



# FOUNDATION Fieldbus™

Key Technologies in Yokogawa's Plant Network Solutions

Bulletin 38K03A00-01E

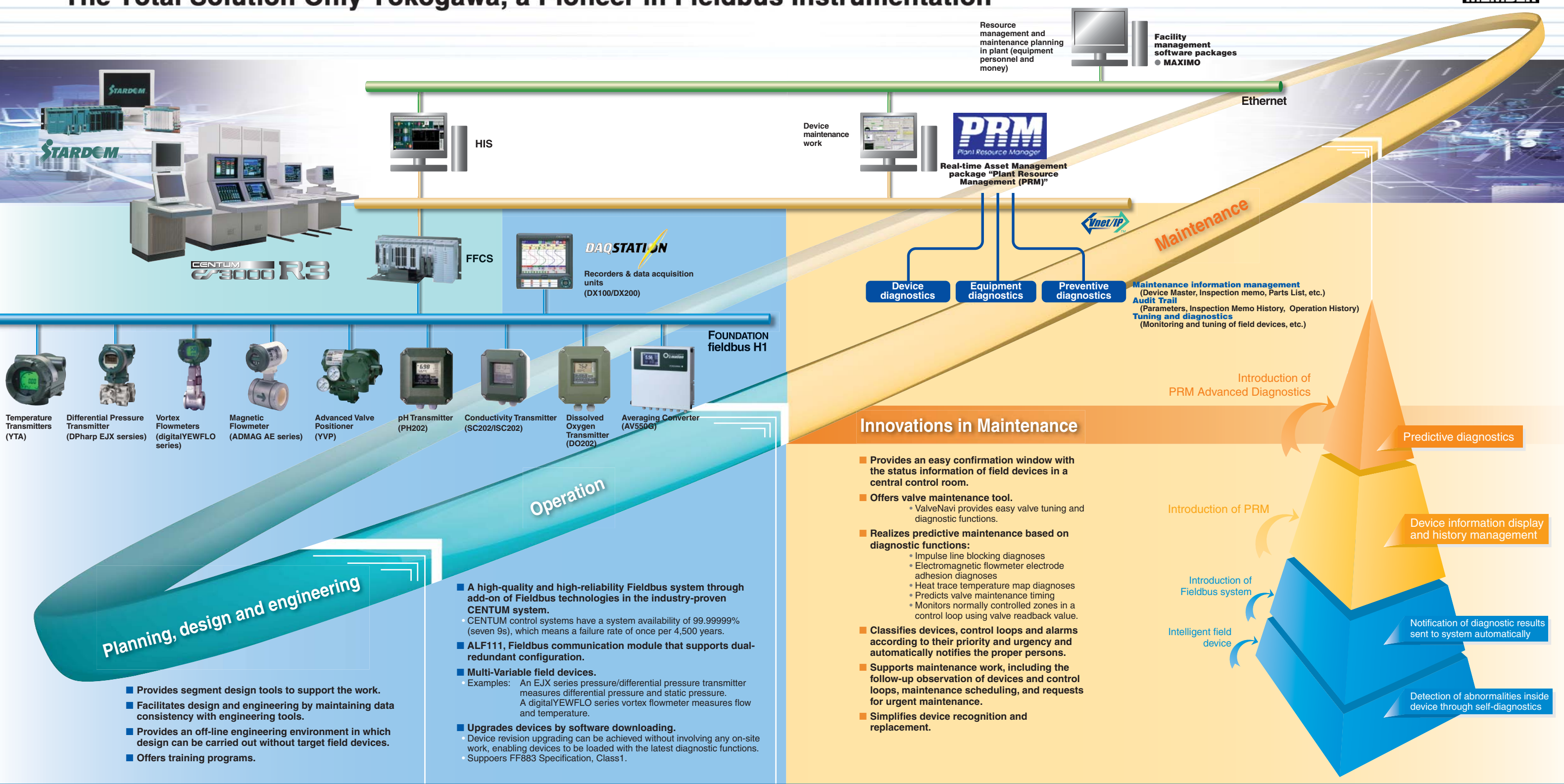
A Yokogawa Commitment to Industry

**vigilance®**

**YOKOGAWA** 

# Yokogawa's Fieldbus Solutions greatly help to reduce plant life-cycle costs.

## The Total Solution Only Yokogawa, a Pioneer in Fieldbus Instrumentation



**Planning, design and engineering**

- Provides segment design tools to support the work.
- Facilitates design and engineering by maintaining data consistency with engineering tools.
- Provides an off-line engineering environment in which design can be carried out without target field devices.
- Offers training programs.

- A high-quality and high-reliability Fieldbus system through add-on of Fieldbus technologies in the industry-proven CENTUM system.
  - CENTUM control systems have a system availability of 99.99999% (seven 9s), which means a failure rate of once per 4,500 years.
- ALF111, Fieldbus communication module that supports dual-redundant configuration.
- Multi-Variable field devices.
  - Examples: An EJJ series pressure/differential pressure transmitter measures differential pressure and static pressure. A digital YEWFLO series vortex flowmeter measures flow and temperature.
- Upgrades devices by software downloading.
  - Device revision upgrading can be achieved without involving any on-site work, enabling devices to be loaded with the latest diagnostic functions.
  - Supports FF883 Specification, Class1.

### Innovations in Maintenance

- Provides an easy confirmation window with the status information of field devices in a central control room.
- Offers valve maintenance tool.
  - ValveNavi provides easy valve tuning and diagnostic functions.
- Realizes predictive maintenance based on diagnostic functions:
  - Impulse line blocking diagnoses
  - Electromagnetic flowmeter electrode adhesion diagnoses
  - Heat trace temperature map diagnoses
  - Predicts valve maintenance timing
  - Monitors normally controlled zones in a control loop using valve readback value.
- Classifies devices, control loops and alarms according to their priority and urgency and automatically notifies the proper persons.
- Supports maintenance work, including the follow-up observation of devices and control loops, maintenance scheduling, and requests for urgent maintenance.
- Simplifies device recognition and replacement.

Introduction of PRM Advanced Diagnostics

Introduction of PRM

Introduction of Fieldbus system

Intelligent field device

Predictive diagnostics

Device information display and history management

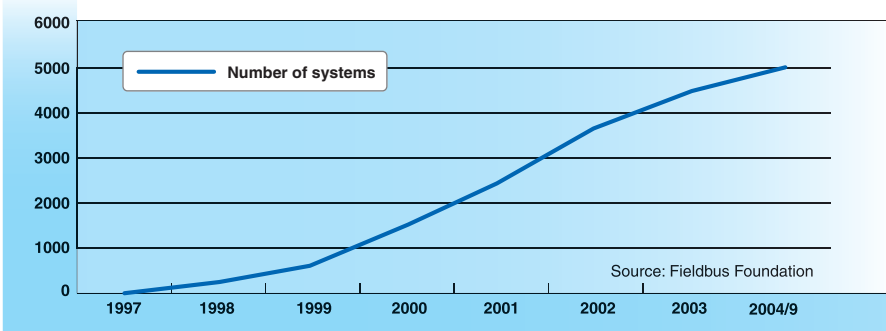
Notification of diagnostic results sent to system automatically

Detection of abnormalities inside device through self-diagnostics

NOTE:	What is Fieldbus?	Communication Method	Quantity of Information	Wiring and Installation Costs	Function Distribution	Scope of real-time monitoring	Maintenance	Interoperability
	Conventional instrumentation	Analog data transmitter method in one-way communication	Single data value	Since one-to-one wiring is required, as many wires as the number of field devices are necessary.	Control is covered by a DCS.	Scope of monitoring based on conventional system	Maintenance on the site/Corrective and Preventive Maintenance	4-20 mA, 1-5V DC
	Fieldbus instrumentation	Full digital data transmitter method in two way communication 	<ul style="list-style-type: none"> <li>■ Multiple data value</li> <li>■ Addition of data status at devices</li> <li>■ Alarm notification from devices</li> </ul>	<ul style="list-style-type: none"> <li>■ Multiple field device can be connected to a single wiring cable</li> </ul>	<ul style="list-style-type: none"> <li>■ Some of the control logics can be allocated to field devices.</li> </ul>	<ul style="list-style-type: none"> <li>■ Availability of field devices status monitoring and implementation of self-diagnosis</li> <li>■ Prevention of unscheduled plant shutdown due to field device failure</li> </ul>	<ul style="list-style-type: none"> <li>■ Remote maintenance from center control room</li> <li>■ Introduction of predictive maintenance</li> </ul>	<ul style="list-style-type: none"> <li>■ Vendor-independent</li> </ul>
	Advantages of fieldbus installation	<ul style="list-style-type: none"> <li>■ Improvements in product quality by highly accurate data processing and less zero &amp; span drift in trend monitoring.</li> <li>■ Availability of remote maintenance</li> <li>■ Increase of field information</li> </ul>	<ul style="list-style-type: none"> <li>■ Increased efficiency in operation and maintenance work by the utilization of information from field devices</li> </ul> <p>* For example, an information for the actual valve is utilized in operation and maintenance.</p>	<ul style="list-style-type: none"> <li>■ Reduction in the number of wiring cables by multi-drop connection</li> <li>■ Reduction in the cost of installation, including wiring cable and marshalling rack, etc.</li> <li>■ Reduction in the size of control room</li> <li>■ Easy addition of devices</li> </ul>	<ul style="list-style-type: none"> <li>■ Optimum allocation of control logics</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduced trip to the site and fieldwork</li> <li>■ Automation and standardization of maintenance work utilizing tools</li> <li>■ Improved availability of the plant through predictive maintenance</li> <li>■ Reduced maintenance costs</li> </ul>	<ul style="list-style-type: none"> <li>■ System configuration with multi-vendor devices</li> <li>■ Freedom of selection for optimum system and field devices</li> </ul>	

# Record of Installation

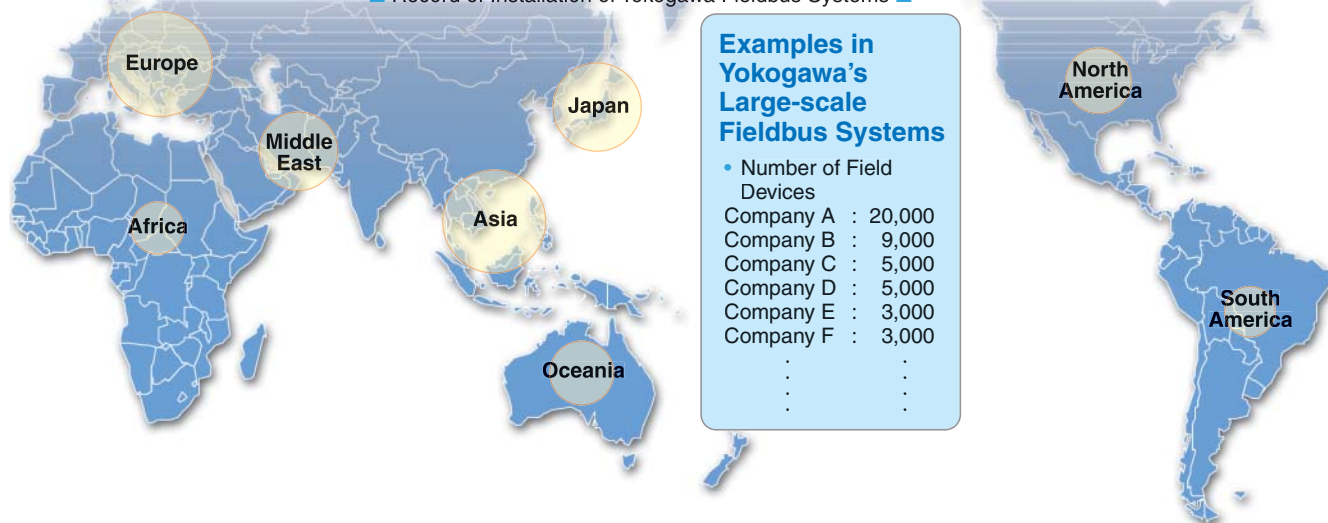
## Number of In-operation FOUNDATION™ fieldbus Systems



Fieldbus solutions are expected to contribute to the cutting not only of initial investment costs but also of the TCO as they provide improved methods of maintenance, such as predictive and remote maintenance. Thus these solutions are being introduced around the world at an accelerating rate. 5,000 systems and 400,000 devices are already in operation as of September 2004.

As a total Fieldbus solution vendor, Yokogawa has an excellent experience records. Yokogawa encourages you to consider introducing our fieldbus solutions when you plan to replace, change or built a new plant. We take helping you seriously.

## Record of Installation of Yokogawa Fieldbus Systems



A Yokogawa Commitment to Industry

# vigilance.®



What does Yokogawa **vigilance** mean to the future of your business? **Quality.** Through products that are built from the ground up and tested to the last hour, you're ensured continuous operation and more uptime. **Innovation.** Your business will benefit from new insights and capabilities, bringing true predictability to your process. **Foresight.** As the market changes, you'll have solutions that give you the continuity and flexibility to plan ahead and grow. Our partners know the difference. With Yokogawa, you can count on a lifetime of plant efficiency, from instrumentation to operation support. Let us be vigilant about your business.

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