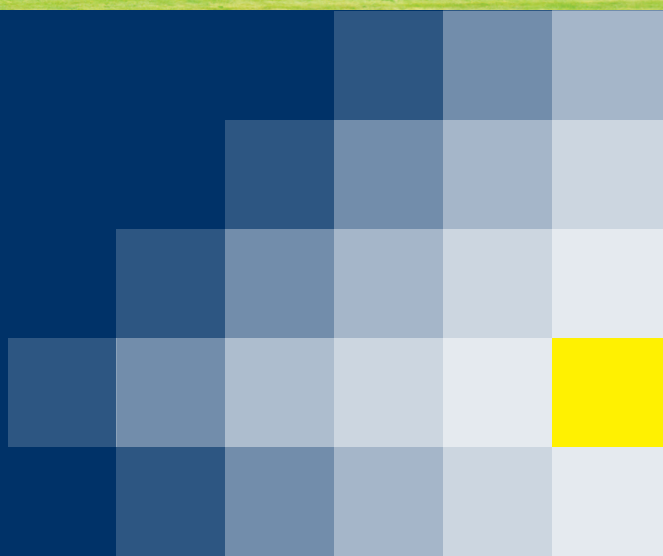




OpreX™ Analyzers

# Wet Chemistry Analyzers Platform

Giving You More Insight





# Wet Chemistry Analyzers Platform

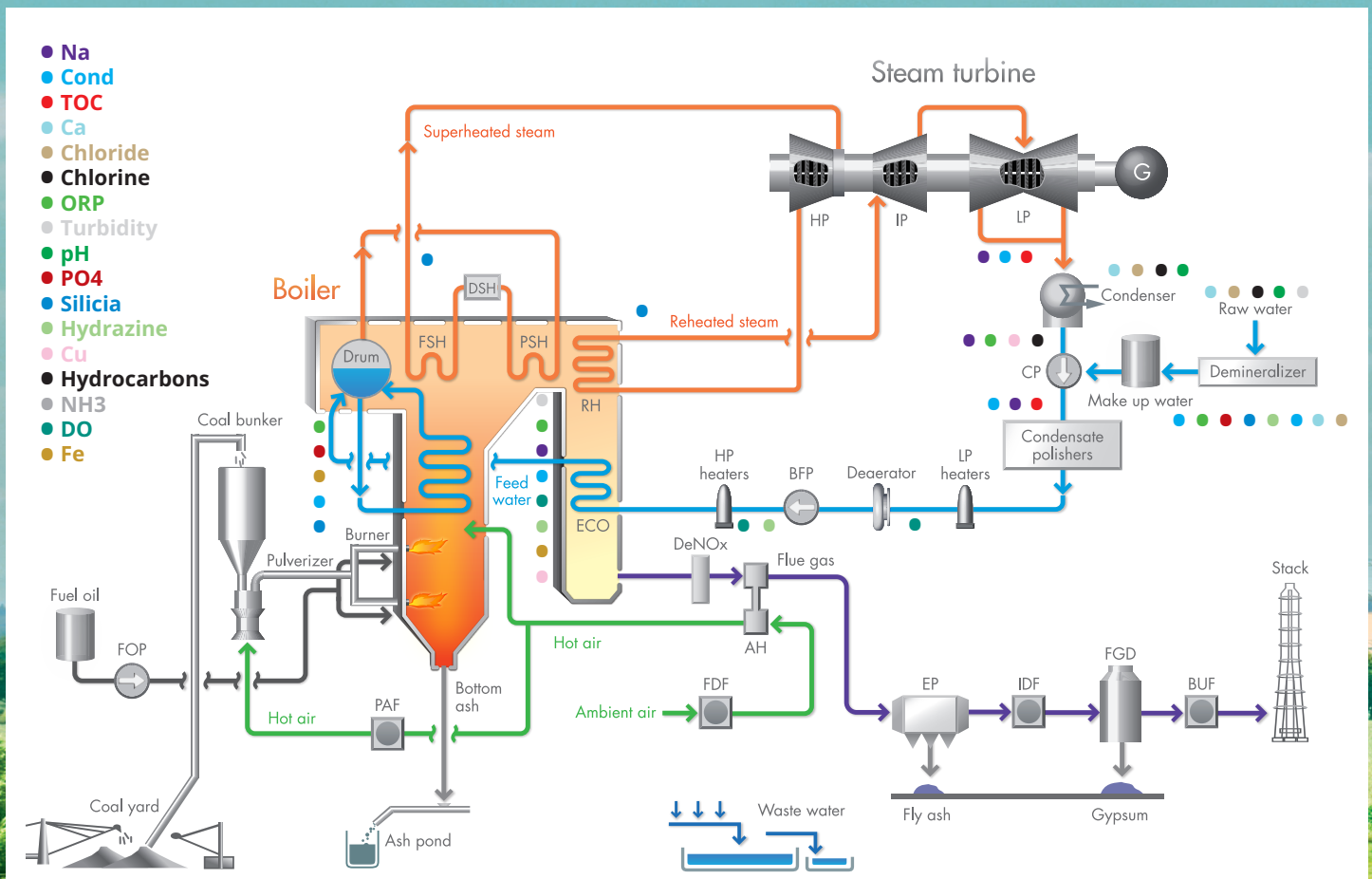
## Wet chemistry at power plants

Energy is a fundamental component in modern society and has become a major challenge. Power plants, one of the

major energy sources, use water as main medium, either for cooling in the liquid phase or as a drive for turbines in the gas phase. The importance for optimizing efficiency and maintaining the

highest possible availability of thermal power plants is well balanced water chemistry. Unplanned plant outage and concurrently, unplanned costs may result if water chemistry shifts out of specified limit values.

Yokogawa Wet Chemistry Analyzers contribute to the reliable and sustainable operation of power plants, helping to minimize downtime.









# WE410 Silica analyzer

## WE410 Silica Analyzer

Formation of deposits such as porcelain inside the boiler and turbines is due to Silica. Removing these deposits is not possible even with the use of acid. Thermal conductivity of Silica is very low, so the smallest deposit thickness has significant impact on heat transfer. This disturbance results in plant-wide reduced efficiency and eventually the plant will require maintenance.

**WE410 Silica analyzer** in thermal power plants application reduces costs and maintenance related to the Silica content monitoring. As the best solution, Silica measurement should be performed in the complete production cycle and steam distribution, including a water demineralization plant, boiler drum, superheater, steam turbine and condensate polishing plant.



## Features:

- Low reagent consumption
- Wide range of detection
- Large, easy to read display
- Simple menu navigation
- Compact size
- Intelligent Sample Awareness
- Temperature controlled sample cell
- On-demand mode for non-continuous operation



## General specification WE410 Silica Analyzer:

### Measurement method

- Heteropoly-molybdenum blue colorimetric method

### Analyzer performance

- Measurement cycle less than 15 minutes
- Measuring range 0 to 5000 ppb or µg/L with auto ranging
- Detection limit 0.5 ppb
- Accuracy less than 5 % of reading or ±0.5 ppb, whichever is greater, from 0 to 300 ppb.
- Automatic calibration
- Reagent consumption 1 L reagents app 45 days @ 15 minute cycle

### Electrical / Output signal

- Two isolated 4/20mA outputs
- Four programmable alarm relays (5A @ 240V AC)

### Electrical / Power supply

- Rating 100 – 240V AC, 100W, 50/60 Hz, auto-detection

### Display

- Display with digital graphics LCD and backlight

### Environmental and process condition

- Ambient operating temperature 5 to 45°C
- Sample flow requirement 50 to 1000 mL/min
- Sample temperature range 5 to 45°C

### Housing / Ingress protection class

- Fluidics cabinet NEMA 4X/IP65 fiberglass with clear poly windows
- Wall mounting

### Certification

- TUV approvals to meet UL61010-1 and CSA C22.2 No. 61010-1 certifications
- EC Directive 2006/95/EC and 2004/108/EC.

## Model and suffix codes:

Model	Suffix code	Option code	Description
WE410	.....	.....	Silica Analyzer
Range	-S	.....	Standard range 0 - 5000 ppb
Housing	-N	.....	Always -N
Type	-AA	.....	General purpose
Spare	-N	.....	Always -N
Language	-E	.....	Always -E



# WE420 Sodium analyzer

## WE420 Sodium Analyzer

One of the very important parameters to analyze in steam and water applications is Sodium. By measuring Sodium, we are able to monitor and control on line water and steam quality. It can be used in water treatment plants and to control the quality of the steam. The measurement result can be a good indicator of condensate leakage.

**WE420 Sodium analyzer** provides continuous measurement of Sodium concentration. The analyzer uses an ion selective electrode and a reference electrode to measure the concentration of Sodium ion.



## Features:

- Detection limit of 0.1 ppb
- Protect against the costly effects of corrosion
- Extremely easy to use while maximizing uptime
- Measurements at a glance from any distance
- Fastest and most stable measurements
- Minimize operator time and maintenance
- Extends reagent consumption up to 3 months
- Advanced user interface with detailed calibration
- Simple and fast calibration cycles
- Easy installation



## General specification WE420 Sodium Analyzer:

Measurement method

- Specific Ion Ammonia/DIPA

Analyzer performance

- Continuous measurement
- Measuring range ammonia 0.30 ppb to 200 ppm, DIPA 0.10 ppb to 10 ppm / auto range
- Accuracy Ammonia Application Package:  $\pm 5\%$  or 0.3 ppb, DIPA Application Package:  $\pm 5\%$  or 0.1 ppb,
- Automatic calibration
- Reagent consumption Ammonia Application Package: up to 30 days of continuous operation, DIPA Application Package: up to 60 days of continuous operation

Electrical / Output signal

- Two isolated 4/20mA outputs
- Three programmable alarm relays (5A @ 240V AC)

Electrical / Power supply

- Rating 100 – 120V AC or 200-240 V AC, 50/60 Hz

Display

- Display with digital graphics LCD and backlight

Environmental and process condition

- Ambient operating temperature 5 to 45°C
- Sample flow requirement 25 to 40 mL/min
- Sample temperature range 5 to 45°C

Housing / Ingress protection class

- Fluidics cabinet NEMA 4X/IP65
- Wall mounting footprint

Certification

CE, CSA

## Model and suffix codes:

Model	Suffix code	Option code	Description
WE420	.....	.....	Sodium Analyzer
Range	-S	.....	0.30 ppb - 200 ppm, or 0.10 ppb - 10 ppm Reagent selection dependent
Housing	-N	.....	Always -N
Type	-AA	.....	General purpose
Spare	-N	.....	Always -N
Language	-E	.....	Always -E



# WE430 Hydrazine analyzer

## WE430 Hydrazine Analyzer

A very corrosive component for most metals is dissolved oxygen. Metal tubes used for boilers are affected by dissolved oxygen-caused corrosion. The effect of dissolved oxygen on corrosion can be reduced by maintaining its low level. During the working cycles of the plants in various regimes, drastic changes in the dissolved oxygen concentration may occur. For such changes, it is necessary to have analyzers with fast response times and shorter analysis time. The process of reducing dissolved oxygen concentration involves the use of chemicals that take it away from the fluid. As the most common dissolved oxygen scavenger hydrazine is used, it has a very strong effect on reducing the concentration of dissolved oxygen and thus also on preventing corrosion.

**WE430 Hydrazine analyzer** uses ion selective high precision and real-time measurement of hydrazine concentration in boiler feed water, boiler water, deaerator inlet-outlet, condensate, and in the entrance to the economizer. The measurement represents the current water status.



## Features:

- Oxygen scavenger detection of 0 ppb to 200 ppb hydrazine or 0 ppb to 1000 ppb ELIMIN-OX
- Continuous online measurement
- Extremely easy to use
- Measurements at a glance from any distance
- Fastest and most stable measurements
- Minimize operator time and maintenance
- Extend reagent consumption up to 2 months
- Advanced user interface with detailed calibration
- Simple and fast user selectable calibration
- Easy installation



## General specification 430 Hydrazine Analyzer:

### Measurement method

- Iodide electrode technology

### Analyzer performance

- Continuous measurement
- Measuring range 0 ppb to 200 ppb / auto range
- Accuracy  $\pm 5\%$  or 2 ppb
- Automatic calibration
- Reagent consumption up to 2 months

### Electrical / Output signal

- Two isolated 4/20mA outputs
- Three programmable alarm relays (5A @ 240V AC)

### Electrical / Power supply

- Rating 100 – 120V AC or 200-240 V AC, 50/60 Hz

### Display

- Display with digital graphics LCD and backlight

### Environmental and process condition

- Ambient operating temperature 5 to 45°C
- Sample flow requirement 40 mL/min
- Sample temperature range 5 to 45°C

### Housing / Ingress protection class

- Fluidics cabinet NEMA 4X/IP65
- Wall mounting footprint

### Certification

CE, CSA

## Model and suffix codes:

Model	Suffix code	Option code	Description
WE430	.....	.....	Hydrazine Analyzer
Range	-S	.....	Standard range 0 ppb – 200 ppb
Housing	-N	.....	Always -N
Type	-AA	.....	General purpose
Spare	-N	.....	Always -N
Language	-E	.....	Always -E

# WE440 Phosphate Analyzer

## WE440 Phosphate Analyzer

In steam production systems, phosphate is used to control the pH of boiler water. Reduction of problems arising from the occurrence of corrosion is achieved by maintaining water alkaline. In addition to maintaining the pH value, phosphate reacts with calcium and magnesium forming suspended matter and thus reduces the build-up of deposits in the boiler and turbines. Suspended matters can be easily removed later in the boiler blowdown cycle. Phosphate dosing must be carefully controlled. Too much phosphate can cause damage to steam and too less can allow acidic conditions to develop and promote the formation of corrosion.



**WE440 Phosphate Analyzer** ensures early detection and precise measurement of phosphate in the boiler water supply.

### Features:

- Allow for 45 days between reagent changes
- Designed to provide accurate and precise measurements
- Compact size
- Simplified operation
- Low operating costs
- On-demand mode for non-continuous operation



## General specification WE440 Phosphate Analyzer:

### Measurement method

- Vanadomolybdate colorimetric method

### Analyzer performance

- Measurement cycle less than 8 minutes
- Measuring range 0.2 to 50 ppm or mg/L with auto ranging
- Detection limit 0.2 ppm
- Accuracy Less than 5% of reading or  $\pm 0.5$  ppm, whichever is greater from 0.2-50 ppm
- Automatic calibration
- Reagent consumption 1 L / 45 days

### Electrical / Output signal

- Two isolated 4/20mA outputs
- Four programmable alarm relays (2A @ 240V AC)

### Electrical / Power supply

- Rating 100 – 240V AC, 110W, 50/60 Hz, auto-detection

### Display

- Display with digital graphics LCD and backlight

### Environmental and process condition

- Ambient operating temperature 5 to 45°C
- Sample flow requirement 50 to 1000 mL/min
- Sample temperature range 5 to 50°C

### Housing / Ingress protection class

- Fluidics cabinet NEMA 4X/IP65 fiberglass with clear poly windows
- Wall mounting

### Certification

- TUV approvals to meet UL61010-1 and CSA C22.2 No. 61010-1 certifications
- EC Directive 2006/95/EC and 2004/108/EC.

## Model and suffix codes:

Model	Suffix code	Option code	Description
WE440	.....	.....	Phosphate Analyzer
Range	-S	.....	Standard range 0.2 – 50 ppm
Housing	-N	.....	Always -N
Type	-AA	.....	General purpose
Spare	-N	.....	Always -N
Language	-E	.....	Always -E



## Synaptic Business Automation<sup>TM</sup>

Synaptic Business Automation underlies a process of co-innovation and collaboration with customers that leverages Yokogawa's domain knowledge and digital automation technologies to create sustainable value.

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