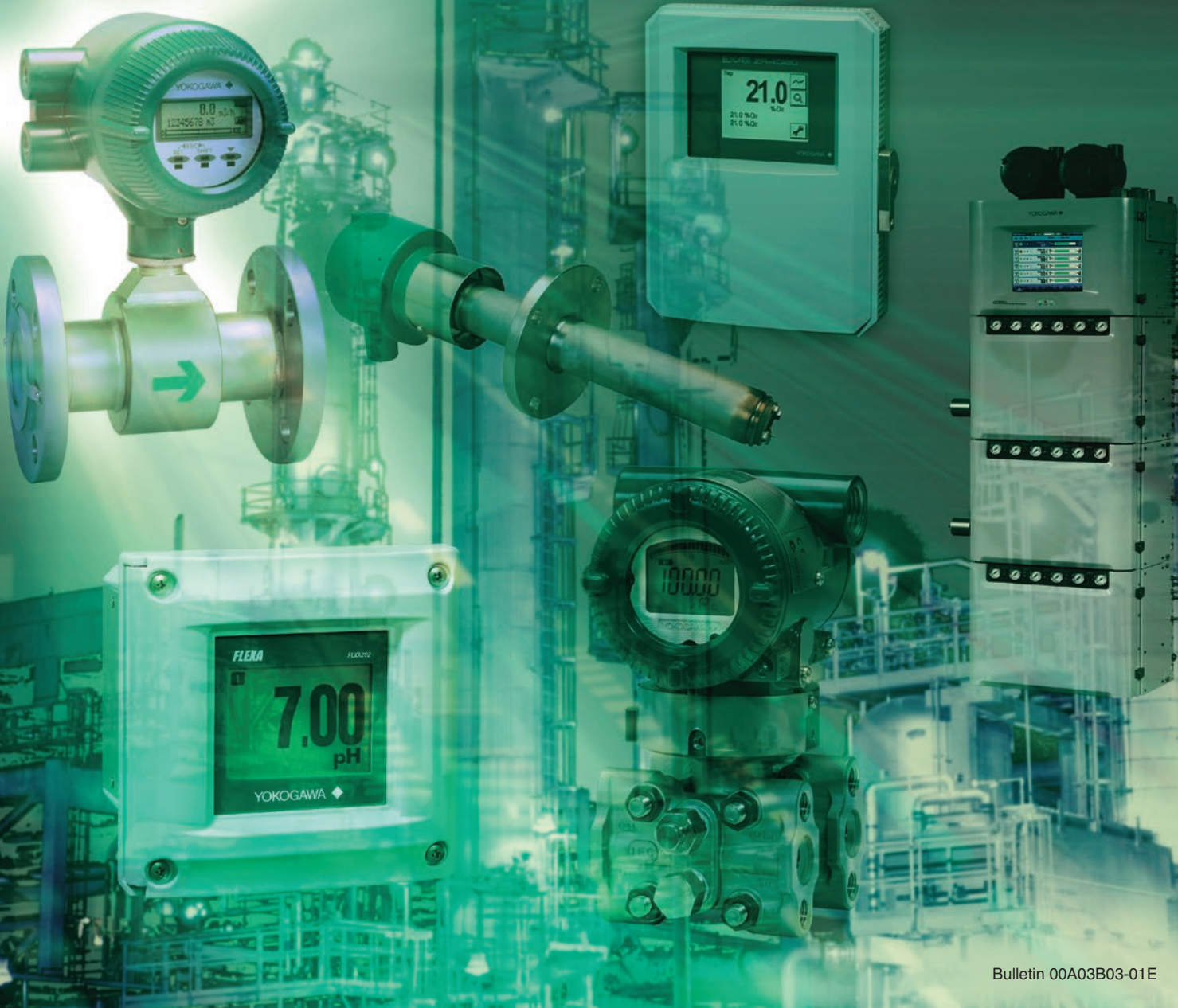


Product Solution Catalog

(Field Instruments and Analytical Products)

Applications



Bulletin 00A03B03-01E

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PRODUCT SOLUTIONS (FIELD INSTRUMENTS)

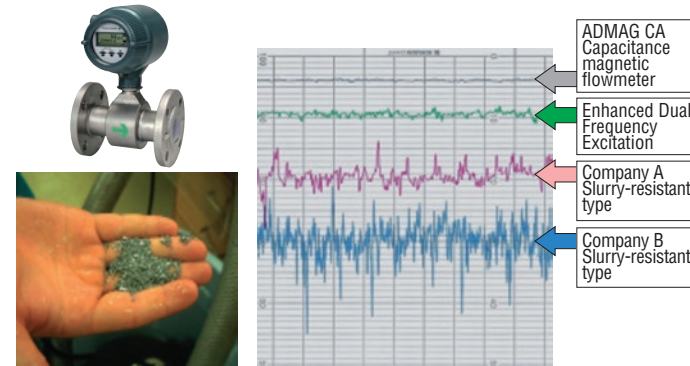
Application/Solution	Field Instrument	Liquid								
		General	Adhesive	Corrosive	Low-conductivity	Slurry	Gas	Steam	Powder	Solid
Flow Measurement Applications										
Sludge cake	Capacitance type magnetic flowmeter	✓			✓					
Coal tar	Capacitance type magnetic flowmeter	✓		✓	✓					
Latex	Capacitance type magnetic flowmeter	✓								
Oil-laden wastewater	Capacitance type magnetic flowmeter	✓								
Pure water	Capacitance type magnetic flowmeter, Vortex flowmeter, Coriolis mass flowmeter			✓						
Nitric acid	Capacitance type magnetic flowmeter, Magnetic flowmeter, Coriolis mass flowmeter		✓							
Pulp liquid (white liquor)	Magnetic flowmeter	✓			✓					1
Waterworks	Magnetic flowmeter, Coriolis mass flowmeter	✓								
Sewage works	Magnetic flowmeter, Capacitance type magnetic flowmeter, Coriolis mass flowmeter	✓	✓							
Coolant for rolling	Magnetic flowmeter, Coriolis mass flowmeter	✓								
Abrasive (slurry)	Magnetic flowmeter				✓					2
Hot black liquor	Magnetic flowmeter (for digester)	✓	✓							
Soil pressure shield	Magnetic flowmeter	✓			✓					
Steam	Vortex flowmeter						✓			3
Solvent	Vortex flowmeter, Capacitance type magnetic flowmeter, Coriolis mass flowmeter			✓		✓				
Acetic acid	Capacitance type magnetic flowmeter, Coriolis mass flowmeter	✓								
Dip process	Capacitance type magnetic flowmeter, Magnetic flowmeter	✓			✓					
Wastewater	Capacitance type magnetic flowmeter	✓	✓							
Electrolytic cell	Magnetic flowmeter	✓	✓							
Solutions										
Solution using electronic transmitter	D/P transmitter without impulse line (for flow measurement)		✓			✓	✓			5
	Level transmitter without impulse line (for level measurement)		✓							6
	Advanced diagnostics with multi-sensing technology		✓							7
	Level meter for underground tank		✓							
	Level meter with double capillaries for process fluid temperature compensation		✓							
	Twin-output transmitter (EJA118/Z)		✓				✓	✓		
Solution using non-wetted sensor	Radar level meter		✓					✓	✓	
	Ultrasonic level meter		✓							
Solution using temperature sensor	Temperature transmitter		✓			✓	✓			8
Solution using special magnetic flowmeter	Capacitance type magnetic flowmeter		✓							
	Magnetic flowmeter		✓							

APPLICATIONS

1 Stable Flow Measurement against Slurry Fluid

Field Instruments

The ADMAG AXF employs the fluid noise free excitation method to achieve stable measurement. Its enhanced version is also available against difficult applications with higher fluid noise than usual.



ADMAG CA Capacitance magnetic flowmeter
Enhanced Dual Frequency Excitation
Company A Slurry-resistant type
Company B Slurry-resistant type

Applications:
Measurement of high concentration slurry liquids (solid mixture liquids).

Features:
The "Enhanced Dual Frequency Excitation Method" can achieve both excellent stability and quick response in flow measurement reducing the negative impact generated from slurry noise.

Benefits:
The "Enhanced Dual Frequency Excitation Method" realizes stable flow measurement even under difficult conditions with process fluid noise. This is applicable not only to slurry fluids but also to low conductivity fluids.

2 Stable Flow Measurement of Highly Abrasive Fluid

Field Instruments



Use of ceramic, harder than everything but diamond, as the flowmeter tube prevents abrasion.

Magnetic flowmeter with non-wetted electrodes prevents the abrasion of the electrodes and the effects of noise of high-density slurry fluid.

Applications:
Measurement of a highly abrasive base material (slurry) for producing aluminum hydroxide.

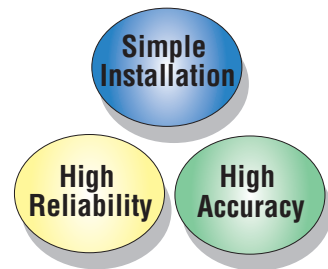
Features:
Use of a ceramic flowmeter tube and non-wetted electrodes.

Benefits:
Abrasion-free lining and electrodes lengthen the maintenance interval.

3 Streamlined instrumentation for saturated steam application

Field Instruments

- ◆ Multi-variable vortex flowmeter with built-in temperature sensor.
- ◆ Directly output mass flow rate of saturated steam.
- ◆ Suitable for high pressure steam application.
- ◆ High temperature up to +400°C.



Applications:
Lower cost instrumentation for saturated steam.

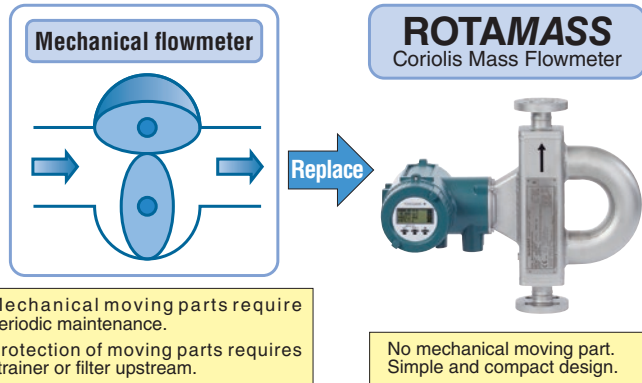
Features:
Real-time temperature compensation by built-in temperature sensor.

Benefits:
Safer and stable measurement without external temperature sensor.

4 High accurate mass flow measurement

Field Instruments

- ◆ Mass flow for nearly all flowing fluids.
- ◆ Wide temperature range (-200 to +350°C).



Mechanical moving parts require periodic maintenance. Protection of moving parts requires strainer or filter upstream.

No mechanical moving part. Simple and compact design.

Applications:
High accurate and stable measurement of mass flow.

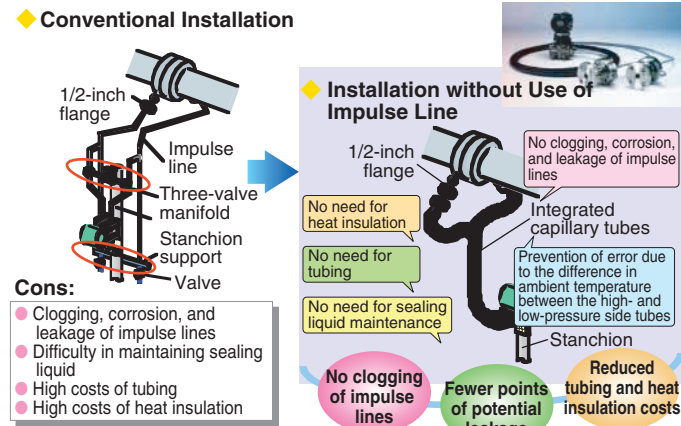
Features:
Highly independent from external loads or vibrations through special decoupling system.

Benefits:
High accuracy $\pm 0.1\%$. Reduction of maintenance time.

5 D/P Transmitter for Orifice Flowmeter without Impulse Line

Field Instruments

Advantages Compared with Conventional Installation



Cons:

- Clogging, corrosion, and leakage of impulse lines
- Difficulty in maintaining sealing liquid
- High costs of tubing
- High costs of heat insulation

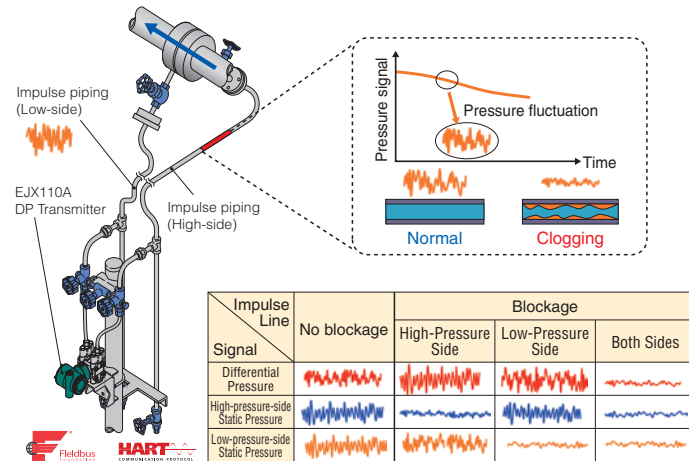
Applications:
Perfect solution to difficulty in maintaining impulse lines for flow measurement with a differential pressure transmitter.

Features:
Use of small, 1/2-inch diaphragm seals in place of impulse lines.

Benefits:
No clogging or leakage of impulse lines, and reduced tubing and heat insulation costs.

7 Advanced Diagnostics with Multi-Sensing Technology

Field Instruments



Applications:
A transmitter monitors the status of impulse blockage.

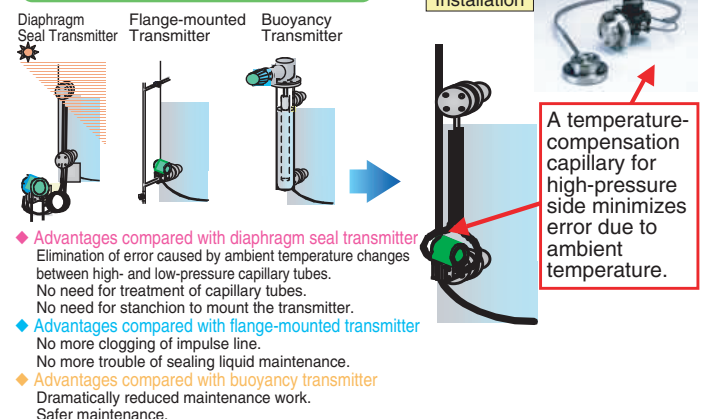
Features:
Blockage detection is available for high side, low side and both sides of impulse line.

Benefits:
Preventive maintenance by impulse line detection provides increased plant operating uptime.

6 Level Transmitter without Impulse Line (for Sealed Tank)

Field Instruments

Advantages Compared with Conventional Level Transmitters



- ◆ Advantages compared with diaphragm seal transmitter: Elimination of error caused by ambient temperature changes between high- and low-pressure capillary tubes. No need for treatment of capillary tubes. No need for stanchion to mount the transmitter.
- ◆ Advantages compared with flange-mounted transmitter: No more clogging of impulse line. No more trouble of sealing liquid maintenance.
- ◆ Advantages compared with buoyancy transmitter: Dramatically reduced maintenance work. Safer maintenance.

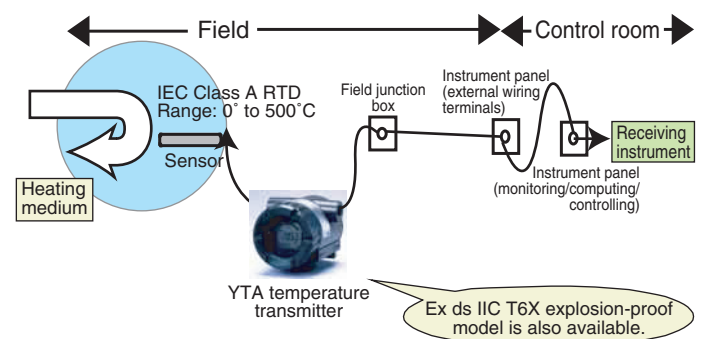
Applications:
Prevents problems associated with impulse lines for level measurement with a differential pressure transmitter.

Features:
A temperature-compensation capillary cancels the temperature differences between the high- and low-pressure sides.

Benefits:
Elegant installation with minimal error due to ambient temperature changes.

8 Temperature Measurement with Higher Accuracy

Field Instruments



Thermocouple
Tolerance $\pm 1.5^\circ\text{C}$ for Class 1 and $\pm 2.5^\circ\text{C}$ for Class 2.

RTD
Tolerance $\pm 0.55^\circ\text{C}$ at 200°C for Class A.

The optimum sensor can be easily selected from a variety of options.

Applications:
Higher-accuracy temperature measurement.

Features:
Employs a resistance temperature detector.

Benefits:
Measurement accuracy increased by 1°C to 3°C .

9 Process Gas Chromatograph

Analytical Products

The GC8000 with multiple ovens and multiple system clocks allows flexible configuration to meet customers' needs even in complex applications. Complex applications are divided into smaller simultaneous measurements, and optimizing the analysis condition of each measurement reduces the analysis time. The GC8000 has a built-in 12-inch color touchscreen display that improves operation and simplifies maintenance. At the touch of the screen, all of the analytical parameters and measurement results can be easily accessed.

GC8000



Applications:

Petrochemical, oil refining, metal refining, inorganic chemical, and other industries.

Features:

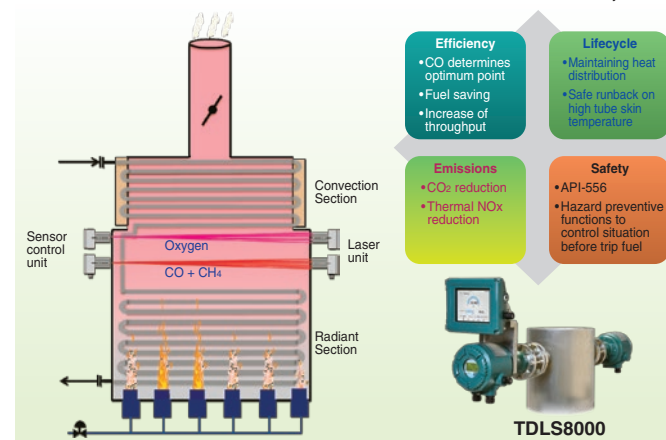
High-speed analysis with multi-oven structure, improved operation with a large touch panel, high reliability, improved functionality.

Benefits:

Controls quality and improves yield.

10 Tunable Diode Laser Spectrometer

Analytical Products



TDLS8000

Applications:

Combustion, Safety, and Lifecycle Management System for Fired Heaters in Hydrocarbon Processing Industries.

Features:

Laser based technology for combustion control is a design consideration for heater applications where a single sample point will not provide a representative sample. It has a response time of < 5 seconds and can measure across a radiant section up to 30m.

Benefits:

Optimize the combustion, improve safety, and extend the life time of heat exchange coils inside.

13 FLXA202/FLXA21 2-wire Liquid Analyzer

Analytical Products

The FLXA202/FLXA21 is a next-generation liquid analyzer that can be flexibly configured to measure pH/ORP, contacting conductivity, inductive conductivity, or dissolved oxygen. The FLXA21 also allows up to two sensors of the same type to be installed, thus reducing installation cost and space, and enabling a highly reliable backup system to be constructed.



Applications:

Measuring pH/ORP and conductivity in sewage treatment facilities and various industrial processes.

Features:

- Support for up to two sensors and digital communications for increasing reliability and reducing maintenance and instrumentation costs.
- Advanced functions such as self-diagnostics capabilities for sensors, displaying sensor status and estimated maintenance time, enabling quick setup.

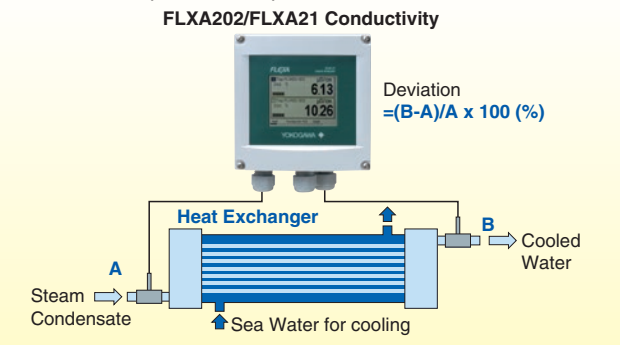
Benefits:

Lower installation cost, and construction of a highly reliable backup system

14 2-wire Conductivity Analyzer FLXA202/FLXA21

Analytical Products

The FLXA202/FLXA21 receives inputs from two conductivity cells located at different points in the process.



Heat exchanger monitoring by dual sensors and deviation output alarms after leakage in the heat exchanger

Applications:

Leak detection of heat exchanger

Features:

- Output of calculation results from two measuring values.
- This feature is also used for the measurement of the efficiency of ion exchange resin.

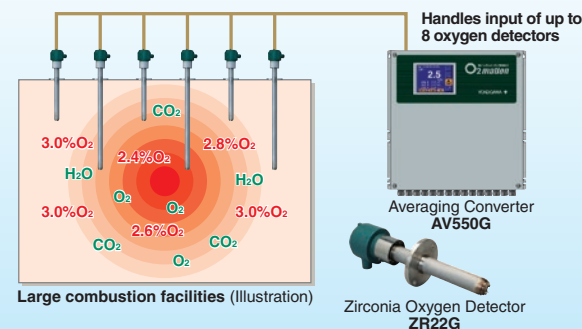
Benefits:

- Lower installation cost (Two sensors – one converter).
- No calculation is required in DCS.

11 Zirconia Oxygen Averaging Converter

Analytical Products

A multiple point oxygen measurement system is required for situations when gas stratification in the flue duct affects combustion control. The AV550G Averaging Converter can accept inputs from up to eight zirconia oxygen detectors. It sends output signals for the individual concentrations as well as averages of multiple oxygen concentrations. A robust multipoint converter reduces installation and maintenance costs.



Zirconia Oxygen Detector ZR22G

Applications:

Combustion control in large utility boilers or various industrial furnaces.

Features:

Color touch screen operation, powerful new process diagnostic tools and creative hardware design.

Benefits:

Optimizes fuel usage, minimizes atmospheric emissions and reduces energy consumption.

12 Paramagnetic Oxygen Analyzer (Flameproof/General-purpose Type)

Analytical Products



MG8E Oxygen Analyzer

Applications:

Prevention of explosion hazards.

Features:

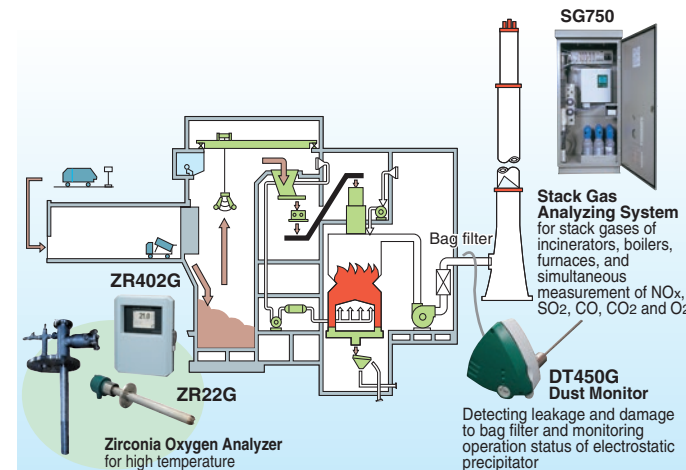
Measures oxygen concentrations of explosive flammable gases.

Benefits:

Safety control at plants.

15 Stack Gas Analyzing System

Analytical Products



Applications:

Incinerators, boilers, furnaces, etc.

Features:

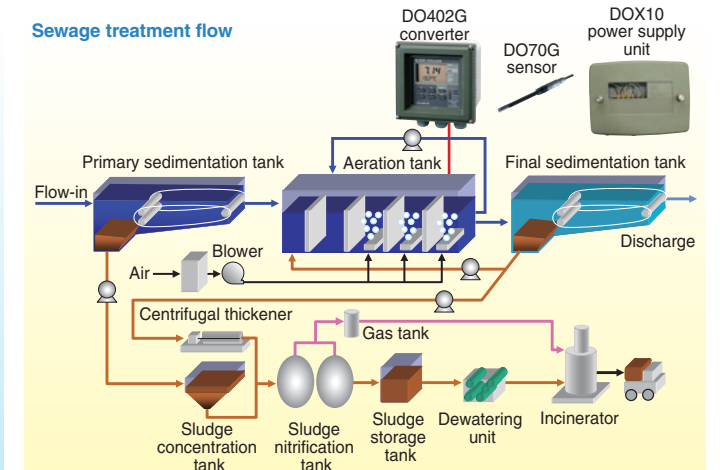
Simultaneous measurement of multiple components.

Benefits:

Environmental protection and energy saving.

16 Optical Dissolved Oxygen Analyzer

Analytical Products



Applications:

Measuring dissolved oxygen at sewage treatment facilities

Features:

Easy maintenance, resistant to dirt, stable measurement even in fine bubbles

Benefits:

- The installed converter DO402G can be connected to DO70G sensor.
- Reduction of maintenance man-hours.

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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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