



Improving the Performance of  
Power Plants Worldwide





## COMMITTED TO YOUR SUCCESS

Don't compromise on your power plant's performance and reliability—choose a measurement and control supplier committed to your safety, efficiency and success.

At Honeywell, we help our customers maximize process performance, productivity, and profitability. Our power industry solutions provide reduced installation and maintenance costs while improving process quality.

Our field instruments and analytical equipment are available from authorized distributors throughout the world. Knowledgeable instrumentation professionals are there to assist you when and where you need them.



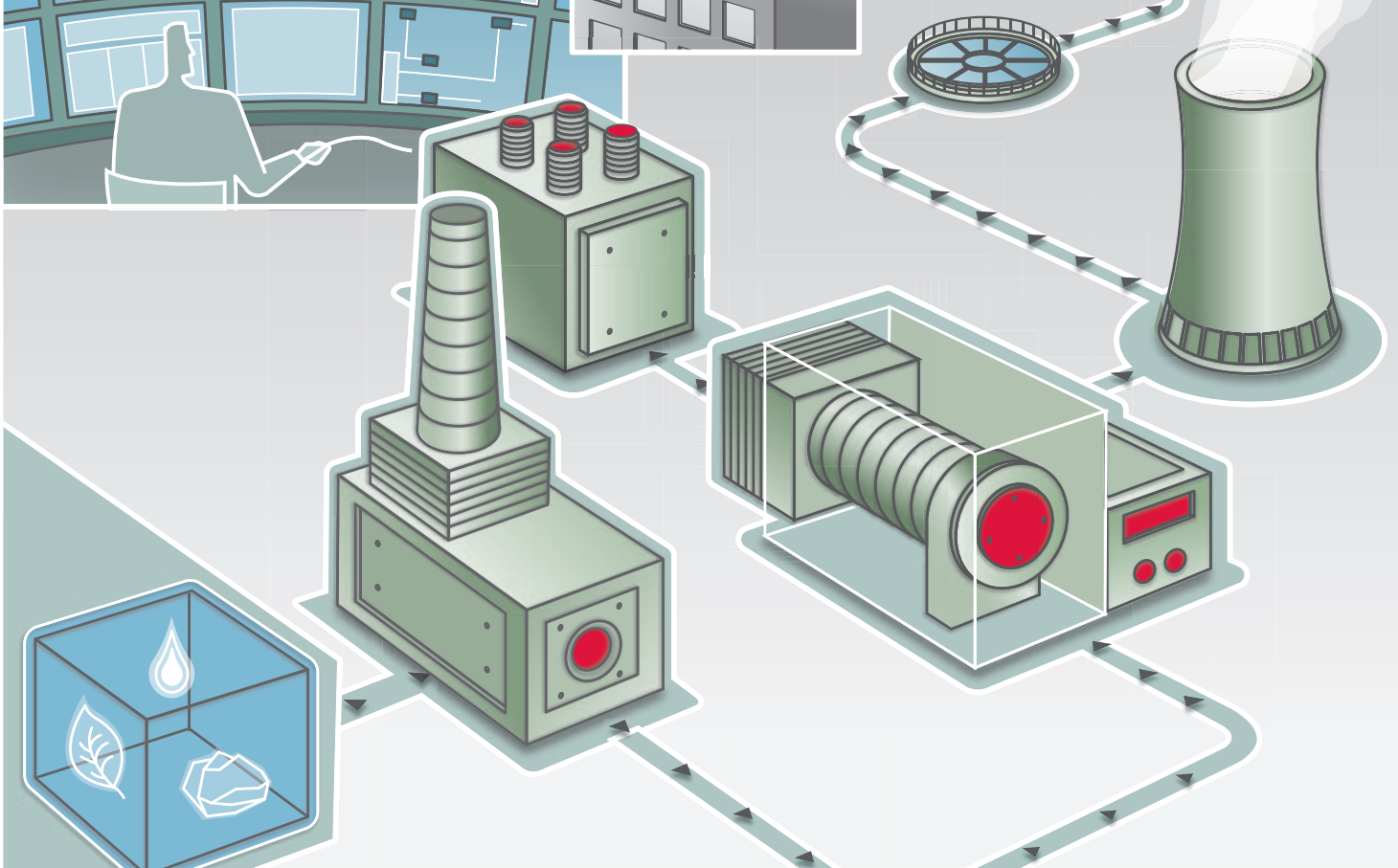
# Power Plants Require Efficiency and Reliability

Honeywell offers a complete range of innovative products to meet application requirements in the power and energy markets. Our solutions meet the needs of many power plants, including steam (coal, gas and oil), combined cycle gas turbine, waste-to-energy, industrial power, alternative energy, hydro and nuclear.



With increased global competition and concern with environmental stewardship and safety, electric utilities—particularly those relying on fossil fuels—must excel at operational flexibility, unit performance, environmental management and fiscal responsibility.

With so much at stake, you need an automation supplier that understands the power generation process and supports your strategic business objectives.



# Solutions Across Your Operation

## Fuel and Water Management

### Boiler Feedwater

Power plant efficiency requires a good water treatment program that reduces contaminants and minimizes risk of corrosion.

- Honeywell's robust conductivity, pH, and dissolved oxygen measurement solutions ensure that requirements for water entering boilers are continuously met.

### Fuel Handling

Operators must keep a continuous eye on levels inside coal bunkers to enable safe and reliable power generation.

- Meet the demands of fuel handling applications with our accurate SmartLine® non-contact and guided wave radar level transmitters.

### Condensate Water

Although makeup water should be high purity water, the condensate may contain some water hardness, corrosion products and impurities.

- Honeywell analytical products, including solutions for measuring pH, conductivity, sodium ion and dissolved oxygen, are proven in use with condensate water. A OneWireless® network can also help connect remote measurements.

## Cooling Water

Raw water is required to replace condensate loss in cooling systems, as well as replenish feedwater in steam circuits. Water extraction flow rates must be measured to control the chemical cleaning process. And, even though water from cooling towers is usually separate from the boiler cycle, proper cycle chemistry is just as important to prevent scaling, corrosion, and microbiological fouling.

- VersaFlow ultrasonic meters supply reliable values even with large pipe diameters. External installation allows easy retrofit with no intrusion into the pipe. Electromagnetic flow meters can precisely register a wide range of water volumes.
- Honeywell offers the industry's most extensive portfolio of analytical instruments to meet cooling water requirements.
- Robust temperature transmitters accurately measure temperature.

## Header Control

Accurate fuel supply measurements are key to controlling the boiler header and measuring product for invoicing.

- Remote Terminal Units (RTUs) can be paired with a smart multivariable transmitter to perform accurate gas flow calculations using AGA formulas.

## Makeup Water

Production of pure water is necessary for the operation of a power plant's steam boilers. This means monitoring the supply of de-ionized water to the water/steam circuit.

- VersaFlow vortex flow meters provide reliable volume measurement while versatile ultrasonic meters measure the flow of conductive and non-conductive liquids.

## Generator

### Generator Cooling

Using hydrogen gas to cool a generator can increase its efficiency and save operating costs. But hydrogen gas mixed with air can be very explosive.

- Reliable hydrogen gas concentration measurement, as provided by the Model 7866 triple range gas analyzer, ensures a safe environment and prevents accidents.

### Pump Monitoring

The lubricating oil circuit in power plant pumps must be monitored for pressure and temperature in order to avoid damage to the equipment.

- Honeywell offers high-precision temperature measurement devices to keep pumps in reliable working order.

## Boiler

### Water/Steam System

For safe operation of water/steam circuits, monitoring levels in vessels, controlling flow volumes in water and steam lines, and over-pressure measurement in all parts of the plant are important.

- Honeywell's advanced level and differential pressure transmitters optimize steam circuit monitoring.

### Combustion Control

Accurate flow measurements are essential for the exact batching and control of combustion processes used to fire boilers. These measurements are part of an integrated burner management system.

- Precise monitoring of burner supply and feedback lines, as performed by a VersaFlow Corolis mass flow meter, helps maintain a SIL-rated burner management solution utilizing the Honeywell HC900 control system.

### Soot Blowers

Molten ash accumulating in process heating areas can reduce heat transfer efficiency and cause the failure of boiler tubes due to increased temperature. Steam is often used to clean the boiler.

- The HC900 control system, incorporating data from temperature and header pressure transmitters, helps ensure the safety of the soot blowing operation.

### Drum Level Control

Measurement and control of steam drum level prevents overflow of water to turbines and enables increased boiler uptime.

- The HC900 control system is ideal for demanding boiler control applications. Its integrated loop and logic control minimizes equipment cost. The Universal Digital Controller can also be used for drum high-limit control.

### Boiler Air Flow

Power plants need to reduce excess air into boilers to optimize the fuel/air ratio in the combustion process and reduce emissions.

- Honeywell's VersaFlow transmitters provide high-accuracy data that can be used as a trip point in cascade control strategies.

### Damper Control

Accurate damper control will help manage emissions.

- HercuLine actuators feature industry-leading torque and accuracy, with unique features including non-contact position sensing and repeatability of 0.2% of the span

### Emissions Control

Stack emissions are impacted by air/fuel ratio; the more fuel not combusted, the greater the emissions discharge.

- SmartLine pressure transmitters accurately measure pressure to help maintain negative draft in stacks, thus minimizing emissions. Process data recorders also record sensor data for use in environmental monitoring.

### Turbine

Precise handling of parameters like steam speed pressure and temperature is mandatory in turbine control applications.

- Honeywell's answer to turbine control is the MasterLogic PLC integrated into an Experion® HS SCADA system. This solution provides complete monitoring and control of dynamic variables while enabling improved turbine uptime.

### Wastewater Treatment

In wastewater treatment systems, re-circulated water must be monitored on a continual basis to determine its pH and dissolved oxygen characteristics. This is essential for regulatory compliance.

- Rely on Honeywell's rugged pH and dissolved oxygen probes, coupled with our universal dual analyzer or high-purity water systems, for wastewater treatment. In addition, we supply single-loop controllers and data recorders to assist with compliance reporting.

### Overall Control and Data Acquisition

The central control panel in a power plant is where the entire monitoring, control and regulation of power generation takes place.

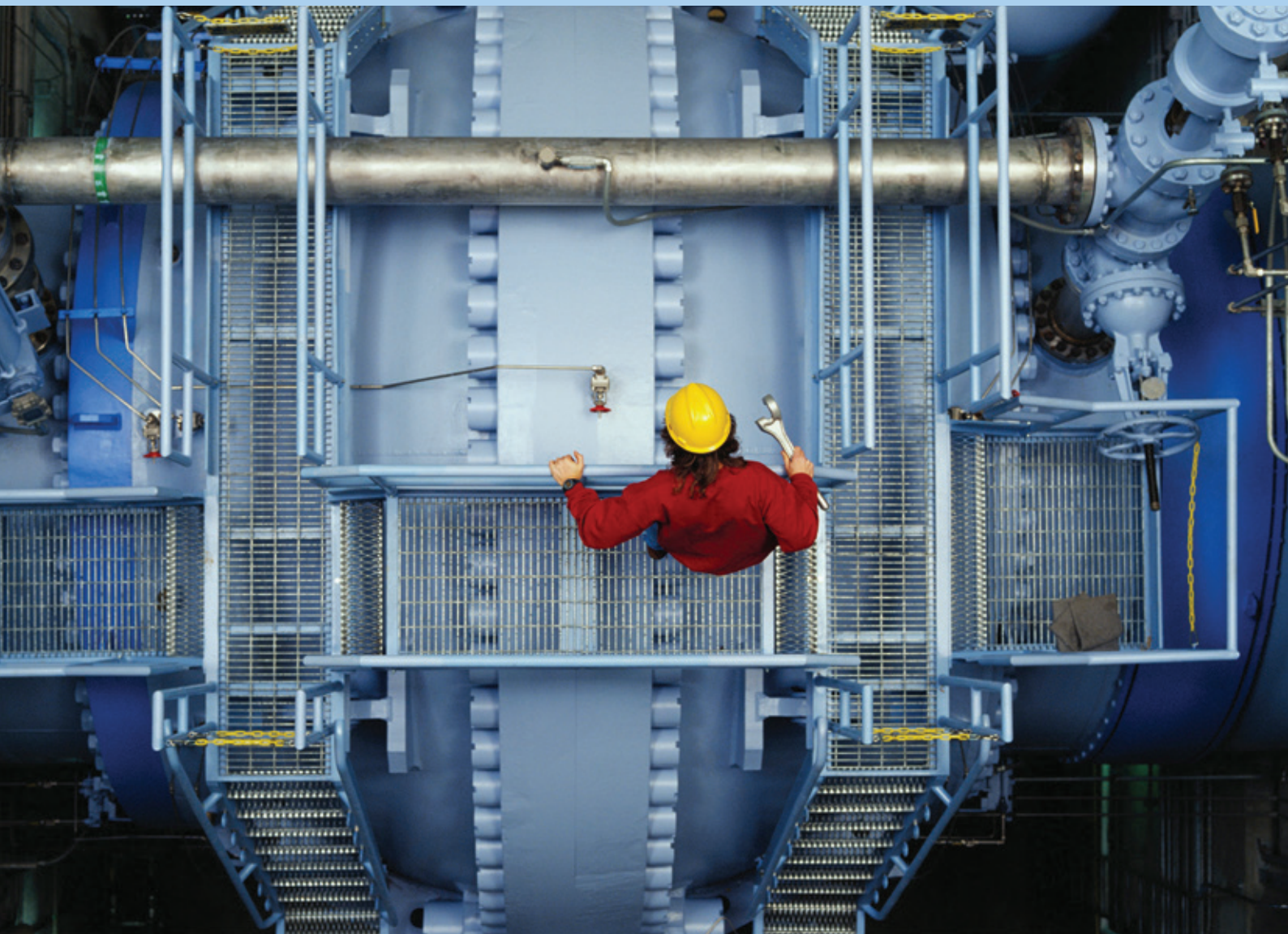
- Trendview paperless recorders are widely utilized to streamline plant data acquisition functions.
- Scalable control solutions, from Experion LX to HC900 process control ensure you have an integrated control strategy in place.



# Honeywell's Industry-Leading Products

Honeywell's field measurement and control products enable you to manage your plant assets and optimize your entire enterprise with solutions that are easy to configure, operate and maintain.

With our integrated approach, power plants can achieve significant advantages impacting their bottom-line. We integrate our own advanced technologies, comprehensive support services and deep power industry domain expertise to enable safe, reliable and economical operations.





## Scalable Control Solutions

Honeywell offers a range of flexible control solutions, from the traditional DCS to affordable PLCs, to meet the needs of any size operation.

### Experion HS SCADA System

Experion HS offers the advantages of a SCADA system with easy-to-create displays and a true global database.

### MasterLogic PLC

Honeywell's compact and modular MasterLogic PLC delivers fast speed for a wide variety of control needs. It also features optional redundancy.

### Experion LX

Experion LX is a highly reliable and scalable DCS system based on state-of-the-art technology from the award-winning Experion PKS. It not only offers field proven C300 controllers and Series 8 IO hardware that simplified the design, engineering and construction of the full DCS systems, but also is able to integrate with existing automation systems, including PLCs, DCS, RTUs, drives and smart field devices.

### HC900 Process Control

The HC900 is an advanced process control and data acquisition system with a modular, scalable design. It is SIL2 certified and ideal for use with burner management systems.







## High Performance Field Instruments

Honeywell's industry-proven field instrumentation sets the standard for performance and reliability in the most demanding power industry applications. Our instruments help customers reduce risk, avoid downtime, and seamlessly migrate to the latest technology.

### Smart Pressure Transmitters

SmartLine Pressure Transmitters are unsurpassed in terms of performance, total cost and ease of integration. Innovative features include: transmitter messaging, maintenance mode indication and tamper reporting. They are the most accurate and provide the right data for control such as trip points and cascade control.

### Smart Temperature Transmitters

STT 3000® Smart Temperature Transmitters offer the right mix of price and performance. They are versatile and easy to install, and also provide online diagnostics and allow remote access, reducing overall cost of ownership.

### Flow Meters

VersaFlow flow meters are suitable for liquid, gas or steam service over a wide range of process conditions. Users can choose Electromagnetic, Coriolis, Vortex Shedding, and Clamp-on Ultrasonic designs.

### Process Level Sensors

SmartLine Non-Contact and Guided Wave Radar Level Transmitters utilize advanced frequency-modulated continuous wave technology. A common electronics platform simplifies installation, setup, and user interface.

### Wireless Transmitters

XYR® 6000 wireless transmitters gather information from hard to reach places. Compliant with the ISA100 standard, they are available for temperature, gauge pressure, absolute pressure, differential pressure, valve position, analog signals, digital inputs, and digital outputs.







## Robust Process Instruments

Honeywell controllers, programmers and indicators are engineered to deliver solutions tailored to your specific process control requirements. In addition, Honeywell offers a complete selection of data acquisition products handling most industrial recording applications.

### Controllers, Indicators & Programmers

A complete line of single-loop, standalone controllers and programmers is provided for monitoring and controlling temperature, pressure, level, and flow.

### Data Recorders

Honeywell offers one of the most complete selections of process data recorders, including paperless. Users benefit from direct sensor connections, Ethernet communications capability, customizable displays, advanced math functions, and a wide selection of storage media.

### Actuators

Herculine electric actuators are designed for continuous duty and reliability. They feature industry leading torque and accuracy, with unique features including non-contact position sensing, repeatability of 0.2% of the span, fail in place on power loss, and 10-60 second stroke time for 90-degree travel.





## Advanced Analytical Instruments

Honeywell's advanced analytical technology provides measurements helping protect valuable capital equipment, while safeguarding facilities and personnel. These solutions are key to improving operating efficiency, maximizing asset life, and meeting regulatory standards.

### pH/ORP Instruments

Honeywell has analyzers and transmitters for use with our glass and non-glass sensors and mountings to measure pH and ORP. This includes Durafet pH Electrodes (only solid-state pH electrodes on the market), robust HB Series Electrodes, and the new HBD Series pH Sensors (combining non-glass silicon electrodes with rugged reference technology).

### Process Analyzers

The UDA2182 Universal Dual Analyzer accepts single or dual inputs from Honeywell pH, ORP, contacting conductivity and dissolved oxygen sensors. For dual units, the inputs can be ordered in any combination.



### Dissolved Oxygen Transmitters & Probes

The DL5000 Dissolved Oxygen Probe relies on patented equilibrium probe technology, which is independent of process flow and fouling. The probe is designed for submersion, in-line or flow-through mounting.

### High Purity Water System

Honeywell's HPW7000 High Purity Water Measurement System is suitable for the most difficult pH and ORP measurements. Its special flow chamber and electrode mounting assembly simplify installation and calibration.







## Universal Wireless Solution

Honeywell provides a single wireless network which supports multiple industrial protocols and applications simultaneously. OneWireless solutions are simple to manage and efficient to operate.

### Honeywell OneWireless Network

The OneWireless® Network is a multi-application, multi-standard wireless network that can be tailored to offer the coverage needed for today's industrial applications, from a simple wireless field instrument network to a completely integrated plant-wide, multi-application wireless network.



### Services To Maximize Your Investments

Count on Honeywell to help you streamline startup and optimize the lifecycle of your measurement and control assets. Our worldwide service and support team is dedicated to maximizing the return on your technology investment through personalized service and assistance throughout the life of your installation.

#### Honeywell offers:

- Design and installation expertise
- Industry-leading maintenance and support
- Remote monitoring services
- Optimization solutions
- Training
- Lifecycle Management services

Timely and knowledgeable Honeywell support is always close and convenient through our global Technical Assistance Center. This expertise is backed by more than 30 years of process industry experience worldwide.



### Honeywell – A Single Source for All Your Needs

At Honeywell, we've spent years developing products and services geared specifically to the power industry. From the sensor to the actuator—and everything in between—we offer all the elements of a total measurement and control solution, whether networked or stand-alone, from a single dependable source.

We also back all of our products with a comprehensive warranty and a Technical Assistance Center staffed with personnel with solid product knowledge.

Since Honeywell understands the needs of power producers, we deliver more effective ways to optimize plant processes, ensure greater safety and reliability, and improve your bottom-line results.

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### For More Information

To learn more about Honeywell's field and process instrumentation, visit [www.honeywellprocess.com](http://www.honeywellprocess.com) or contact your Honeywell account manager or distributor.

### Process Solutions

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