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FIELD

**Changi DCS Plant**

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MIND

**Yamatake provides comprehensive valve solutions to satisfy customers' needs around the world**



**Feature**

**Sonic Landscape in Japan**

# KIMONO

# Kimono, traditional dress still worn today

## 【Shanari shanari】～しゃなりしゃなり

The word *kimono* is actually a compound from the stem of the verb *kiru*, which means “to wear”, and *mono*, or “thing”, so its literal meaning is “something you wear”. In pre-modern times it referred to clothing in general, but now the word generally refers to traditional Japanese dress, in contrast to Western style clothing. There are still some people who wear kimono on a regular basis, but for most people kimono are worn just on special occasions. When women wear this special kind of dress they feel different, and naturally seem to move more elegantly. Part of that is because unlike Western-style clothes, it is difficult to walk in large strides. The onomatopoeia used to describe the supple way women walk when wearing kimono is *shanari shanari*.

### A simple yet functional style of dress made from a single piece of cloth

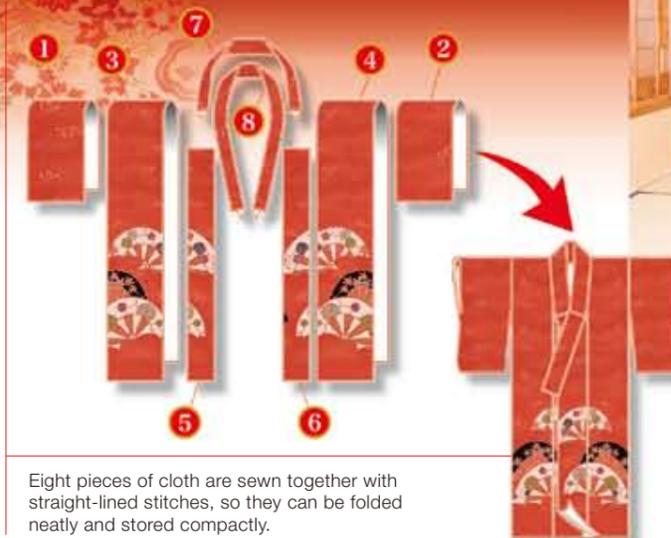
In ancient times, Japanese clothing was heavily influenced by Chinese clothing, but it is thought that after Japan stopped sending *kentōshi*\*1 (envoys) to China, *kimono* gradually evolved into clothing that was uniquely Japanese. From the end of the 16th to the beginning of the 17th centuries, commoners in Japan's feudal class system became relatively wealthy in a very short period of time, and a thriving culture developed that revolved around artisans and merchants that lived in the country's towns and cities. It was around this time that *kimono* are believed to have taken the form that we see today.

The sleeves of *kimono* are very roomy, and the hem goes all the way to the ankles, forming a “T” shape when laid out. This shape is made by sewing together eight cuts of cloth (two each of the main body section, the sleeves, the long overlapping front panels, and the collar pieces) all in straight stitches. If you were to take

the *kimono* apart and sew all of the pieces together flat, you would get a single, long piece of cloth. In other words, *kimono* are designed such that no part of the original bolt of cloth goes to waste.

*Kimono* are always worn with a separate piece of cloth called an *obi* that functions as a belt. These *obi* are designed so that they also look attractive from behind. For women's *kimono*, the belts are often tied in different ways to create various nice-looking shapes on the back. Special Japanese toed socks are worn, and either clogs or sandals are generally chosen for footwear. People often coordinate all of their accessories to go with their *kimono*, which can include Japanese-style bags, coats, and even folding fans.

When people put on *kimono* it generally means they are getting ready for special or formal occasions, such as weddings, funerals, enrollment and graduation ceremonies at universities or other schools, to see their young children attend ceremonies at K-12 schools, and formal parties. Many people also wear *kimono* to at-



Eight pieces of cloth are sewn together with straight-lined stitches, so they can be folded neatly and stored compactly.

### A man's kimono

A crested coat and divided skirt, which is formalwear for men. This style spread as a simplified form of formal samurai dress.

### Irotomesode

*Irotomesode* is a versatile style, suitable at everything from formal occasions to informal get-togethers. If there are five crests it can be worn as formalwear, and if there are three or just one crest it can be worn informally.



tend classes on traditional pastimes such as the tea ceremony, flower arrangement, and Japanese dance, as well as when they attend traditional festivals and traditional performing arts like *noh* and *kabuki* theater. Even in the home, it is a tradition in many families for everyone to get dressed up in kimono during the official New Year's holidays (January 1st through 3rd). Putting on formal clothes for New Year's not only gives people a sense that it is a special time of year, the custom also stems from staying dressed up so that you look well-mannered and respectful when you go to extend season's greetings to family or close friends or when they come visit you during the holiday. This custom, however, has been gradually disappearing over the past several decades.

### Choose the kind of kimono right for the place or circumstances

Just as with Western-style clothing, distinctions are made among formal, semi-formal, and informal *kimono*. Let

us take the example of a wedding. First, the *kimono* of the families of the bride and groom must be formal. Traditional formalwear for men consists of a crested coat and divided skirt. Worn over a black *kimono*, the broad divided skirt is called a *hakama*, and the coat worn is called a *haori*. Black is the standard color for clothing worn above the waist, and the *haori* features the *kamon*\*2, or family crest, in five places on it. Women's formal wear is a black *tomesode*, or “shortened-sleeve”, *kimono*. It is a black *kimono* with a decorative design only towards the hem, and also has family crests above the waist. Just as with men, the color must be black. However, exceptions are made for unmarried women, who may wear a richly colorful style called *furisode*. The sleeves of a *furisode kimono* drape very far down, hanging around one meter down from the elbow. As the *furisode* is a *kimono* style just for unmarried women, they give off a youthful and extravagant impression and is enjoyable to look at.

If you are a guest at a wedding, the *irotomesode*, or “colored shortened-sleeve”, style, which spans the formal and semiformal range, is the best choice. It looks somewhat like a *furisode* with the sleeves taken up, but unlike the *furisode* the pattern is

present only towards the hem. Once a woman gets married, she can have the sleeves of a *furisode kimono* cut short and still wear it. Called *hōmongi*, which literally means “visiting dress”, it is considered the next level of formality after an *irotomesode kimono*. *Hōmongi* can be worn on a wide range of occasions such as wedding receptions and all sorts of parties.

In addition to the ones described above, there are other *kimono* styles called *komon* and *tsumugi*, which are perfect for just going into town, as well as *yukata*, which are worn for going out in the summer. *Kimono* can be divided into two basic fabric types: *some* and *ori*, the techniques for which are unique to many different areas of Japan. If you see a *kimono*-clad woman in Japan walking *shanari shanari*, take a second and get a glimpse of the incredibly diverse world of *kimono*.

\*1 *Kentōshi* : Beginning around the year 630, Japan began sending envoys called *kentōshi* to China, where they learned about world affairs, studied advanced Chinese technologies, and collected Buddhist scriptures.

\*2 *Kamon* : Similar to a heraldic coat of arms, a *kamon* is a crest that identifies a person as belonging to a certain bloodline or circle of kinship.

### Obi

The long *obi*, or belt, can be tied into various shapes.



### Furisode

A style for young women, the most common occasion for wearing *furisode kimono* is at coming-of-age ceremonies.

# Changi DCS Plant



**Changi Business Park is a business district in Singapore, where forward-looking businesses such as knowledge-intensive enterprises, high-tech businesses, and financial data centers are located. At the Changi DCS Plant, which supplies chilled water to the air conditioning systems of the buildings located in this business park, the monitoring and control system was recently revamped with the aim of further improving continuous stability of the chilled water supply. By installing a new, easy-to-use system, the Plant has achieved significant improvement in reliability of equipment operation.**

***A project to strengthen monitoring and control performance to respond to increased users***

Situated almost at the center of South-east Asia and right on the equator, Singapore has prospered as a base of East-West trade since long ago. In recent years, companies in mainly developed nations including Japan have been actively injecting capital into Singapore to take advantage of its geographical superiority.

Changi Business Park is located adjacent to the area that houses Changi Airport, Singapore's gateway for air travel. The development of this busi-



The Harmonas-DEO installed in the monitoring room enables centralized monitoring and control of chillers and other equipment in the plant.

ness park is still underway. In the site measuring about 66 hectares in total, about a dozen buildings have already been constructed, and companies, mainly those in the fields of high-tech businesses, research and development divisions of multinational companies, as well as the data management departments of financial institutions, have begun operation.

The district cooling system (DCS)\*1 of the Changi DCS Plant provides chilled water for the air conditioning systems of the buildings located in Changi Business Park. It boasts a refrigeration capacity of 30,000 refrigeration tons (RT) to ensure stable and continuous supply of chilled water to the buildings. Keppel DHCS that developed, installed, and operates the plant is known as the largest DHCS\*2 provider in Singapore. The company not only provides district cooling service to Singapore's major business parks such as Biopolis and Woodlands, but also actively conducts busi-

ness relating to district heating and cooling systems (DHCS) in various parts of the world.

"Since the Changi DCS Plant began operation in 2000, we have done everything to ensure reliable monitoring and control of the equipment including the refrigeration system in order to maintain stable and continuous supply of chilled water to customers in the area. However, as the development of Changi Business Park progressed and the number of companies operating in the park increased, in 2008 we began realizing the need to revamp the monitoring and control system," said Mr. Ng.

***Responsive support essential for stable and continuous supply of chilled water 24/7***

In addressing the issue described above, Keppel DHCS began examining the upgrade of the existing monitoring and control system at the Changi DCS Plant. After thorough and detailed examination, Keppel DHCS decided to



Control panels were newly installed in the plant. Cabinets store the controllers that control the chillers, pumps, and other equipment.

install the Harmonas-DEO™ (Harmonized Automation System - Dependable Open) system proposed by Azbil Singapore Pte. Ltd. (ASG), a member of the azbil Group.

"We worked with ASG as partners for the DCS plant projects for Biopolis and Woodlands. We were very satisfied with the quality of ASG's Harmonas-DEO and other products as well as its support service," said Mr. Ng.

"DCS plants must guarantee stable and continuous supply of chilled water 24 hours a day, every day of the year. Thus, reliability of the plant and the system is the most important requirement from a business perspective. With ASG, we can rest assured of prompt response in the shortest possible time should a problem occur," said Mr. Tan.

***Easy data retrieval and processing contribute to reduced work hours***

The Harmonas-DEO system was installed and set up during the period from 2009 to 2010. For effective utilization of assets, Keppel DHCS decided to continue using the existing monitoring and control system. All information collected by the existing system is transmitted to the Harmonas-DEO system. The newly installed control instruments and controllers are directly monitored and controlled by the Harmonas-DEO system. Furthermore, redundant design was adopted to further improve the operational reliability.

"Installation of the Harmonas-DEO system has significantly improved the visibility of information and the ease of performing monitoring and control tasks. There is another major advantage of the system: it enables us to retrieve necessary data and process it



Yamatake's MagneW™3000 electromagnetic flowmeters measure the flow of chilled water and coolants.

easily. For example, COP\*3 data can be automatically computed in multiple patterns, thus contributing to reduced work hours. Furthermore, we have realized an efficient workflow for transmitting data from the Harmonas-DEO system to the ERP\*4-based system for processing fees charged to customers. We highly evaluate the Harmonas-DEO system's capabilities to enable easy linking with other systems and to maintain high data accuracy," said Mr. Poh.

Also installed in the Changi DCS Plant is Yamatake's TSS (Thin client Supervisory Server) server/client system which allows monitoring and control in a multi-client environment. Since the Biopolis and Woodlands DCS Plants are already equipped with the Harmonas-DEO system, Keppel DHCS has constructed a system that allows remote monitoring and control of all three DCS plants from any of the three locations.

"For instance, if an abnormality should occur in the Changi DCS Plant and the operator must leave the control room to go to the plant to take response action, he or she can ask the operator at the Biopolis or Woodlands DCS Plant to remotely monitor and control the equipment at the Changi DCS Plant temporarily via TSS," said Mr. Poh.

Keppel DHCS plans to further enhance the system for stable and continuous supply of chilled water so that the Changi DCS Plant can respond to the growing need resulting from the increased number of buildings constructed in the business park in the future.

DCS plants contribute to customers' energy reduction efforts. Now, we plan to achieve energy conservation in the plants themselves. To that end, we look forward to the support of the azbil Group that boasts expertise in the energy-saving field and advanced technology development capability," said Mr. Ng.

**Keppel DHCS Pte Ltd**



**Location**  
48 Changi Business Park Central 2, Singapore 486067

**Founded**  
1998

**Business scope**  
Development, construction and operation of district heating and cooling systems and facilities



**Mr. Joseph Ng**  
Chief Executive Officer

**Mr. Poh Tiong Keng**  
General Manager  
(Operations)



**Mr. Victor Tan**  
Senior Manager  
(Business Development)

**glossary**

**\*1 ▶ DCS (District Cooling System)**  
A system which supplies chilled water from a centralized supply facility (plant) to a group of buildings in a district through its underground pipe network for the buildings' space cooling. This system is used in tropical and subtropical regions where heating is not necessary.

**\*2 ▶ DHCS (District Heating and Cooling System)**  
A system which supplies chilled water, hot water, and steam from a centralized supply facility (plant) to a group of buildings in a district through its underground pipe network for the buildings' space cooling and heating as well as for hot water supply. Since this system eliminates the need for the installation of heat source facilities in individual buildings, it is expected to save energy and reduce environmental impact.

**\*3 ▶ COP (Coefficient Of Performance)**  
A COP is a numeric value that expresses how much energy is output from a given amount of energy input to the equipment. It is the ratio of the quantity of heat generated by the heat source equipment to the total energy consumed by the equipment. (Primary energy equivalent of heat source equipment and other equipment)

**\*4 ▶ ERP (Enterprise Resource Planning)**  
A method or concept that aims to improve management efficiency by comprehensively managing the management resources of an entire company to achieve effective utilization, as well as IT systems and software designed to realize such method or concept.

## Yamatake provides comprehensive valve solutions to satisfy customers' needs around the world

From everyday life to the industrial workplace, valves are everywhere at work behind the scenes in the modern world. Yamatake, which manufactured the first control valve in Japan, strives to provide both domestic and international customers with total solutions for control valve applications, based on comprehensive know-how cultivated in its valve business and on its advanced measurement and control technologies.

### Expertise of manufacturing the first control valve in Japan

Valves stop or control liquid or gas flow using a mechanism for opening and closing the flow path. They are essential not only for faucets and gas mains in kitchens and bathrooms, but also for heating, ventilation and air-conditioning (HVAC) facilities in office buildings and production facilities in factories. Valves are an absolutely basic piece of equipment in almost every situation, from daily life to industrial activities.

For over 100 years, since its establishment in 1906, Yamatake has had a deep involvement in the development and manufacture of valves, lending a boost to Japan's industrial growth. It is said that the greatest technological innovation in the history of valves was the control

valve, which could not only shut off a flow, but regulate it at will. And in 1936, this company made its own bit of history by manufacturing Japan's first control valves—top and bottom guided double-seat control valves which were delivered to an oil refinery. In that sense, Yamatake was a pioneer that paved the way for Japan's control valve technology.

### Providing comprehensive valve solutions in conjunction with measurement and control mechanisms

Today, Yamatake offers products and services that take advantage of its technology and its valve know-how accumulated over a long period in both its Building Automation and Advanced Automation businesses. To meet domestic and international customers' needs, we provide advanced products and systems

such as the ACTIVAL™ Motorized Two-Way Valve for HVAC; the Valstaff™ Maintenance Support System, which aids decision-making for maintenance and improves maintenance efficiency by collecting data on the operating status of control valves in the field; and HART/Fieldbus Solutions,



**Makoto Kawai**  
Executive Director and  
Managing Executive Officer  
Yamatake Corporation

which support stable and optimal operation on the production site by collecting, visualizing, and analyzing data on the operating status of valves, sensors, and other field instruments.

Thus, Yamatake enjoys the considerable competitive advantage of providing not only control valves but also the measurement and control systems associated with them, integrated as



Control valves prepared for shipment at the Shonan Factory. Customization results in various sizes and designs.

comprehensive solutions that add high value to customers' buildings, factories and plants. In addition, we offer a wide range of services, from valve selection and installation to valve operation and maintenance.

### Bringing together know-how from across business lines to achieve synergistic development

In addition to efforts to expand its products and services, Yamatake is working to enhance its valve-related business by modifying its business structure. As part of our business direction, in April 2011 we created the Valve Production Development Department, which integrates the two departments of the Building Systems Company (BSC) and Advanced Automation Company (AAC) that develop control valves and valve-related products. By bringing together knowledge that extends beyond the individual frameworks of BSC and AAC, we expect that product development will benefit from synergy between the two businesses.

The valve development section is now working on products equipped



Performance test for ACTIVAL Motorized Two-Way Valve.

with an intelligent differentiation function, making use of new technologies for visualizing fluid flows

(CFD\*, etc.) and for assuring reliability, in addition to longstanding basic technologies for valve actuator design.

Regarding the production of control valves, at the moment Yamatake is manufacturing valves for the market mainly at the following two production bases: Shonan Factory, producing primarily industrial control valves, and Azbil Control Instruments (Dalian) in China, with production lines for both HVAC and industrial control valves. In the future, however, the production bases will be optimized globally for optimal production and cost cutting.

To promote the valve business in the global market, Yamatake will also create cooperative structures with its partner companies in India, West Asia, the Middle East, as well as Brazil and the South American region, where rapid growth of the markets is expected.

In addition, to support long-term reliable valve operation for international customers, Yamatake has opened valve maintenance centers in China, Thailand, Taiwan, Indonesia, Singapore and Malaysia to meet local needs

for valve maintenance. One of the important goals for Yamatake in the future is to enlarge the maintenance service area so that service can be provided more quickly to global customers.

An indispensable factor in pursuing its global business is how Yamatake cultivates personnel with advanced skills related to control valves. Upon request, we provide, mainly at the Kawara Technology Center in Fukuoka Prefecture, a course to train valve engineers for overseas assignment, and it has already accepted many trainees from overseas. In addition, training courses for valve production technologies are provided by skilled workers at the Shonan Factory. Yamatake is proactively developing programs designed to transmit to a new generation both the artisan skills essential to valve manufacture and the essential spirit of craftsmanship.

In the future too, Yamatake looks forward to maximizing customers' value in offices and at factory and plant sites domestically and internationally, based on the results and know-how it has accumulated over many years as a control valve pioneer and on its expertise in measurement and control technologies.

\*Computational fluid dynamics, a numerical analysis simulation method for flow monitoring in which a computer is used to analyze formulas related to the motion of invisible fluids (air, water, etc.).



## ■ InnovativeField Organizer Device Management System

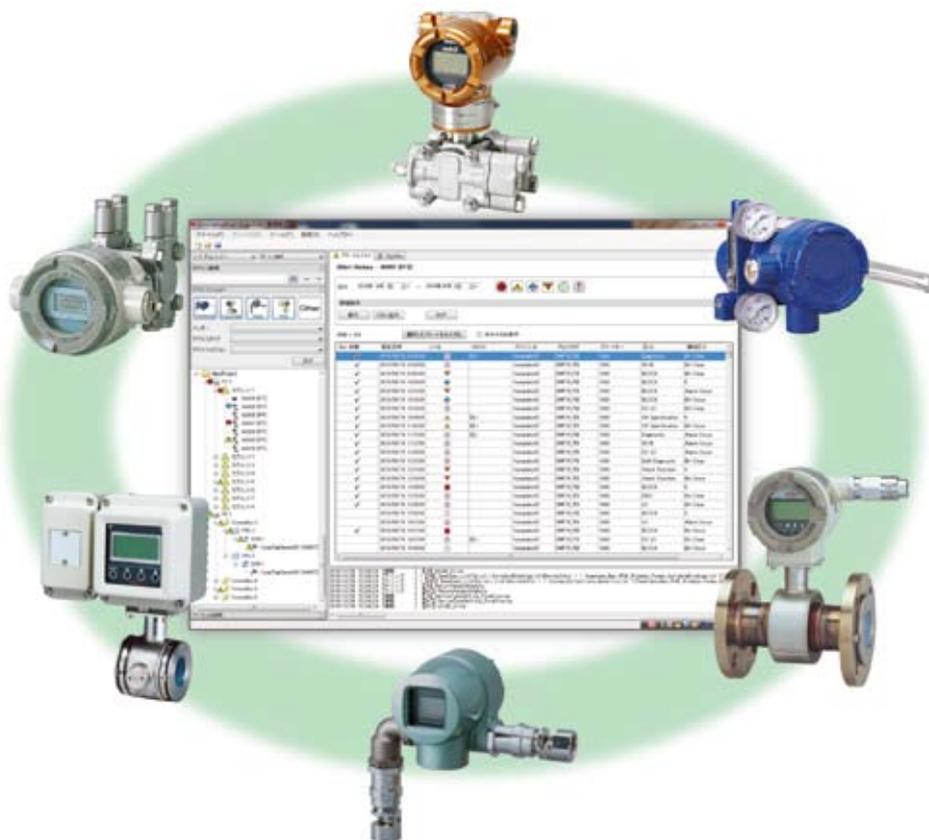
InnovativeField Organizer (IFO) is a device management system that can achieve dramatically more efficient instrument maintenance by taking advantage of diagnostic and maintenance information from smart field devices that communicate with the distributed control system (DCS) using FOUNDATION\*1 fieldbus or HART\*2.

### Benefits provided by IFO:

- More efficient check and test work before plant startup  
IFO can achieve more secure and effective shut-down maintenance by automating loop checks to make pre-startup checking more efficient.
- Reduced probability of device malfunction problems  
IFO continuously monitors the status of field devices, and if any malfunction occurs, it alerts the maintenance staff or operators to take prompt action to prevent device failure. It is especially valuable for indicating the status of control valves for which early detection of an abnormality was previously not possible.
- Optimization of valve work during shutdown maintenance  
IFO supports the selection of only those control valves that need maintenance by drawing upon the diagnostic information collected during operation and on inspection results after plant shutdown.

\*1 FOUNDATION is a registered trademark of Fieldbus Foundation.

\*2 HART is a registered trademark of HART Communication Foundation.



### Online valve monitoring

By monitoring control valves online using the diagnostic function of Yamatake's Smart Valve Positioner, problems can be lessened through early detection.

**azbil**  
<http://www.azbil.com/>

#### Japan

- Yamatake Corporation • Yamatake & Co., Ltd.
- Yamatake Control Products Co., Ltd.
- Yamatake Friendly Co., Ltd. • Yamatake Care-Net Co., Ltd.
- Safety Service Center Co., Ltd.
- SecurityFriday Co., Ltd. • Hara Engineering Co., Ltd.
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- Taishin Co., Ltd. • Tem-tech Lab.

#### Overseas

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