



Solutions for Improved Thermal Process Performance

Honeywell

Agenda

Committed to Your Success

Solutions Across Your Plant Operation

Industry-Leading Products

Services to Maximize Your Investment

A Single Source for All Your Needs

Agenda

Committed to Your Success

Solutions Across Your Plant Operation

Industry-Leading Products

Services to Maximize Your Investment

A Single Source for All Your Needs

Committed to Your Success

Honeywell helps customers maximize

- Process performance
- Productivity
- Profitability



Committed to Your Success

Honeywell's Thermal Industry Solutions

- Reduce installation costs
- Reduce maintenance costs
- Improve process quality



Committed to Your Success

Honeywell has been a preferred supplier to thermal processing industry for over 100 years

- Best-in-class equipment control solutions
- Reliable and scalable solution
- Low cost-of-ownership for batch and continuous applications



Committed to Your Success

Honeywell offers comprehensive portfolio of automation products and systems

- Distributed Control Systems (DCS)
- Advanced controllers
- Instrumentation
- Field devices
- Human Machine Interfaces (HMIs)



Committed to Your Success

Honeywell's solutions provide:

- Sophisticated control strategies with minimal effort
- Improved equipment flexibility
- Faster changeovers
- Seamless access to production data

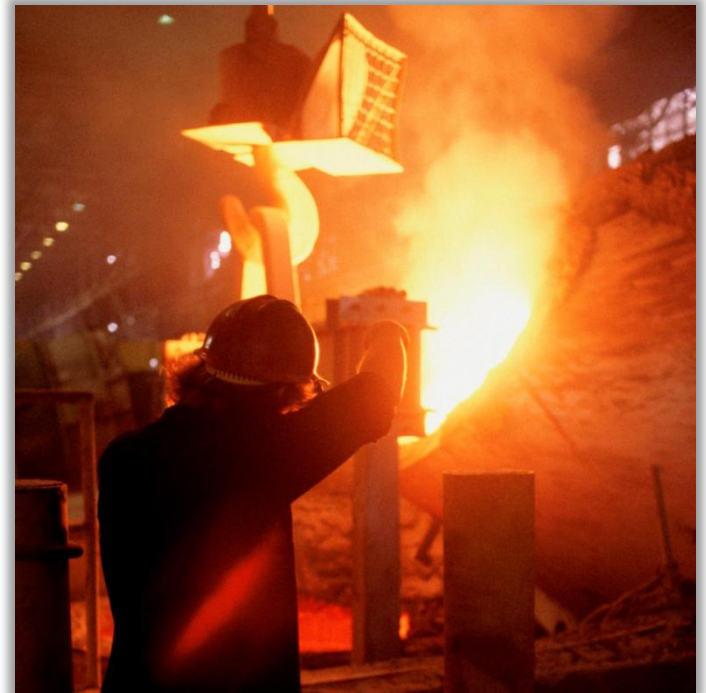


Committed to Your Success

Honeywell provides a competitive edge

Better control performance of furnaces and oven equipment benefits:

- Processing time
- Energy usage
- Audited compliance

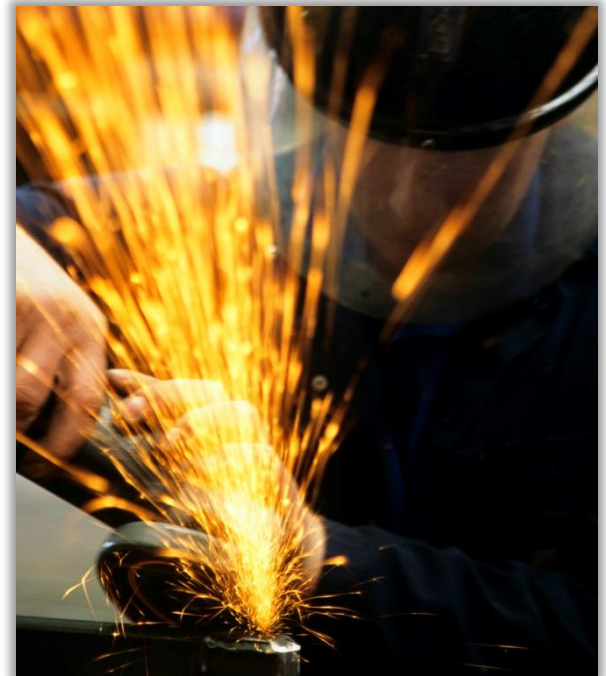


Committed to Your Success

Honeywell provides a competitive edge

Industrial combustion operations need automation solutions to manage:

- Complicated temperature cycles
- Complex setpoints reamping
- Multiple setpoint control strategies



Committed to Your Success

You need an automation supplier that:

- Understands thermal management process
- Supports your strategic business objectives

Don't compromise!
Choose a supplier
totally committed to
your success

Agenda

Committed to Your Success

Solutions Across Your Plant Operation

Industry-Leading Products

Services to Maximize Your Investment

A Single Source for All Your Needs

Solutions Across Your Operations: Heat Treatment

Thermocouple Health Monitoring

Challenge

Avoiding costly process problems caused by a failing thermocouple by reliably monitoring and predicting servicing needs

Solution

Honeywell QX and SX recorders

- Provide diagnostics credit feature
- Offer standard message system to monitor the health of thermocouples
- Alert the user if the devices start to fail

Solutions Across Your Operations: Heat Treatment

Vacuum Furnace Control

Challenge

Maintaining temperature control in vacuum environment despite changing heat transfer characteristics

Solution

HC900 process controller offers

- Powerful algorithms for temperature control applications
- Multiple tuning constants for customized control response to match furnace's dynamic characteristics
- Approach limits that allow maximum heating rates without overshoot, reducing cycle time and optimizing efficiency

Solutions Across Your Operations: Heat Treatment

Annealing Furnace Control

Challenge

Uniformly heating material treated in annealing furnaces

Solution

HC900 control solution utilizes a “load follower” cascade configuration to execute control transfers, eliminating need for transfer relays, switches and their associated wiring

Solutions Across Your Operations: Heat Treatment

Carbon Potential Control

Challenge

Maintaining precise furnace atmosphere and control required for gas carburizing when producing steel parts

Solution

UDC 3200 Digital Controller

- Controls percent of carbon and furnace temp
- Delivers high-accuracy direct percent carbon readout
- Compatible with all ZrO₂ carbon probes
- Includes thermocouple health monitoring

Solutions Across Your Operations: Heat Treatment

Furnace Control

Challenge

Maintaining electric furnaces for industrial heat treatment and preventing premature failure due to temperature fluctuations

Solution

Honeywell thyristor units

- Feature latest microprocessor-based design
- Ensure precise power is delivered to furnace heating elements
- Detect heating element failure, reducing out-of-spec product

Solutions Across Your Operations: Brick Kilns

Combustion and Pressure Control

Challenge

Maintaining process control for demanding environment of Tunnel Kilns

Solution

Honeywell's HC900 process controller

- Provides precise temperature & pressure monitoring
- Enables operators to manage dynamic combustion processes

Solutions Across Your Operations: Cement Kilns

Finish Mill Control

Challenge

Blending and regulation of mill feed to achieve highest production rate with least amount of energy

Solution

HC900 controller can separate control of the finish mill circuit into two functions:

- Control of the clinker/gypsum ratio
- Control of the mill feed

Solutions Across Your Operations: Cement Kilns

Rotary Kiln Temperature Measurement

Challenge

Finding accurate, repeatable technique for temperature measurement given extreme environmental conditions

Solution

OneWireless™ provides reliable measurements, contributing to high product quality

- Helps reduce wastage due to out-of-spec product
- Lowers kiln energy requirements
- Minimizes process downtime
- Increases throughput

Solutions Across Your Operations: Cement Kilns

Cement Kiln Control

Challenge

Improving kiln control despite severe conditions and economically maintaining large number of control points

Solution

HC900 Controller

- Provides powerful control algorithms to monitor kiln performance and maintain stable operations
- Compares burning zone temperature with setpoint and initiates action if it deviates

Solutions Across Your Operations: Cement Kilns

Industrial Autoclaves

Challenge

Reducing power wasted by industrial autoclaves

Solution

HC900 Control Solution

- Reduces wasted power
- Provides additional process security
- Combines proven analog process control with PLC functions in one package

Solutions Across Your Operations: Glass

Modulating and Open/Close Actuation

Challenge

Maintaining precise regulation of temperature, pressure and flow of actuators in glass manufacturing process

Solution

Herculine[®] actuators offer

- High temperature limits
- Accurate and repetitive positioning
- Reliable and maintenance-free service in hot environments

Solutions Across Your Operations: Glass

Melting Control

Challenge

Incorporating thyristor-controlled electrical furnace boosting to enhance the glass melting process

Solution

Honeywell's industrial solid-state thyristors have a DC offset elimination function that prevents bubbles from forming in molten glass

Solutions Across Your Operations: Glass

Furnace with Checkers

Challenge

Managing furnace reversals necessary to prevent upsets to the temperature profile

Solution

HC900 Process Controller with integrated continuous control and configurable logic/sequence capabilities

- Manages furnace reversal
- Maintains temperature profile of a multiport glass furnace on a continuous basis

Agenda

Committed to Your Success

Solutions Across Your Plant Operation

Industry-Leading Products

Services to Maximize Your Investment

A Single Source for All Your Needs

Industry-Leading Products

Honeywell's Process Automation Products Enable you to:

- Manage your plant assets
- Optimize your entire enterprise
- Apply solutions that are easy to configure, operate and maintain



Industry-Leading Products

Integrated Approach Improves Manufacturers Bottom Line

Honeywell integrates:

- Advanced technologies
- Comprehensive support services
- Deep thermal industry domain expertise

**Results enable safe, reliable and
economical operations**

Scalable Control Solutions

Honeywell offers a range of flexible control solutions, from traditional PLCs to process controllers and distributed control systems (DCSs), that are affordable for any size industrial operation



Scalable Control Solutions

Experion HS Software Platform

- Built upon Honeywell's proven Experion® Process Knowledge System (PKS) solution
- Experion HS employs powerful supervisory control and data acquisition software to provide a plant-wide view of your process operations



Scalable Control Solutions

MasterLogic PLC

- Provides powerful sequential logic and process control at a cost lower than other major brands



Scalable Control Solutions

MatrikonOPC

- Integrates Honeywell's automation products with best-in-class third-party solutions
- Offers ideal data connectivity across the plant
- Links critical process data to business applications

High Performance Field Instruments

Smart Transmitters

- SmartLine Pressure and Temperature Transmitters are unsurpassed in terms of performance, total cost and ease of integration. Innovative features include: transmitter messaging, maintenance mode indication, tamper reporting and Field Device Manager (FDM) area health views



High Performance Field Instruments

Honeywell's field instrumentation sets the standard for performance and reliability in the most demanding thermal processing applications.

Our instruments help customers:

- Reduce risk
- Avoid downtime
- Seamlessly migrate to the latest technology

High Performance Field Instruments

Wireless Transmitters

- XYR™ 6000 form a managed and secure wireless mesh network that's compliant with the ISA100.11a standard
- Available for temperature, gauge pressure, absolute pressure, differential pressure, valve position, analog signals, digital inputs, and digital outputs



Robust Process Instruments

Controllers, Indicators & Programmers

- A complete line of single-loop, stand-alone controllers and programmers is provided for monitoring and controlling temperature, pressure, and other process parameters



Robust Process Instruments

Actuators

Herculine® electric actuators for continuous use and reliability

Unique features:

- Non-contact position sensing
- Repeatability of 0.2% of span
- Fail in place on power lose
- 10-60 second stroke time for 90-degree travel



Robust Process Instruments

Thyristors

Solid-state thyristors are suitable for switching electrical loads to provide power to ovens, dryers, furnaces and other electrically-heated industrial devices

Best-in-class features:

- Partial load failure detection
- Heater break alarms



Robust Process Instruments

Data Recorders

- Honeywell's complete selection of process data recorders offer users:
 - Direct sensor connections
 - Ethernet communications capability
 - Customizable displays
 - Advanced math functions
- Recorder meets AMS 2750E requirements for industrial processing of high-quality materials



Universal Wireless Solution

OneWireless™ Network

- Honeywell offers multi-application, multi-standard wireless network that can be tailored for today's industrial applications:
 - From simple wireless field instrument network to a completely integrated plant-wide, multi-application wireless network



Agenda

Committed to Your Success

Solutions Across Your Plant Operation

Industry-Leading Products

Services to Maximize Your Investment

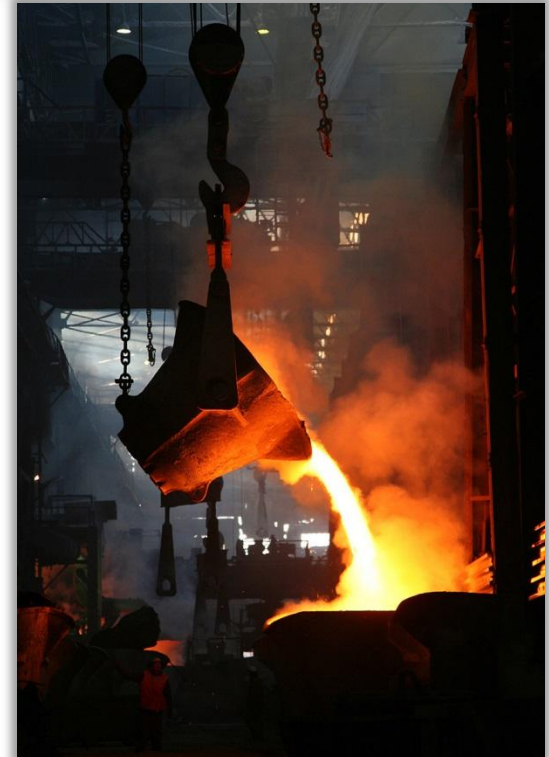
A Single Source for All Your Needs

Services to Maximize Your Investment

Help streamline startup and optimize the lifecycle of your measurement and control assets

Worldwide service and support team dedicated to:

- Maximizing return on your technology investment
- Offering personalized assistance throughout life of your installation



Services to Maximize Your Investment

Honeywell offers:

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



Services to Maximize Your Investment

Global Technical Assistance Center

- Timely and knowledgeable support is always close and convenient
- Expertise backed by over 50 years of experience in thermal processing solutions



Services to Maximize Your Investment

Help streamline startup and optimize the lifecycle of your measurement and control assets

Worldwide service and support team dedicated to:

- Maximizing return on your technology investment
- Offering personalized assistance throughout life of your installation

Services to Maximize Your Investment

Honeywell offers:

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

Services to Maximize Your Investment

Global Technical Assistance Center

- Timely and knowledgeable support is always close and convenient
- Expertise backed by over 50 years of experience in thermal processing solutions

Agenda

Committed to Your Success

Solutions Across Your Plant Operation

Industry-Leading Products

Services to Maximize Your Investment

A Single Source for All Your Needs

A Single Source for All Your Needs

From the sensor to the actuator – and everything in between – we offer all the elements of a total measurement and control solution:

- Networked
- Stand-alone
- Single, dependable source



A Single Source for All Your Needs

All Honeywell products backed by:

- Comprehensive warranty
- Technical Assistance Center staffed with personnel with solid product knowledge



A Single Source for All Your Needs

Our experience and expertise with Thermal Processing means:

Honeywell...

- Delivers more effective ways to optimize plant processes
- Ensures greater safety and reliability
- Improve your bottom-line results



A Single Source for All Your Needs

From the sensor to the actuator – and everything in between – we offer all the elements of a total measurement and control solution:

- Networked
- Stand-alone
- Single, dependable source



A Single Source for All Your Needs

All Honeywell products backed by:

- Comprehensive warranty
- Technical Assistance Center staffed with personnel with solid product knowledge



A Single Source for All Your Needs

Our experience and expertise with Thermal Processing means:

Honeywell...

- Delivers more effective ways to optimize plant processes
- Ensures greater safety and reliability
- Improve your bottom-line results





Thank You

Honeywell