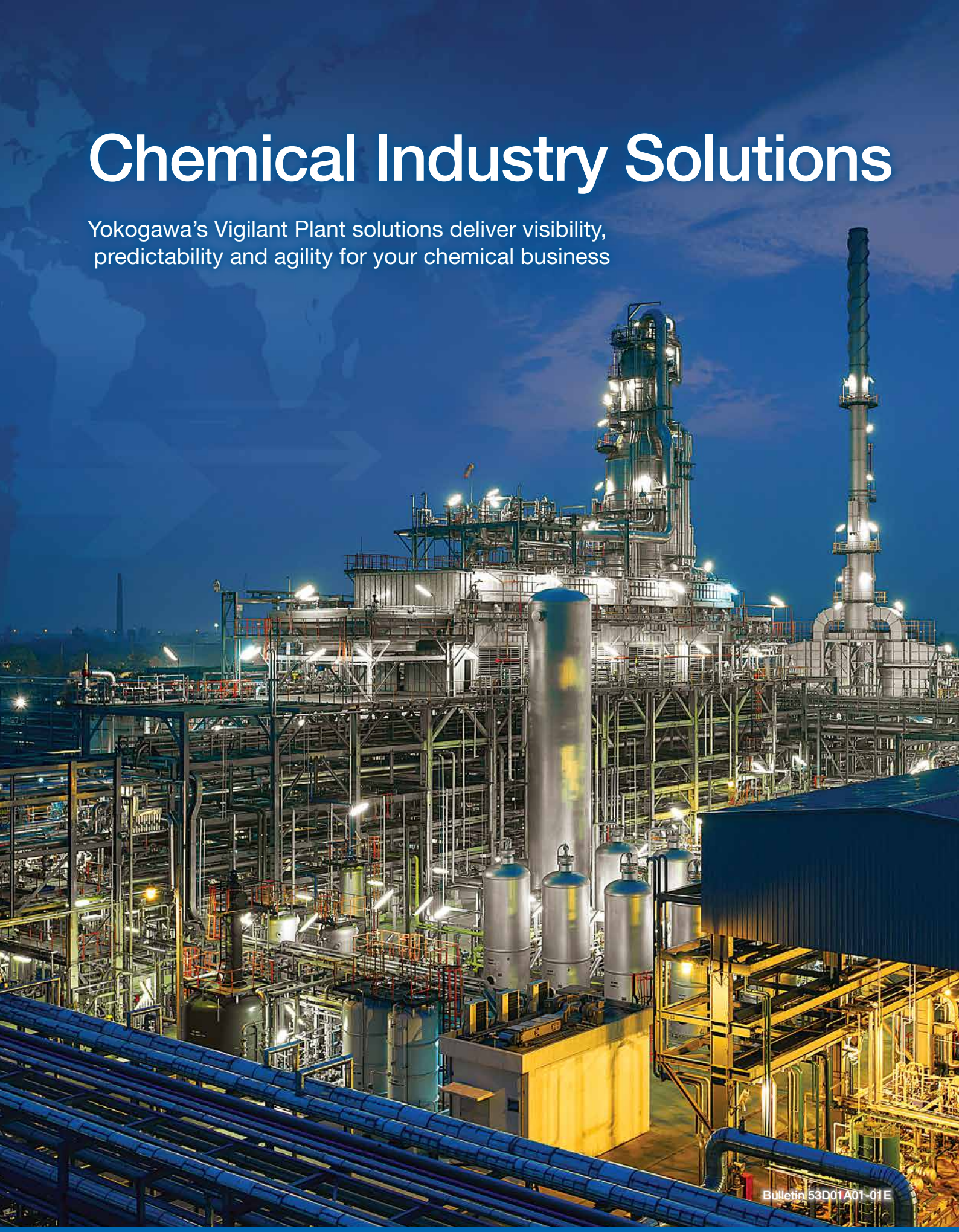
Chemical Industry Solutions

Yokogawa's Vigilant Plant solutions deliver visibility, predictability and agility for your chemical business



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The clear path to operational excellence

YOKOGAWA

Your Partner in Chemical Manufacturing

Being a producer in the chemical industry has become more and more challenging over the years. Customer needs for products, pricing, and delivery are more demanding and material requirements are complex and ever-changing. Additionally, health, safety, security, and environment (HSSE) compliance has always been a primary requirement for doing business.

Over the years, Yokogawa has worked with many chemical companies to provide technology solutions that meet these challenges. We stand ready to partner with you to take on whatever challenges you face and help you achieve your aims safely and profitably.

Yokogawa is dedicated to developing the most advanced control and instrumentation products and systems in the world. Today, Yokogawa is a leader in the fields of measurement, control, and information. As a global solution provider, Yokogawa works with its customers to anticipate future requirements and provide the best control and information solutions in the world. Yokogawa's commitment to innovation is reflected in our extraordinary investment in research & development, which ensures development of the most advanced products and services.

Long-term business success needs a long-term strategy. A long-term partnership with Yokogawa will provide you the highest total value of ownership for your automation and plant information solutions.

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Bulk Chemicals

Whether you produce petrochemicals, inorganics, or intermediates, you are under constant cost and margin pressure to deliver products to your customers in a timely and efficient manner while maintaining safe operations and ensuring regulatory compliance. Additionally, there is the need to adjust to constant fluctuations in feedstock and energy prices and to be able to provide the most profitable product mix to the market.

Yokogawa serves the global bulk chemical market and is the recognized market leader. With our products, solutions, and industry expertise, we understand your market and production needs and will work with you to provide reliable and cost effective solutions throughout the lifecycle of your plant.

Success Story

Rapid Implementation of Integrated CENTUM DCS and ProSafe-RS Systems at New Oleochemical Plant

In response to rising demand in Thailand for oleochemicals, which are environmentally friendly biodegradable substances used in applications such as fuels and personal care products, Thai Oleochemicals Co., Ltd. (TOL) has recently completed the construction of a new oleochemical production facility. The new plant is located at the Map Ta Phut Industrial Estate in Rayong, Thailand, which is 160 km southeast of Bangkok, and is capable of annually producing 100,000 tons of fatty alcohol, 200,000 tons of methyl ester (ME), and 31,000 tons of glycerine from crude palm oil. The ME produced at this plant is blended with petroleum diesel to create biodiesel, a biodegradable and clean burning fuel that has the same combustion properties as conventional petroleum diesel fuel. To ensure that the new plant would operate reliably and safely, TOL relied on a solution from Yokogawa based on the CENTUM DCS Integrated Production Control System and the ProSafe-RS Safety Instrumented System.

The Challenges and the Solutions

Multiple licensors and consultants were involved in this project, so a key issue was maintaining consistency in the information and specifications handled during the engineering stage. From the beginning of this project to the completion the plant startup phase, Yokogawa's engineers worked with everyone on the project team to ensure a successful conclusion.

Only four months were allocated for hardware installation and plant start-up. Within this tight timeframe, the CENTUM DCS and ProSafe-RS system hardware had to be installed in the plant's control and rack rooms and their functions checked. Transmitters were also installed and loop checks were performed. Many software changes had to be accommodated quickly and flexibly. All this work was performed within specifications and on schedule.

Plant safety and efficiency also had to be maintained by automating plant operations to the maximum possible extent. To accomplish this objective, the ProSafe-RS and CENTUM DCS systems were fully integrated. The combination of feedback and sequence control with the graphic display of trend data, alarm summaries, operator guide messages, and other information have greatly enhanced operations at this plant. The highly reliable CENTUM DCS system has also helped TOL maintain high productivity at this facility.

Finally, as TOL only has a few DCS engineers who are available to work on these systems at short notice, the company relies on support provided by personnel from Yokogawa's Rayong service office. Its 24/7/365 support is very much appreciated by TOL.

Customer Satisfaction

"Yokogawa's engineers were all very patient and cooperative during the early engineering and start-up phases. We worked as one team through to the completion of this plant project," said Sayan Saesue, TOL's Engineering and Maintenance Division Manager.

Specialty & Fine Chemicals

Producers in the specialty and fine chemicals market face many challenges. Research driven innovation and the rapid introduction to market of products that meet customer needs is the key to profitability. Additionally, customers' future requirements for products and solutions must be anticipated.

Yokogawa has long served the specialty and fine chemicals market. With a market leading batch solution that offers best in class reliability and flexibility as well as industry experts who understand the complex requirements in designing a batch solution, you can rest assured that a partnership with Yokogawa will give you a system that enables you to produce the products your customers need while maintaining safety and regulatory compliance.

Success Story

CENTUM VP Batch Replaces Legacy System and Improves Production Efficiency at Acrylic Plant

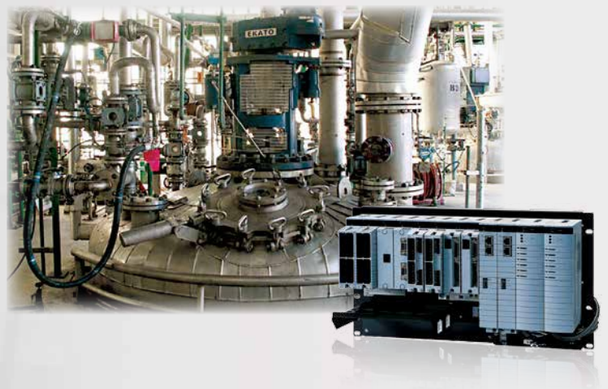
Lucite International is the world's largest producer of acrylic monomers, and the company's plant in Darwen, England produces high quality acrylics for use primarily in bathroom and kitchen fittings. The plant formerly relied on a Honeywell PlantScape Batch control system that ran on Windows NT4 servers. Due to the difficulties of maintaining this legacy system, Lucite opted for its replacement. Through this change, the company aimed to achieve continuous improvements in the areas of plant safety, worker health, environmental protection, and cost performance. Toward this end, Lucite evaluated the system reliability, lifetime support, and engineering capability of various control system vendors and decided on a Yokogawa CENTUM VP solution. Yokogawa United Kingdom successfully installed this system within a short period of time.

1. Project execution

Due to the age and condition of the legacy system, the project team could not find the existing system configuration and detailed specifications by proper documentations. However, by working through the system one section at a time, Yokogawa and Lucite engineers were able to collect all of the configuration data and transfer it to CENTUM VP. This approach allowed Yokogawa to develop an excellent relationship with the Lucite project team and gave Lucite confidence in Yokogawa's capabilities as a solution provider. As a result of careful planning and preparation, the project team was able - during a short 14-day plant shutdown period in September 2008 - to remove the PlantScape system and install, start up, and commission the new CENTUM VP system.

2. Efficient batch operations

The overall competency of Yokogawa's engineering team, particularly in the area of batch applications, was well appreciated by the Lucite project team. The CENTUM VP Batch package can handle everything from recipe management to batch report handling and unit management. Its capabilities are superior to those of the system that it replaced, and it is much easier for the Lucite engineers to use, ensuring error-free batch operations. The package has a function that shows the operation procedure, current step, and current phase during normal operations, ensuring very high production efficiency and safe operation. In addition, the ergonomic design of the CENTUM VP human machine interface (HIS) helps improve operation efficiency. Lucite is very happy with the high reliability, availability, and flexibility of the CENTUM VP system, and has experienced no major system failures since this system was started up.



Utilities

At any chemical plant there are common utilities that must be run safely, efficiently, and reliably. Yokogawa has decades of experience in providing control solutions for burners, boilers, compressors, thermal oxidizers, scrubbers, and wastewater treatment facilities.

Success Story

Yokogawa revitalizes compressor control system in a Polypropylene resin plant

This compressor control upgrade project for a Polypropylene resin plant operated by Safripol in Sasolburg, South Africa, is a showcase of Safripol and Yokogawa's integrated control philosophy. Here, a single control room concept was followed in the integration of an existing Yokogawa CENTUM CS (DCS) for core process control with a fast STARDOM Network-based Control System (NCS) for high-speed compressor control.

According to Mike Dukas, a process control engineer at this plant, "Making use of Yokogawa's different control platforms having unique specifications but the same well known 'look and feel' operator interfaces allows us to avoid extensive operator training, yet provides both the right control philosophy
on the plant floor and makes use of the existing management information software tools."

Through this project, Safripol achieved:

- A single 'look and feel' operator interface for the DCS and NCS
- A fast and controllable integration cycle
- A high speed hybrid compressor control solution
- A reduced OPEX for the compressor operation by replacing old and obsolete PLCs with a modern hybrid control platform.

The challenges and the solutions

One of the objectives of Safripol was to avoid operator interference as much as possible in order to reduce costs and guarantee that processing could continue undisturbed after switchover. By making use of a STARDOM hybrid controller, a single 'look and feel' operator interface could be established, enabling the continued use of the DCS software and hardware while maintaining the PLCs' high-speed process response.

The second challenge faced was the criticality of the compressors in the process. Stopping the compressors meant losing money. A tight changeover schedule and accurate pretesting was essential.
"The changeover was virtually bumpless. Besides the planned mini-shutdown time, we did not experience any additional downtime.

The first controller has been running now for over a year without any problems," Mr. Dukas explained. "The first STARDOM unit was installed with the help of Yokogawa South Africa and, due to time pressure, this was done without official training. Programming the controller was done with remote assistance from Yokogawa SCE in the Netherlands and Japan. The changeover took place without any failures or plant delays
and was well within the planned time and budgets. More units will be placed during the course of 2006, eventually replacing all existing compressor control systems with Yokogawa's STARDOM."

The third objective was to make sure the new compressor control system was easy to program and maintain. This allows future expansions and modifications as well as the installation of additional units. According to Bennie Coetzer, a process control engineer at the polymerization plant, "The old saying still applies; you cannot control what you cannot measure. But to get all these signals to and from the DCS using old technology, cabling, and junction boxes costs a lot of money. We decided to keep costs down by using modern technology that met all our requirements.
A lot of options and product combinations were evaluated and STARDOM with Ethernet communication came out to be the best for our business," said Mr. Ducas.

Achieving Long-term Business Success

Maximizing plant uptime by having reliable and well maintained automation systems

One of the most fundamental and often overlooked factors in maximizing plant availability is the reliability and maintainability of its automation systems. High system availability is an absolute prerequisite at any chemical plant.

Plant-wide automation for agile and flexible production

Yokogawa is an automation supplier with extensive hands-on knowledge on the use of production data for optimizing a variety of complex chemical production processes. We are a premier supplier of integrated plant-wide automation solutions that deliver agility and flexibility to the chemical production workflow.

Partnering with Yokogawa to enhance production efficiency and HSSE and maximize total value of ownership

Companies in the chemical industry have an extremely diverse array of needs. To come out ahead in today's highly competitive marketplace, they must continually strive to improve quality and productivity. At the same time, they share a greater commitment to addressing HSSE issues. Yokogawa provides tailor-made solutions to these needs based on its long and wide-ranging experience in this field.

Long-term partnership for maximum total value of ownership

Yokogawa is a premier supplier of integrated plant-wide automation solutions that deliver agility and flexibility to the chemical production workflow. We partner with you over the entire lifecycle of our automation system solutions to maximize your total value of ownership.

Production Excellence

Production Management

MES integration
A variety of individual systems that perform scheduling and other functions are included in the manufacturing execution systems (MES) domain. The connectivity among systems is a fundamental key enabler for agile production management.

Workflow standardization
Production workflows should be defined and monitored for reliable production management. The standardization of workflows is especially effective at companies with multiple production sites

Real-time production management
Overall real-time production management is required to speed up the production plan-do-check-action (PDCA) cycle.

Production Control

Loop tuning
Process identification (PID) control plays a fundamental role in process control. Proper tuning is required for stable process control and is a prerequisite for advanced-level control.

Advanced automation
Advanced process control and knowledge-based navigation systems are key contributors to a well-automated operation.

Real-time optimization
Plant-wide optimization can be achieved with a real-time optimizer using rigorous model calculations.

Production Monitoring

Alarm rationalization
An approach to alarm management based on the well-known engineering equipment & materials users' association (EEMUA) No.191 guideline is recommended. Alarm root cause analysis is also an effective approach to successful alarm rationalization.

KPI monitoring
A wide variety of key performance indicators (KPI) should be monitored by each person. KPI monitoring requires comparison with targets and drilling down for detailed information.

Production navigation
Production tasks need to be managed correctly by the system. Task progress monitoring is a valuable bridge between planning and manufacturing that facilitates cooperation in production management.

Production Environment

Operator training
Operator training systems allow operators to gain experience in handling various situations such as equipment malfunctions and in performing start-ups and other routine operations. It helps operators upgrade their skills.

Control room design
Control room design needs to take into consideration all aspects of the work environment including ergonomics, safety, ease of communication, functionality, automation of systems, and business policy.

Resource optimization
A central control room is desirable for an effective production environment. All production-related units should be stationed nearby to ensure good communication. In addition to centralizing the control room, the optimization of human resources and other activities can be considered to achieve production excellence.

Locations

Worldwide Business Operations


Yokogawa Corporation of America Headquarters (Sugar Land, TX USA)


Yokogawa Corporation of America (Newnan, GA USA)


Yokogawa Europe (Netherlands)


Yokogawa Deutschland (Germany)


Yokogawa Russia (Moscow)


Yokogawa Middle East (Bahrain)

Yokogawa Engineering Asia (Singapore)


Yokogawa China (China)


Yokogawa Electric Korea (Seoul)


Yokogawa World Headquarters (Tokyo, Japan)

Global Network Supporting Business Growth


Yokogawa Canada (Calgary)


Yokogawa de Mexico (Mexico City)

North America
Newnan GA, USA
Sugar Land TX, USA
Calgary, Canada

South America
Tamboré - Barueri, Brazil
Santiago, Chile
Bogotá, Colombia
Buenos Aires, Argentina

Russia
Moscow

Europe
Amersfoort, The Netherlands
Zaventem, Belgium
Wien, Austria
Madrid, Spain
Vélizy,Villacoublay Cedex, France
Ratingen, Germany
Runcorn, United Kingdom
Milano, Italy

Middle East and Africa
Manama, Bahrain
Dhahran, KSA
Abu-Dhabi, UAE
Dubai, UAE
Johannesburg, South Africa

China
Xi'an
Shanghai
Wuxi

Asia
Singapore, Singapore
Bangalore, India
Puchong Selangor Darul Ehsan, Malaysia
Bangkok, Thailand
Jakarta, Indonesia
Quezon City, Philippines
Macquarie Park NSW, Australia
Taipei, Taiwan
Hanoi, Vietnam

Japan
Central Engineering Center

Korea
Seoul
Bupyeong

Engineering Centers

Yokogawa's Global Commitment to the Chemical Industry

Yokogawa is the world leader in automation solutions for the chemical industry. As a global player, we offer strong local support in any region where you do business. With global centers of excellence, automation and process engineers, consultants, and automation project managers, you can count on us to help you with any application in the chemical industry.

vigilantplant.®
The clear path to operational excellence

SEE CLEARLY | KNOW IN ADVANCE | ACT WITH AGILITY

VigilantPlant is Yokogawa's automation concept for safe, reliable, and profitable plant operations. VigilantPlant aims to enable an ongoing state of Operational Excellence where plant personnel are watchful and attentive, well-informed, and ready to take actions that optimize plant and business performance.

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