulate activities worldwide to suppress CO_2 and other greenhouse gas emissions with the aim of preventing global warming.

Various Initiatives for Preventing Global Warming

The Yokogawa Group was engaged in various activities to prevent global warming even before the Kyoto Protocol was put into action. For example, in 1998, the Yokogawa headquarters/plant installed an absorption freezer and two cogeneration systems with a maximum output of 585 kilowatts each as part of its commitment to cutting plant CO_2 emissions. In the same year, it installed a maximum output 16.7 kW solar power generation system, the first attempt of its kind in the Group. Then, in 2000, a large-scale review of the control circuitry of the Yokogawa headquarters/plant was conducted to achieve optimized operation of its clean rooms, and green production was promoted in its production lines. The Group has also started an upgrade to high-efficiency compressors to increase the heat-conversion efficiency of its boilers.

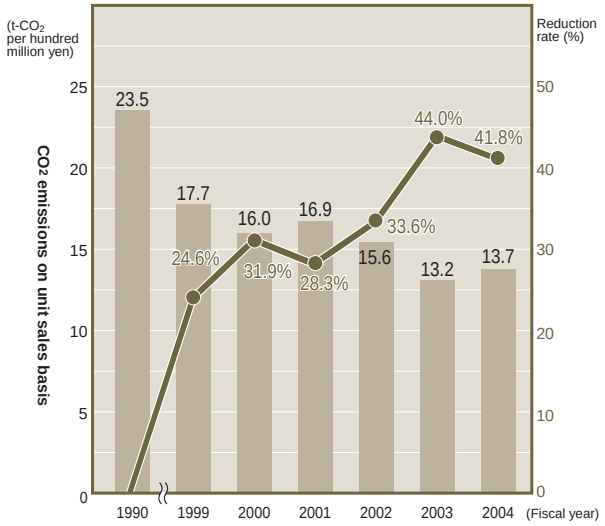
Activities in Fiscal Year 2004

The Yokogawa Group continued to promote activities to prevent global warming in fiscal year 2004. While constructing some building extensions, the YMF Kofu Plant installed InfoEnergy, an energy conservation support system. In a first for the Group, this plant conducted an energy management survey. As a result of this survey, this plant was designated a Class I type plant.

In offices, too, various energy-saving measures are being implemented; during lunch breaks, employees make it a point to turn lighting and personal computers off; in the new main building at Yokogawa headquarters, timers are set to turn off all lights at 8 pm; and efforts are being made to use inverters and other energy-saving devices for lights and other facilities.

In fiscal year 2004, the Group's CO_2 emissions on a unit sales basis were 13.7 t-CO_2 per hundred million yen (total amount: 51,440 t-CO_2), a 41.8% decrease compared to fiscal year 1990. In this and other ways, all of the companies in the Group will continue their efforts to achieve the goals established in the Kyoto Protocol.

CO_2 Emissions on Unit Sales Basis and Reduction Rates (compared to fiscal year 1990)



Co-generation System

The YMF Kofu Plant Leads the Yokogawa Group in Reducing Use of Toluene and Xylene

The YMF Kofu Plant has jointly developed with a vendor a new paint that contains considerably lower amounts of toluene and xylene. In fiscal year 2004, the plant changed over and began to deploy its paint and cleaning solution lines.

Background to Toluene and Xylene Reductions

Toluene and xylene are contained in large amounts in paint adhesives and paint thinner, which is used as a cleaning solution by painting facilities. Corporations are obligated to report on how much of these substances is discharged to the air or transferred as waste matter in accordance with the Pollutant Release and Transfer Register law (PRTR law).

Up till now, the Group has used large amounts of polyester resin paints containing these two substances. Like other manufacturers, this was because there was no other alternative paint type that could provide excellent quality. Nevertheless, as it became common knowledge that toluene and xylene adversely affect the human body, the Group decided to reduce usage of these two substances from as early a stage as possible. For this reason, Yokogawa's Manufacturing Engineering Division had been looking for a long time for a paint manufacturer that would be willing to develop a low-toluene/low-xylene paint and cleaning solution.

Collaboration with a Paint Manufacturer

The search for an appropriate company was extremely difficult. Yet, the Manufacturing Engineering Division managed to find a paint manufacturer with a pioneering spirit – Taiho Paint Co., Ltd. – which understood Yokogawa's commitment to the environment and was willing to cooperate in development.

Collaboration began between the two organizations in this way, and this led to the creation of a promising new product in the fall of 2003 that is capable of reducing the amount of toluene and xylene used by 10%.

Use of Low-Toluene/Low-Xylene Polyester Paint Started

Just because we were able to reduce the amount of two substances by 1/10 did not necessarily mean that we could immediately switch over our paints and cleaning solutions. The problems were diverse. Could good paint quality be maintained over a long time? What was paint supply performance like? Was it cost effective? And, what about the technical problems of adjustments? Also, the painting method must be optimized according to the environment in which the final product is to be used. After several testing times and preparations for switching over to a new paint line, the YMF Kofu Plant started use of low-toluene/low-xylene polyester paint and cleaning solution on February 9, 2005. For the time being it has installed these lines for frequently used paint colors, and will gradually shift over to other colors.

Paint Line in YMF Kofu Plant

Sprayer for Low-Toluene/Low-Xylene Polyester Paint

Soil and Water Studies Thoroughly Implemented for All Chemical Substances Used at Former Production Sites

The Yokogawa Group has been conducting soil and water studies at former production sites in accordance with proprietary control standards and adopted practices required under the Soil Contamination Control Law before this was enacted in 2003.

Yokogawa's Corporate Accountability for Conserving Soil and Water

During a two-year period starting in fiscal year 2002, the Group reorganized its Japanese production system and closed 15 production sites. Before starting this reorganization, however, the Group had already established its own proprietary soil and water management system. In accordance with this system, it looked into whether any pollutants covered by studies were present in the soil and water of the production sites that were to be closed. If any pollutants were found, the group implemented the required cleaning measures. The table below shows the current status of soil studies conducted in the Group.

Report on Former Sites Requiring Soil Cleaning

Of the 15 closed plants, three plants – YMF Matsukawa, YMF Koriyama, and YMF Mie – were using designed equipment for designated toxic substances as specified by the Soil Contamination Control Law enacted in February 2003. A study of the soil at the site of the YMF Matsukawa Plant that was conducted in compliance with this law showed that the amount of residual substances was within the level allowed by the standard. However, as a result of a self-directed study, dioxins were discovered at the site of an incinerator that had been demolished before the enactment of the Law Relating to Special Measures for Dioxins. Industrial waste containing dioxin was excavated and removed in February 2005, and the appropriate measures were taken in line with the Waste Management and Public Cleansing Law.

A study in accordance with the Soil Contamination Control Law was also performed at the YMF Koriyama Plant, and no dichloromethane, a pollutant covered by the study, was found. However, as a result of a self-directed study covering a wider range of pollutants, two substances – tetrachloroethylene and 1-1-dichloroethylene – were found in the soil and water that exceeded the standard's maximum values. Accordingly, we built a purification plant at the site and the soil was cleaned over a three-month period starting in August 2004.

On the other hand, at the YMF Mie Plant, as the removal of facilities has not yet been completed, studies in compliance with the Soil Contamination Control Law and self-directed studies will be considered in fiscal year 2005.

Pollution prevention measures were taken at the former site of the YMF Moroyama Plant, where trichloroethylene contamination was found in the soil and ground water as a result of a self-study conducted in May 2002, before the enactment of the Soil Contamination Control Law. Iron powder was spread over the soil and mixed in to improve soil quality, and then ground water was continuously pumped up to aerate it. As a result of these measures, the trichloroethylene concentration had fallen to 0.2 mg per liter by March 2005. Work at this site will continue until the trichloroethylene concentration reaches 0.03 mg per liter, the environmental standard value for trichloroethylene in soil and groundwater.

Yokogawa Group Soil Studies

Location	Type of study	Pollutants covered by study	Study status	Completion report submitted to government
YMF Ashikaga Plant	Self-directed study	Type 1 designated toxic substances (11), Type 2 designated toxic substances (9), dioxin, oil	Within level allowed by standard	Yes
YMF Daian Plant	Self-directed study		Within level allowed by standard	Yes
YMF Sakaigawa Plant	Self-directed study		Within level allowed by standard	Yes
Yokogawa Electric Hachioji Plant	Self-directed study		Trichloroethylene level exceeded maximum value of standard. Cleaning implemented	Yes
YMF Koriyama Plant	Soil Contamination Control Law		A secondary study showed that tetrachloroethylene and 1-1-dichloroethylene exceeded the maximum values of the standard inside the site. Cleaning of soil and groundwater completed.	Yes
YMF Haramachi Plant	Self-directed study		Detailed study of Type 1 and Type 2 substances in progress	–
YMF Moroyama Plant	Self-directed study (before enactment of Soil Contamination Control Law)		Pumping and aeration of ground water currently being continued	–
Ando Electric Kosai Site	Soil Contamination Control Law		Within level allowed by standard	Yes
YMF Matsukawa Plant	Soil Contamination Control Law		Dioxin detected from landfill waste substances. Excavated and disposed of as industrial waste.	Yes
YMF Mie Plant	Soil Contamination Control Law	Scheduled to be implemented in fiscal year 2005		

Reducing Emissions of Chemical Substances Through Careful Management

The Yokogawa Group is making efforts on an ongoing basis to reduce emissions of toxic chemical substances based on a system for assessing and managing the amounts of such substances.

Toxic Chemical Substance Management System

The reduction of toxic chemical substances is being promoted globally to help build a sustainable society. In particular, the Waste Electrical and Electronic Equipment (WEEE) directive and the Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) directive, both of which were issued by the EU, must be complied with.

For the past twenty years, Yokogawa has developed and built up an in-house product data management (PDM) system. Making full use of this PDM system, we have aimed to establish a system that minimizes the burden on designers and produces maximum results.

As a result, Yokogawa initiated a project in April 2004 and managed, in the short space of about six months, to complete a system capable of calculating the amount of toxic chemical substances in the parts appearing in parts lists.

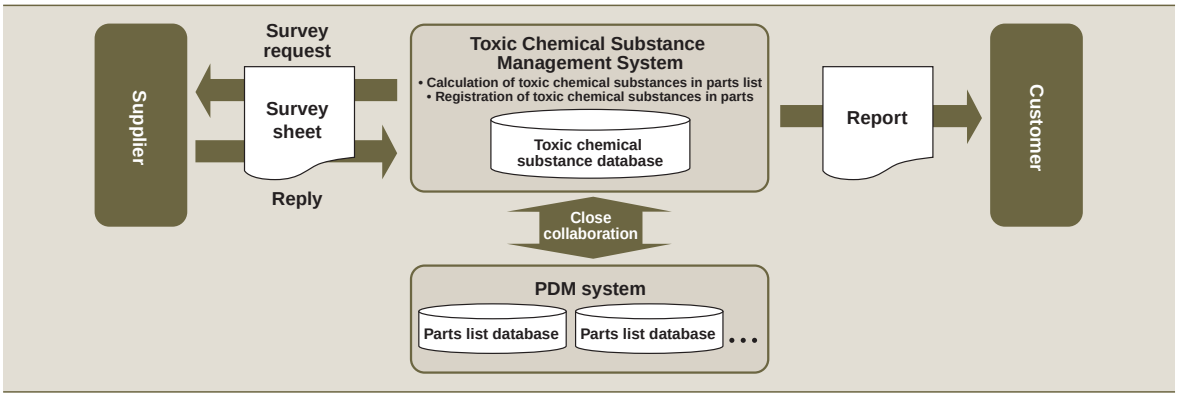
Yokogawa will enhance support functions for the registration of data on toxic chemical substances in parts with the intention of providing stronger links with the PDM system.

Substances Covered by PRTR

The following table presents Yokogawa's usage amounts for substances designated for reporting by the PRTR law*1 (usage amounts of 1 ton or more per year).

***1 PRTR law:** Abbreviation for Pollutant Release and Transfer Register. This law was established to prevent environmental pollution from chemical substances and to encourage self-directed improvements to chemical substance management by chemical substance-handling enterprises, through the disclosure of the emission of toxic chemical substances into the environment. Under the PRTR law, chemical substances throughout the company are managed through disclosure of emissions data and other information.

Toxic Chemical Substance Management System (Image)



Fiscal Year 2004 PRTR Data

Plant	Substance	Amount used (kg)	Amount emitted (kg)				Amount transferred (kg)	
			Air	Public water areas	Soil	Landfills	Sewage system	Outside plants
YMF Komine Plant	Xylene	2,700	1,700	0	0	0	0	1,000
	Toluene	1,920	1,200	0	0	0	0	720
	Cyanide	1,100	0	0	0	0	0	1,100
YMF Kofu Plant	Xylene	3,140	2,820	0	0	0	0	320
	Toluene	3,847	3,420	0	0	0	0	427
YMF Ome Plant	Formaldehyde	11,450	5,500	0	0	0	110	780
	Water-soluble copper salts	21,830	0	0	0	0	24	3,000
YMF Komagane Plant	Hydrogen fluoride and water-soluble copper salts thereof	1,580	0	180	0	0	0	1,400
Yokogawa Denshikiki Co., Ltd., Hadano Plant	Nitrilotriacetic acid	25,388	0	0	0	0	0	0

Eliminating Toxic Chemical Substances in Products and Production Processes

The Yokogawa Group has taken a proactive approach to eliminating toxic chemical substances.
In fiscal year 2004, it established a technology for eliminating hexavalent chromium and cyanogen, and deployed lead-free soldering technology.

Establishment of a Substitute Technology for Eliminating Hexavalent Chromium and Cyanogen

The RoHS (Restriction of Hazardous Substances in Electrical and Electronic Equipment) directive, which was put into effect in February 2003, specifies six substances that must not be in electrical and electronic equipment that is to be put on sale in the EU market from July 1, 2006, onwards. Carcinogenic hexavalent chromium and lead are included in these six substances, and the Yokogawa Group had been targeting these for elimination since an early stage. However, it has not been that easy a task to remove these substances from the manufacturing system. The Group finally managed to establish alternate technologies that would allow the transition away from these two substances for two reasons. Technology developed by materials manufacturers matured and was improved, and possible candidate technologies were found after an extensive search.

Hexavalent chromium is used in surface treatment processes for iron and aluminum underlayer parts mainly to prevent coatings from rusting. We looked for an alternative substance that could be substituted for hexavalent chromium in the rust-proofing process. As a result, we found that trivalent chromium demonstrated satisfying rust-inhibiting properties as a substitute substance, and enabled rust-proofing without having to use hexavalent chromium.

Cyanogen, too, which has the risk of igniting or exploding, and generating toxic gas when mixed with acids, is one of the substances that the Group has wanted to eliminate. This time, concurrent with the switchover from hexavalent chromium to trivalent chromium, the Group has managed to establish an alternative plating technology for cyanogen that had previously been used in the zinc-plating process and nickel-plating pre-processes.

As a result of this, the Group succeeded in establishing a hexavalent chromium-free technology in rust-proofing treatment processes and a cyanogen-free technology in plating processes.

Deployment of Lead-free Soldering Technology at Production Sites

Accompanying the establishment of lead-free soldering technology, we started upgrading production sites and promoting the application of this technology to similar Group products. However, a lot of the existing facilities cannot handle this solder as the melting point of lead-free solder is higher than that of conventional lead eutectic crystal solder. In anticipation of the production of lead-free solder products, the YMF Kofu Plant has built a line exclusively for lead-free products, installed a reflow furnace capable of adapting to the lead-free solder profile, remodeled the flow baths to ensure optimum soldering, and installed dedicated soldering irons. They have also set up lectures and various other programs for teaching manual soldering skills and techniques for lead-free solder, which is more difficult to work with than lead eutectic crystal solder, and is upgrading the production lines to meet more exacting conditions in other ways, too.

INTERVIEW

It's Been Tough Up Till Now. It'll Get Even Tougher From Now On

Yokogawa's technical field of expertise is measurement, control, and information. The elimination of hexavalent chromium and cyanogen from the manufacturing system has been a challenge for the Group as it depends entirely on the chemicals that are used for surface treatment.

Fortunately, a substitute technology has been developed. However, there have been various problems deploying this at manufacturing facilities.

Since all of our products for the EU must comply with the RoHS directive by July 2006, if anything, it's going to get tougher from here on.

Interview with **SHIGEO SAITO**
Manufacturing Engineering Development Department, Design to Cost Engineering Division, Target Costing Headquarters
Shigeo Saito

Promoting Zero Emission Activities in Business Areas

Everyone in the Yokogawa Group is committed to achieving the goal of zero emissions.

The Challenge of Zero Emissions

The processes for manufacturing measuring and control instruments consist of numerous steps, and consume a variety of raw materials and forms of energy. For this reason, environmental problems such as air, water, soil pollution, and waste treatment cannot be avoided. Through all of its operations, the Group strives to promote recycling and effectively use resources, and to achieve the goal of zero emissions.

The Group defines zero emissions as reclaiming and reusing 99% of the total mount of waste generated, and this is the goal that the Group is continually working towards attaining.

The Group currently has achieved zero emissions at some but not all of its sites, and will be adopting positive recycling initiatives to reduce waste in line with the table shown below.

Results for Fiscal Year 2004

In fiscal year 2004, the Yokogawa Group got down to the task of achieving the goals set for reducing the amount of emissions. As a result, the waste emission reduction rate on a unit sales basis was 0.22 tons per hundred million yen (total amount of emissions: 839 tons), a reduction of 86.7% compared to fiscal year 1995.

Specific initiatives included the reuse of unwanted office furniture in other workplaces, the transition from wood to cardboard in imported product packaging, and a campaign to return unsolicited direct mail back to the sender. For purchased products, we revised contracts so that packages contained only the required goods, and partially instituted a system of returning packing materials once a product is delivered.

Waste Food Oil Used in Commuter Bus

Since April of fiscal year 2004, the YMF Kofu Plant has introduced the use of bio diesel fuel (BDF) on the commuter bus that runs between the Kofu station and the plant. The bus has already clocked about 12,000 km to date. The canteen at the Kofu Plant generates 200 liters of waste oil on average per month. This oil is converted to fuel at a BDF plant, and helps contribute to recycling as reusable fuel. BDF has been authorized for use in accordance with Yamanashi Prefecture's recycle authorization system, and is an environmentally friendly fuel as its gas emissions contain almost no SOx.

Resource Recycling

Ever since the Yokogawa headquarters/plant opened its Recycling Center for treating waste products in 2000, it has been carefully sorting materials after they have been broken down. In fiscal year 2004, the Group has further increased its metal collection efforts, sorting metal by type. As a result, it has expanded the scope of its resource recycling activities.

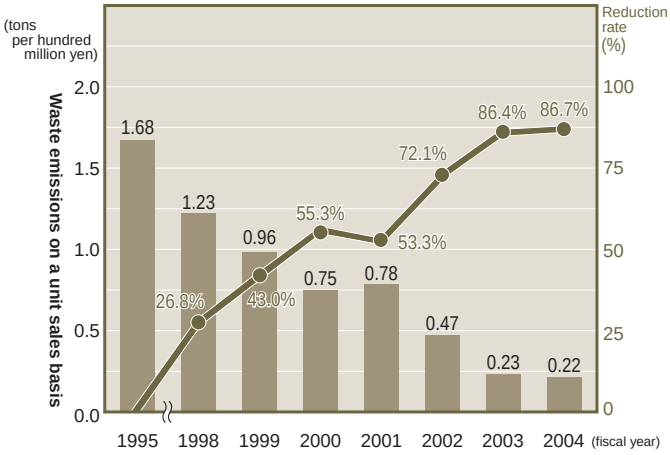
Kokusai Chart Corporation also has set up a collection and recycling system for waste recording paper. Moreover, it has succeeded in mixing in waste paper that was regarded as difficult to recycle to make eco-chart recording paper.

Yokogawa Group's Definition of Zero Emissions

Category		Process	Legal (Japan)	Types of Waste
Total amount of waste generated	Amount of waste recycled	Recycling	General refuse	Paper, packing materials, cardboard, etc.
				Domestic garbage, packing materials, wood cuttings
			Industrial waste	Metals
				Manufacturing debris (metal, paper, plastic, solvents, oil, etc.)
				Glass, concrete and other incombustibles
			Specially controlled refuse	Toxic substances (mercury, solder debris)
		Chemical treatment fluid waste (volume reduction)	Industrial waste / specially controlled refuse	Wastewater detoxified by subcontractors for (except detoxification at Yokogawa facilities)
	Amount of waste emissions	Refuse for incineration	General refuse	Domestic garbage (cigarette buttes, food waste, mixed papers, fallen leaves, etc.)
				Packing materials, debris containing wood cuttings, etc.
			Specially controlled refuse	Fats and fatty oils (waste oil, paint, ink), infectious refuse
		Refuse for landfills	Industrial waste	Debris containing metal, plastic, etc.
			Specially controlled refuse	Waste asbestos

•The remaining 1% is waste that would pose a significant burden on the environment if recycled, or would be difficult to recycle. Examples include infectious refuse, refuse which is difficult to sanitize, asbestos, and fluorescent lights.
•Waste that can be turned into fuel, used to generate power, or recycled as incineration ash is considered part of recycled waste.
*Temporarily stored polychlorinated biphenyl (PCB) equipment is counted as part of waste emissions when it is detoxified.

Waste Emissions on a Unit Sales Basis and Reduction Rate (compared to fiscal year 1995)



Pursuing Higher Efficiency and Reducing Environmental Impact of Global Logistics

The Yokogawa Group is committed to reducing the environmental impact and improving the efficiency of its logistics that link customers throughout the world, production sites (four factories in Japan and ten factories overseas), and numerous sales companies.

Global Logistics Linking an Increasing Number of Sites

For quite some time now, the Group has been supplying products to customers around the world. In recent years, the Group's production bases outside Japan have been reorganized, and there are now ten factories in seven countries producing an increased number of models. Consequently, the Group has had to improve distribution between these production bases and sales companies to quickly supply customers with products, and reduce the environmental load that increases in proportion to the distribution volume. To address this, the Group is now engaged in the following activities.

Quicker Supply / Reduction of CO_2 Emissions by Shipping Directly to Customers

Since May 2004, the recorders and flowmeters that are supplied to Japan from Yokogawa Electric China Co., Ltd. have been shipped directly to customers using the integrated air-land transport of Federal Express (FedEx), with which the Yokogawa Group has made a collaborative agreement. For example, direct shipment to Tokyo takes just 20 hours, a reduction of 48 hours compared to conventional relay delivery by multiple operators. This is a major saving in time for the customer. Also, as products do not pass through domestic dispatch centers, trucks travel a shorter distance, producing a 7% reduction in CO_2 emissions compared with the previous year.

Wood-free Simple Packaging and Resource Savings

Since fiscal year 2004, the Yokogawa Group has been shifting over to simpler packaging, doing away with wood in its product packaging, so that it can rely exclusively on transport in aircraft and avoid combined shipment with other products. With this simple packaging, the film-wrapped product is protected by reinforced cardboard that can be easily removed by the customer after the product is delivered. This saves the customer considerable time and effort, and at the same time eliminates the cost of commissioning a waste disposal specialist to collect and remove the waste materials.

During fiscal year 2004, the Group applied this simple packaging, for example, to cabinets and flat desks for distributed control systems (DCS) that are being shipped from Singapore, and to recorders, flowmeters and other devices from China. By eliminating wood in the packaging, we were able in fiscal year 2004 to reduce the total weight of the packaging by 300 tons, to roughly 1,500 tons.

Using Returnable Tote Boxes for Dealings with Purchasers

Yokogawa Trading Corporation is promoting the use of returnable tote boxes for the delivery of parts from its suppliers. This system was already in place at seven of its suppliers, and adoption of this system was further encouraged at three other suppliers in fiscal year 2004.

Simply Packaged DCS Cabinet

Flat desk – cardboard packaging (left), wooden packaging (right)

Continual Focus on Business Ethics for All Yokogawa Employees and Stakeholders

In an increasingly complex society and an age of diversifying values, the Yokogawa Group believes that a heightened awareness of business ethics is becoming more and more important, and is adopting actual measures to address this issue.

BERC Award for Effort in Business Ethics - Special Harmony Award

On November 5, 2004, Yokogawa was awarded the Second Award for Effort in Business Ethics - Special Harmony Award by the Business Ethics Research Center (BERC).

BERC is the only organization in Japan specializing in the field of business ethics and it was established in 1997 to support the business community. It established a Business Ethics Effort Award in 2002 to recognize member corporations that are making positive efforts to formulate and practically apply business ethics. At the second presentation of this award, a total of seven corporations received awards in four categories after a strict screening.

We feel that Yokogawa received this prestigious award for a number of reasons. These include our being a profitable company with sound management, our proactive and continual efforts to fix in place and practically apply business ethics, our implementation of community aid activities in Japan such as zero-garbage day station front cleanups and an effort to clean tap water from the Tamagawa Waterworks and its surrounding environment, our hiring of the disabled that goes beyond legally mandated hiring rates and establishment of a mechanism for supporting the job search efforts of the retired, and our commitment to corporate social responsibility (CSR).

At the awards ceremony held at the Tokyo Prince Hotel, Kiyoaki Okino, Vice President of Environmental Management and Head of the Audit & Compliance Headquarters, accepted the award on behalf of Yokogawa.

Business Ethics Campaign Initiative

In fiscal year 2004, the 2nd Business Ethics Campaign was organized by the Corporate Ethics Committee and held over a two week period in October. The campaign targeted all personnel at all levels of the Group's organization for the purpose of heightening their awareness of business ethics. The following outlines the activities conducted during this period.

(1) Compliance education by e-learning

We promoted a course on compliance, mandatory for all Group employees in Japan, that was provided on the Group's Intranet. In particular, to further understanding of compliance, e-tests for line managers were held until all test recipients in the education session passed.

(2) Business ethics lecture

Professor Takayoshi Sugawara of Keio University was invited to give a lecture on business ethics. The attendance of many directors, managers, and highly interested employees made this highly informative lecture a resounding success.

(3) Receipt of Standards of Business Conduct Pledges

As part of the 2nd Business Ethics Campaign, the Group companies in Japan reaffirmed their employees' thorough awareness of the Group's Standards of Business Conduct and received pledges from their employees that they would comply with these standards.

(4) Distribution of business ethics poster

A corporate ethics poster on the theme of "Good corporate citizens, you protect society and the company" was distributed to Yokogawa and the Group companies in Japan.

BERC Award Ceremony

Business Ethics Poster

Efforts Devoted to Disaster Measures and Top Priority Given to Fulfilling Our Social Responsibility by Ensuring Safety

The Group believes that its mission as a trustworthy corporate entity is to ensure the safety of its customers, stockholders, the community, employees, and all other related people.

Group-wide Commitment to Safety

The Group conducts various activities that show its commitment to the safety of its customers, stockholders, local community, and employees, thereby enhancing the Group's value. The following outlines this approach.

The Group operates ten production plants in seven countries other than Japan. To ensure safety in a variety of cultures and societies, we must consider what mechanisms are most effective in each environment. At production sites in Japan, too, not everyone shares the same set of values. We must take care to ensure that everyone exercises good common sense in performing their duties to maintain an even more reliable system of safety management.

The Yokogawa Group is in the process of integrating security measures for preventing unauthorized access to sensitive information by outsid ers, ensuring stricter control in the removal of hazardous substances, and preparing for natural disasters such as earthquakes as well as man-made disasters caused by factors such as unfamiliarity with work procedures. It has also reviewed its existing safety system, and is implementing a number of improvement measures that include pointing out specific dangers in plants by posting hazardous substance maps, improving entry/exit management to and from sectors where hazardous substances are located, systematically carrying out safety patrols, and third-party monitoring of safety initiatives at plants.

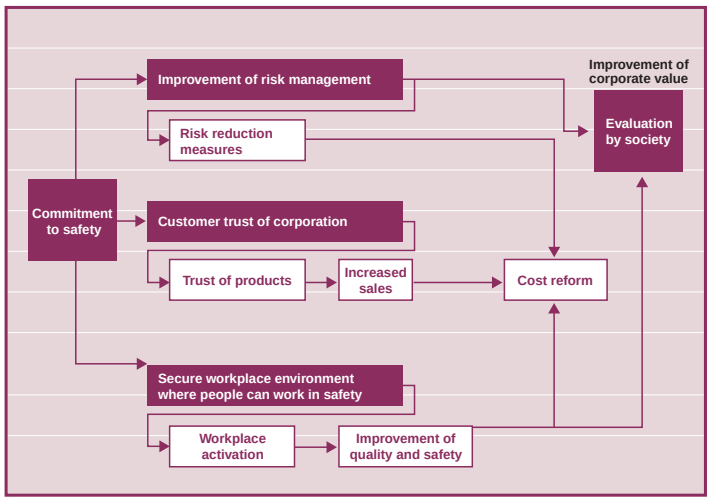
AOM Zero Initiatives

Production sites in the Group are currently promoting accident on manufacturing (AOM) zero initiatives intended to totally eliminate accidents at manufacturing sites. The Group has interpreted this more broadly than in the work-related disaster statistics (disasters requiring site shutdown of four days or more) provided by the Japan Ministry of Health, Labor and Welfare, including even minor zero-shutdown accidents in its definition of "disaster." In fiscal year 2004, sites have started tackling issues that include the adoption of measures for preventing the recurrence of disasters that have occurred in a department or section, the clarification of emergency response rules for when a disaster occurs, the gathering of information from employees at the worksite and improved communication based on that information, and safety training.

Environmental Emergency Drill Conducted at Suzhou Yokogawa Meter Company

In accordance with the Environmental Safety Emergency Measure Guidelines, on November 19, 2004, the Suzhou Yokogawa Meter Company in China conducted an emergency drill that simulated a fire in a liquefied gas warehouse. The purpose of this exercise was to minimize the initial disaster in the event of a real fire. They were able to verify the anticipated effect of their efforts, and in the review meeting held afterwards, the president commented that it is important to work to make safety their top priority and make further improvements to become better prepared.

Three Approaches for Linking Commitment to Safety with Improvement of Corporate Value



Suzhou Yokogawa Meter Company

A Variety of Programs That Improve Employee Satisfaction

The Yokogawa Group is promoting the creation of a workplace environment where employees can go about their daily tasks in comfort and at ease.

Employee Development

The Group provides programs aimed at personal development as well as development of basic business skills in keeping with its human resource development policy. The on-demand e-learning education program was started in Japan in fiscal year 2004, and includes compliance education outlined on page 30 and education on security and the protection of personal information.

In the area of environmental education, Yokogawa distributes environmental management reports every year to each Group company in Japan to increase awareness. It has also conducted an overall review of environmental conservation education materials that are used for group introductory education, and has switched over from videos to a lecture format.

The Yokogawa headquarters/plant issued environment e-mail news every month in fiscal year 2004 to inform employees of the latest environment-related information. In addition, the YMF Kofu Plant held a lecture on "Stars and the Environment" in June.

Hiring Measures

(1) Employing the disabled

As part of its basic personnel management philosophy, Yokogawa has adopted a policy of true equality, providing equal opportunities and recognition regardless of conditions such as age, sex, academic background, nationality, or disability. At the end of fiscal year 2004, Yokogawa had achieved the legally mandated 1.8% hiring rate for the disabled in ten companies in Japan. Going forward, Yokogawa will continue to provide employment opportunities to the disabled.

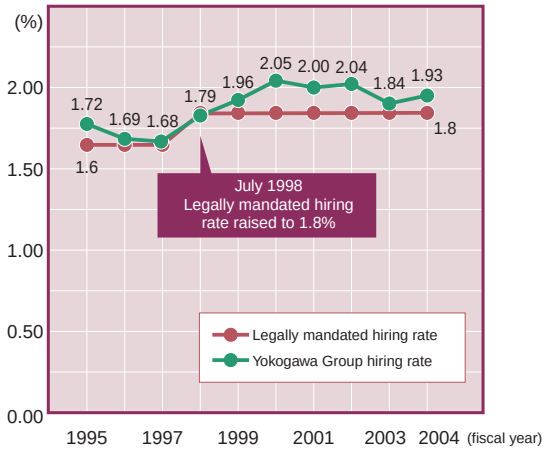
(2) Supporting the job search efforts of retired persons

Yokogawa also strives to help the job search efforts of retired persons past the age of 60 who are eager to work and are physically capable of continued employment. A human resources company in the Group in Japan provides employment opportunities both inside and outside the Group, supporting the retired in their efforts to find work.

Workplace Safety and Hygiene

At the Yokogawa headquarters plant, a Safety Committee Conference is held monthly to ensure the safety and health of workers, and to aid the formation of amenable workplace environments. At the beginning of the fiscal year, the yearly action plan establishes monthly goals, and points out problem areas in safety and hygiene that have been identified during in-plant tours. This conference conducts activities in which both labor and management can be resourceful in finding solutions to problems. The table below summarizes labor-related accidents at the Yokogawa headquarters in fiscal year 2004.

Disabled Hiring for the Past Ten Years (data as of June 1 every year)



Work-related Accidents over Past Five Years at the Yokogawa Headquarters / Plant Year

Year	2000	2001	2002	2003	2004
Annual average number of workers (persons)	6,346	6,376	5,750	5,625	5,763
Total actual labor hours (hours)	13,075,247	12,691,373	11,263,598	11,179,692	11,381,745
4 or more days missed (persons)	1	2	2	1	1
1 to 3 days missed (persons)	1	2	1	3	2
Subtotal days missed (persons)	2	4	3	4	3
No days missed (persons)	17	17	12	15	22
Total	19	21	15	19	25
Total days missed (days)	31	158	86	43	74
Lost work days (days)	25.5	129.9	70.7	35.3	60.8
Incident rate (national average 1.77) (persons)	0.15	0.32	0.27	0.36	0.26
Strength rate (national average 0.12) (days)	0.002	0.010	0.006	0.003	0.005

Incident rate = $\frac{\text{Number of workers who missed work}}{\text{Total actual labor hours}} \times 1{,}000{,}000$ H Strength rate = $\frac{\text{Lost work days}}{\text{Total actual labor hours}} \times 1{,}000$ H

Manufacturing System and Business Organization Restructured in Japan to Promote Company-wide Quality Assurance Activities

In fiscal year 2004, the Quality Assurance Headquarters became the in-house body for promoting quality assurance activities in the Yokogawa Group, setting the stage for achieving the same quality worldwide.

Group-wide Quality Assurance Activities to Deal with New Issues

The first stage has been completed for the restructuring of the manufacturing system and business organization that was promoted in fiscal year 2003, and now the Yokogawa Group is conducting an organizational reform to optimize quality assurance activities from a global perspective. As part of this reform, the Quality Assurance Department, which formerly was part of the Management Administration Headquarters, was upgraded to Quality Assurance Headquarters in January 2005 and is directly accountable to the President and Chief Executive Officer.

To coordinate the activities of the entire Group, the Quality Assurance Headquarters absorbed and centralized personnel who have extensive experience dealing with customers and who previously had been dispersed among the service affiliates. It also reviewed the existing system to pursue quality assurance activities that have the ultimate goal of achieving the same quality worldwide.

This enabled the Quality Assurance Headquarters to visualize what issues it should be tackling. For example, when the Group was viewed as a whole, it was found that quality assurance rules were not necessarily being implemented on a unified basis, that customer satisfaction was no longer being achieved only by means of a "customer as the next process" approach, and intellectual assets were not being systematically shared. Also, as a more diverse range of employees were working at production sites, which are responsible for building outstanding quality into products, there appeared a new need for measures such as the clear indication of work instructions using photos and multiple languages.

For this reason, the core of the Quality Assurance Headquarters was divided into two departments: a Planning Department and an Audit Department. The role of the former is to see that rules are standardized and appropriate, while the role of the latter is to support improved quality assurance activities at various production sites and departments according to on-the-spot site principles. Through the collaboration of these two departments, the Group will be pursuing the triple quality assurance aims of "Quality First. Customer First. Site First."

Building a Lifecycle Solution Proposal System

In April 2004, the Yokogawa Group brought the services division of Yokogawa Engineering Services into Yokogawa to set up a system that integrated all functions from marketing through to customer service. The aim of this move was to create a system that would allow the Group to provide an integrated total solution over the entire product lifecycle. Moreover, in October, commissioning of the maintenance services of Yokogawa Engineering Services was merged with Yokogawa Field Engineering Corporation, which was in charge of instrumentation work, to establish Yokogawa Field Engineering Service.

This merger resulted in a system where sales function of installation and maintenance service activities is performed by the Yokogawa headquarters, and actual work is commissioned by the new company under the integrated control of the Group.

INTERVIEW

My Experiences in Quality Assurance in My Youth Support Me Today

I have an unforgettable experience with quality assurance. This goes back to when I entered Yokogawa and was first involved in developing system products.

One day, I had to go to a customer's plant and attend the installation test for a product that I had developed. On entering the shop floor, I saw all the lines spread out before me, and at the end of one of them was the product that I was in charge of developing. I started the test run, and after a while it suddenly stopped.

My immediate reaction was "What? Why did it stop?" and my mind went completely blank. This really shouldn't have happened, but it did. I feel that that painful experience, however, made me think more seriously about the question of quality.

Interview with **TOSHIKI OKUZUMI**

Vice President,
Quality Assurance Headquarters **Toshiki Okuzumi**

The Yokogawa Group's Active Involvement with Local Communities

The Group heeds its responsibilities to society and is actively promoting community outreach activities. The Group carried out and participated in numerous community activities in fiscal year 2004.

Fall Disaster Prevention Drill

On November 24, 2004, the Musashino Fire Department and Yokogawa headquarters jointly sponsored and conducted a fall disaster prevention drill. As this drill came soon after the Niigata Chuetsu Earthquake, we took steps to make it more realistic by not disclosing the details of the drill in advance and allowing the company's fire crew members to make decisions and take action on their own. This allowed problems and issues to come to light so that we could correct them and be doubly sure of our disaster prevention measures.

The cooperation of the Musashino Police Department also helped make this large-scale event a rounding success. Local residents joined in fire fighting drills and tried out simulators that allowed them to experience what it is like to be in an earthquake and in a room filled with heavy smoke.

In a lecture to employees held after the drill, our President and Chief Executive Officer stated, "By conducting this drill, you have realized that you are not prepared for dealing with a disaster. I urge you to immediately devise measures in order to be ready for such a situation. As you ultimately must protect yourself, preparedness must always be uppermost in your mind. Although the safety of company employees is important when a disaster occurs, it is important to use our emergency supplies to rescue those in our neighborhood. The chief of the Musashino Fire Department explained three key points about earthquake measures that were based on lessons learned in the Great Hanshin and Niigata Chuetsu earthquakes. Employees then set about resolving the problems that were pointed out, upgrading emergency facilities, and reinforcing measures for preventing disasters at production sites.

Local Crisis Management Activities Conducted in Response to Niigata Chuetsu Earthquake

October 25 - 29, 2004, Yokogawa personnel went to Niigata to provide aid to those affected by the Niigata Chuetsu Earthquake, which occurred on October 23. We visited our customers and sales representatives, and also dispatched service personnel in response to requests for aid in earthquake recovery efforts. We also delivered to our customers and to the residents of Ojiya City emergency food, water, blankets, and other provisions that had been stored at our company headquarters, and checked on the safety of university students who had been provisionally accepted to join Yokogawa after graduation.

Support for the Middle Eastern Culture Center

The Middle Eastern Culture Center in Japan (Mitaka City) resumed its public exhibits in October 2004 after discontinuing them the previous December. Yokogawa was among those announcing their support for the foundation and providing financial assistance. The Center is one of only a few research and exhibition centers in Japan specializing in the Middle East. It has an archive of about 6,000 rare artifacts and has accomplished a number of achievements in the research of ancient oriental civilizations. A variety of exhibitions are scheduled.

Listening to presentations from personnel who played active roles in Niigata Chuetsu Earthquake

Yokogawa Festival

Yokogawa Assists JSEC2004

The Japan Science and Engineering Challenge (JSEC) was first held in 2003 and is sponsored by the Asahi Shimbun newspaper. The purpose of the JSEC is to encourage and cultivate high school and vocational students who will support and be the driving force in science and technology in the future. The JSEC is calling for individual research studies in physics, chemistry, biology, and other science and technology fields from students nationwide, and will award prizes to the most outstanding applicants.

Since 2004, Yokogawa has sponsored the JSEC for the purpose of improving the value and recognition of its corporate brands, and aiding society by cultivating new talent and technological growth. As part of this sponsorship, the Group established two new prizes, the Yokogawa Award and the Yokogawa Special Award.

The calls for applicants to this year's JSEC brought in 161 studies in 15 categories including biology, physics, chemistry, and earth science. Fresh and original research was submitted by high school students on a variety of surprisingly specialized subjects including some like environmental protection that are of particular interest to us today. After a careful review of all submitted documents, prizes were awarded to 13 students.

Project HOPE Japan

The Yokogawa Group companies in Japan have continued to support Project HOPE Japan. The mission of this certified NPO is to help developing nations such as Thailand, Indonesia and Cambodia improve their healthcare system. A further purpose is that of promoting contributions to international causes such as AIDS prevention education, heart surgery for children, and health and hygiene programs for mothers and children. The NPO pursues its activities under the motto "Health for All People in the World."

Last October and November, the Group companies in Japan participated in the Hibiya International Cooperation Festival, the Musashino International Exchange Festival, and the Cambodia-Peace Message Photo Exhibition, hosting booths at these events to promote awareness of Project HOPE Japan's activities among the many visitors.

Community Outreach

The Yokogawa Group organizes and participates in a variety of events as part of its community outreach efforts. In fiscal year 2004, too, the Yokogawa headquarters/plant and other group companies made positive efforts to participate in cleanup campaigns held in different areas, and sponsored local summer festivals which were enjoyed by employees, local citizens, and customers alike. Also, the Yokogawa headquarters/plant held a disaster prevention drill in which many local citizens participated.

Appointment as Environmental Counselor

Kanji Nishimura of Yokogawa's Sourcing and Manufacturing Business Headquarters passed the Japan Ministry of the Environment's fiscal year 2004 Environmental Counselor Review. There are two "environment counselor" categories, the first being a "Citizen Class" that covers consultation and advice from citizens and civil groups, and the second being a "Business Class" that covers consultation and advice from businesses. Mr. Nishimura passed the Business Class.

Urban Cleanup Campaign

Local staff and children at Project HOPE Japan in Thailand

A Wide Range of Outreach Initiatives Intended for Environmental Communication

The Yokogawa Group promotes various communication activities including publication of its Environmental Management Report. It also gathers and feeds back information to its own activities.

Environmental Reporting Activities

Since 1999, the annual environmental report has served as an important communications tool and the Group has prepared and distributed it to customers, employees, and other stakeholders. We modified the 2004 edition to include information from 46 companies in Japan and other countries to show the increasingly global nature of the Group's operations. We also provided pages relating to corporate social responsibility (CSR) and started reporting to local community associations and elementary schools on an experimental basis.

Following on from this, in the 2005 edition we have dealt in more detail with the environmental, social, and environmental management aspects of the activities that the Group is committed to.

In addition to the printed edition, we publish information on our environmental activities on the Internet, with a special "Environmental Management" area of our website dedicated to explaining the Group's environmental protection initiatives. The English version of the report is available on our global website in PDF format – there is no print version.

Our subsidiaries outside Japan publish their own environmental reports as part of their efforts to maintain good communications with their local communities. Yokogawa Electric China Co., Ltd., which acquired ISO14001 certification in 2004, has also issued its first site report. Also, in fiscal year 2004, the Kofu site environmental report was published jointly by the Yokogawa Kofu office and the YMF Kofu Plant, and reports on information exclusive to the Kofu site.

Website for our environmental conservation activities:
http://www.yokogawa.com/eco/eco-toppage-en.htm

Cover Page of the Environmental Report Published by Yokogawa Electric China Co., Ltd.

Cover Page of the Environmental Report Published by the Yokogawa Electric Kofu Office

Response to Our Environmental Report 2004

The Yokogawa Group received lots of valuable responses to the questionnaires on the 2004 edition that were circulated internally and externally. The average ratings from one to five are shown below.

	2002	2003	2004
•Was this report easy to understand?	3.7	3.8	3.8
•Did this report contain enough detail on what you wanted to know ?	3.9	3.9	3.9
•How do you feel about the Yokogawa Group's environmental conservation initiatives?	4.2	4.2	4.3
•What is your overall impression of the report?	–	3.9	4.0

The following shows the four most popular comments:

- The information is well presented and easy-to-read.
- I like the overall design.
- I want actual figures.
- Technical terms make it difficult for me to understand some parts.

We will take these comments into account when writing the 2005 edition, and will continue to work on improving the report.

Establishment of an Energy Savings Study Course at the Kofu Office

In March 2005, we started an Energy Savings Study Course at the Kofu office. Participants in this course have an opportunity to inspect the in-house energy savings support systems installed in this plant. The Yokogawa Group will be using this study course to present the effectiveness of the cost-reduction and energy-saving measures it is implementing.

Other Communication Activities

We exhibited environmentally friendly products and environmental solutions at trade shows such as SEMICON JAPAN 2004 and Measurement and Control Show 2004 OSAKA to improve customer awareness of our products and services. In addition, we were actively involved in many outreach activities, including the Environmental Citizen Meetings of Musashino City, and the Environment and Safety Committee of the Japan Electronics and Information Technology Industries Association (JEITA).

A History of Caring for Our Environment

	1971	Yokogawa establishes a pollution prevention organization.
July	1974	Yokogawa completes construction of wastewater treatment facilities in accordance with municipal bylaws.
May	1987	Yokogawa begins conducting environmental assessment studies.
October	1989	Yokogawa establishes a chlorofluorocarbon (CFC) reduction committee.
April	1991	Yokogawa sets up a Global Environmental Protection Promotion Department.
August		Yokogawa starts a "Protect the Earth" campaign.
February	1993	Yokogawa appoints an Office of Environmental Management and forms a Corporate Global Environment Committee.
July		Yokogawa establishes a voluntary environmental activities plan.
August	1994	Yokogawa reports on the results of voluntary environmental activities in fiscal year 1993.
December		Yokogawa completely eliminates specific chlorofluorocarbons and trichloroethane for cleaning.
June	1995	Yokogawa begins planning to obtain ISO14001 certification as the first step towards becoming an environmentally friendly enterprise. The voluntary environmental activities plan is absorbed into the ISO14001 plan.
October		Yokogawa reorganizes the Corporate Global Environmental Committee.
March	1996	Yokogawa establishes corporate rules for environmental protection management.
May		Yokogawa forms a Global Environment Committee at headquarters and at the Kofu office (now called YMF Kofu Plant) and Komine office (now called YMF Komine Plant). Solar power generators are installed at headquarters. Yokogawa signs a disaster prevention accord with Musashino City.
April	1997	Yokogawa begins publishing Green Times, an in-house publication promoting environmental issues.
July		The Kofu office (now called the YMF Kofu Plant) obtains ISO14001 certification.
February	1998	Headquarters and the Komine Plant (now called the YMF Komine Plant) obtain ISO14001 certification.
May		A co-generation system goes online (twin 585-kW generators) at the headquarters new main building.
June		Yokogawa begins publishing an environmental catalog.
September	1999	Yokogawa publishes Yokogawa Environmental Report 1999, its first environmental report. Also introduces environmental accounting and makes data available to the public.
November		Yokogawa introduces environmental labeling (Type II).
July	2000	The Yokogawa headquarters/plant attains the goal of generating zero landfill waste.
August		Yokogawa becomes the first company in Japan to institute a returnable container recycling service for all its customers.
September		Yokogawa publishes Yokogawa Group Environmental Report 2000. Also introduces third-party verification.
November		Suzhou Yokogawa Meter Company joins the Japan-China 3Es (Energy, Environment, and Economy) Research Project, and is selected as a model corporation for a study of environmental accounting.
March	2001	Yokogawa establishes its Basic Environmental Management Standard for the Yokogawa Group.
July		Yokogawa publishes Yokogawa Group Environmental Report 2001.
September		Three Yokogawa sites receive comprehensive ISO14001 certification.
November		The Kofu office (now called the YMF Kofu Plant) accomplishes its goal of generating zero landfill waste.
February	2002	The YMF Akiruno office (now called the YMF Komine Plant) accomplishes its goal of generating zero landfill waste.
		The Kofu office (now called the YMF Kofu Plant) 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.
February	2003	The Econo-Pilot energy saving system for water pumps receives the Agency of Natural Resources and Energy Director-General's Award at the Energy Conservation Award 2002 ceremony.
		The Kofu office (now called the YMF Kofu Plant) receives an 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 Suzhou Plant of Yokogawa Electric China Co., Ltd., a new company, starts operations as an environmentally aware production site.
March	2004	New environmentally optimized facilities at the YMF Komine Plant and YMF Kofu Plant start operations.
June		Yokogawa publishes Yokogawa Group Environmental Management Report 2004.
August		Yokogawa headquarters/plant makes a separate application for renewal of ISO14001 certification
March	2005	The Energy Savings Study Course is established at the YMF-Kofu Plant.

From the Editor

- The title of this report has been changed from Environment Report to Environmental Management Report in recognition of its economic and social significance. This change has come about as the result of Yokogawa's increasing awareness of the importance of corporate social responsibility (CSR) and its desire to bring as much CSR-related information into the report as possible.
- Up till now, we have placed the priority on reporting information to more clearly communicate Yokogawa management's perspective on the environment. In this edition, however, we have tried to pay more attention to providing information that is of interest to our stakeholders, and have made efforts to communicate that information as transparently as possible.
- Regarding editorial content, we have provided pages that introduce control systems, one of our principal product groups so that our stakeholders can sufficiently understand the Yokogawa Group's business operations. We have also tried to incorporate as much global information as possible, and have extensively presented news of groupwide environmental activities.
- Moving on, we hope to continue efforts to improve this report. To this end, the Yokogawa Group is very interested in receiving your feedback and comments.

Yokogawa Electric Corporation (Published by June 2005)
2-9-32 Nakacho, Musashino-shi, Tokyo, Japan 180-8750
Phone: +81-422-52-9561 Fax: +81-422-52-4197
http://www.yokogawa.com/eco/eco-toppage-en.htm

Let us know what you think of this publication

The Environmental Management Report 2005 outlines the environmental management activities of the Yokogawa Group during fiscal year 2004. We value the open communication with our many stakeholders of the information disclosed in this report. What do you think about its contents? Although we have tried to make the report easy to understand and show actual examples of our activities, there is always room for improvement. To improve both the environmental management of the Yokogawa Group and this report, we welcome your opinions and feedback. Please kindly complete the questions on this page and return the form by post, fax, or e-mail.

Environmental Conservation Promotion Department
Yokogawa Electric Corporation
2-9-32 Nakacho, Musashino-shi, Tokyo 180-8750, Japan

Fax; +81-422-52-4197

Survey Questions on Yokogawa Group Environmental Management Report

Mail to Environmental Conservation Promotion Dept., Yokogawa Electric Corporation
2-9-32 Nakacho, Musashino-shi, Tokyo 180-8750, Japan
Fax to +81-422-52-4197

Q1 What is your relationship with the Yokogawa Group? Please tick one box.

☐Customer ☐Stockholder ☐Government body ☐Investment/financial institution
☐Environmental-related NGO/NPO ☐Living near a Yokogawa Group site ☐School/educational institution
☐Student ☐In charge of environmental management in a firm or other organization
☐Employee of Yokogawa Group ☐Others ( )

Q2 Was this report easy to understand?

5. Very easy 4. Moderately easy 3. Normal 2. Moderately difficult 1. Very difficult

Q3 How do you feel about the Yokogawa Group's measures and actions for protecting the environment?

5.Highly approve 4. Moderately approve 3. Neutral 2. Moderately disapprove 1. Highly disapprove

Q4 Did this report contain enough detail?

5. Far too much 4. Too much 3. Just enough 2. Too little 1. Far too little

Q5 Which sections of the report did you find particularly interesting? (Please tick all boxes that apply.)

☐Editorial Policy ☐Corporate Profile ☐Environmental Management Practices of the Yokogawa Group
☐Special Report 2004 ☐Environmental Management Activities ☐Overview of Environmental Impact
☐Environmental Accounting ☐Indicators and Achievements ☐Green Procurement and Purchasing
☐Environmentally Friendly Products ☐Development of Environmentally Friendly Products
☐Environmental Solutions ☐Green Production Lines ☐Preventing Global Warming
☐Protecting the Air and Water ☐Soil Cleaning ☐Comprehensive Management of Chemical Substances
☐Reduced Use of Hazardous Substances ☐Zero Emissions ☐Logistics ☐Employee Relations
☐Customer Relations ☐Community Relations ☐Environmental Communication
☐Other ( )

Q6 What was your general impression of this report?

5. Very good 4. Better than average 3. Average 2. Poor 1. Very poor

Q7 Your opinions and comments

Thank you. Please complete the following personal information (optional):

Your full name (Mr./Ms.):

Contact address:

Daytime phone number: E-mail address:

* Your opinions may be reflected in the next issue of our environmental management report.
Please note that we take complete responsibility for the appropriate management of any confidential personal and private information collected.
In addition, the information you supply will not be used for any purpose other than answering your questions, nor will we disclose it to any third party.