TURBOMACHINERY CONTROL FOR EFFICIENT, SAFE, AND RELIABLE OPERATIONS

Why you should deploy a unified and standardized control platform

Honeywell

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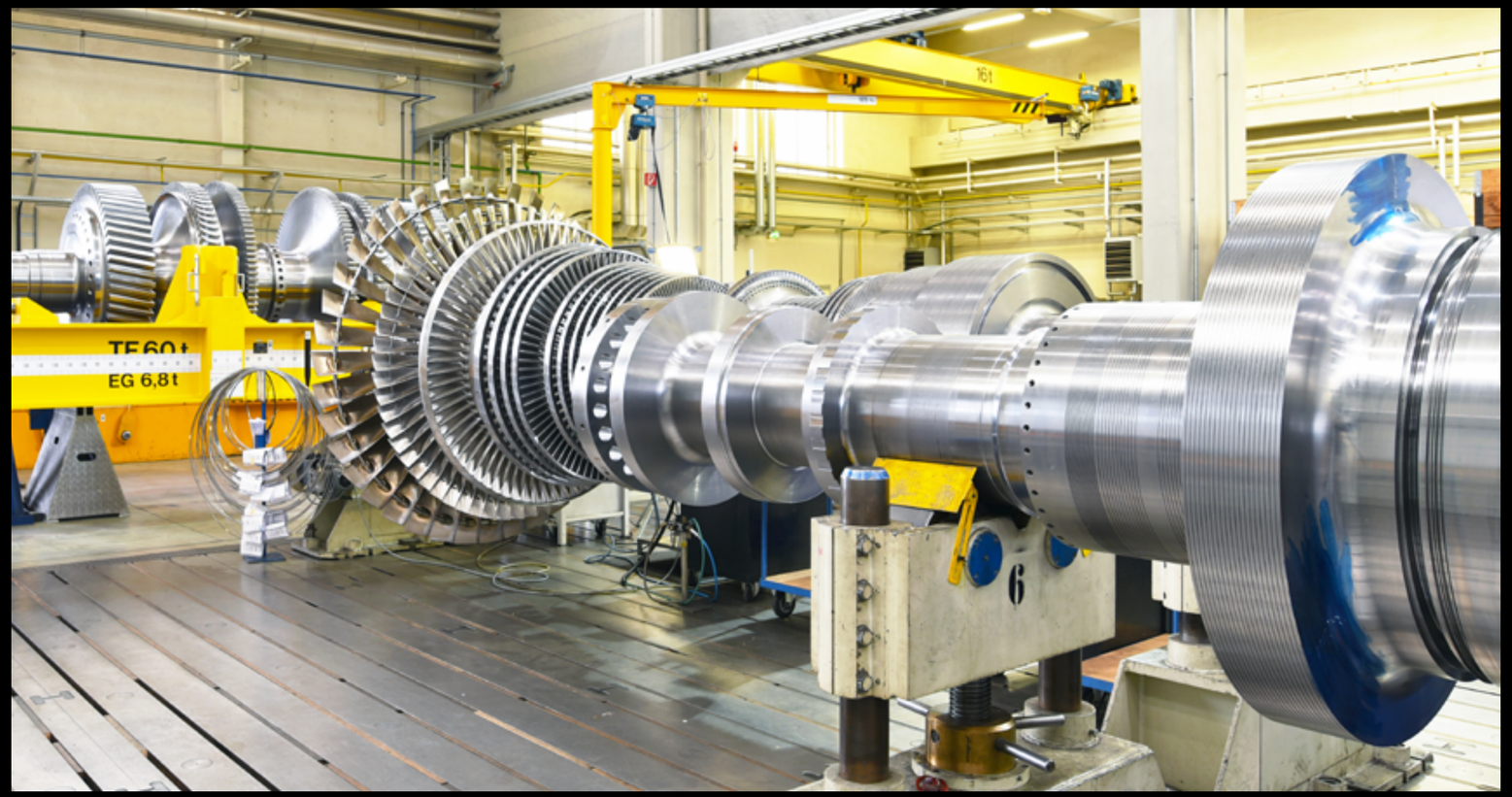
INTRODUCTION

Around the world, industrial operating companies must find ways to increase plant availability and get the most out of assets, while also dealing with smaller workforces and lower budgets.

Plant safety and productivity depend on turbomachinery performance, and as such, failures and unplanned outages can result in lost production and costly machine repair.

Turbomachinery control applications such as turbine governor and anti-surge require solutions providing faster system response, higher availability, and full standardization.



TODAY'S OPERATING DEMANDS

In today's demanding environment, with increased operational costs, limited on-site resources, and strict regulatory requirements, plant operators seeking to improve reliability, efficiency, and safety within their facility require solutions to:

- Single automated solution provider for turbines, compressors and DCS
- Improve coordination among subsystems for compressors, turbines and automation systems
- Implement a common operator interface for the entire plant
- Extend the ROI of rotating equipment in your plant by refreshing the control platform
- Simply operation through reduced training requirements
- Ensure effective and consolidated data reporting and archiving

IMPORTANCE OF TURBOMACHINERY

Throughout the industrial sector, every refinery, chemical plant, pulp & paper mill, steel mill and power generation facilities utilize turbomachinery. Precise control of this equipment is needed to maximize the life value from assets and ensure safety and compliance in plant operations.

- High-speed rotating equipment
- Prime movers such as turbines and electric motors
- Driven equipment such as compressors, pumps, blowers, and fans

CONTROL PERFORMANCE IS CRITICAL

In a typical process and power facilities, turbomachinery control solutions are required to address turbine governor and surge condition while preventing over-speed and surge events through plant equipment and process unit, and in doing so, protect personnel and machinery from a catastrophic event.

- Governor control maintains normal operational speed while preventing over-speed conditions resulting in catastrophic machine speeds
- Turbine temperature control ensures turbines are brought up to normal operating conditions
- Surge protection for operating machinery within the surge safety line
- Load control to balance work between compressors for optimal efficiency
- Sequencing of valves and motors for safe startup and shutdown
- Protection functions when critical parameters exceed safe ranges
- Standard operating interface to manage alarms and variables

CHALLENGES FOR END USERS

For end users of plant turbomachinery, the proprietary “black box” technology commonly employed for turbine and compressor controls can present challenges in terms of operational effectiveness and availability, asset support and maintenance, and total cost of ownership.

- Difficult to interface with other control system components
- Cumbersome and expensive to repair due to technology obsolescence
- Costly and disruptive to upgrade in a “rip and replace” scenario
- Limits the view of plant personnel into the process and machinery
- Requires dedicated spare parts
- Requires specialized training for plant personnel

HOW CAN HONEYWELL HELP?

For almost 20 years, Honeywell has leveraged its global industrial automation domain expertise to provide customers with advanced turbomachinery controls based on the open, familiar, and easily maintained Experion® PKS platform.

- Offers superior alternative to purpose-built OEM turbine and compressor control solutions
- Includes unique integration capabilities for turbomachinery applications requiring very fast response times
- Utilizes partnership with leading turbomachinery specialists to deliver complete, OEM-independent solutions to customers
- Eliminates risk of obsolescence due to easy migration path to the latest technology

IMPLEMENT PROVEN TECHNOLOGY

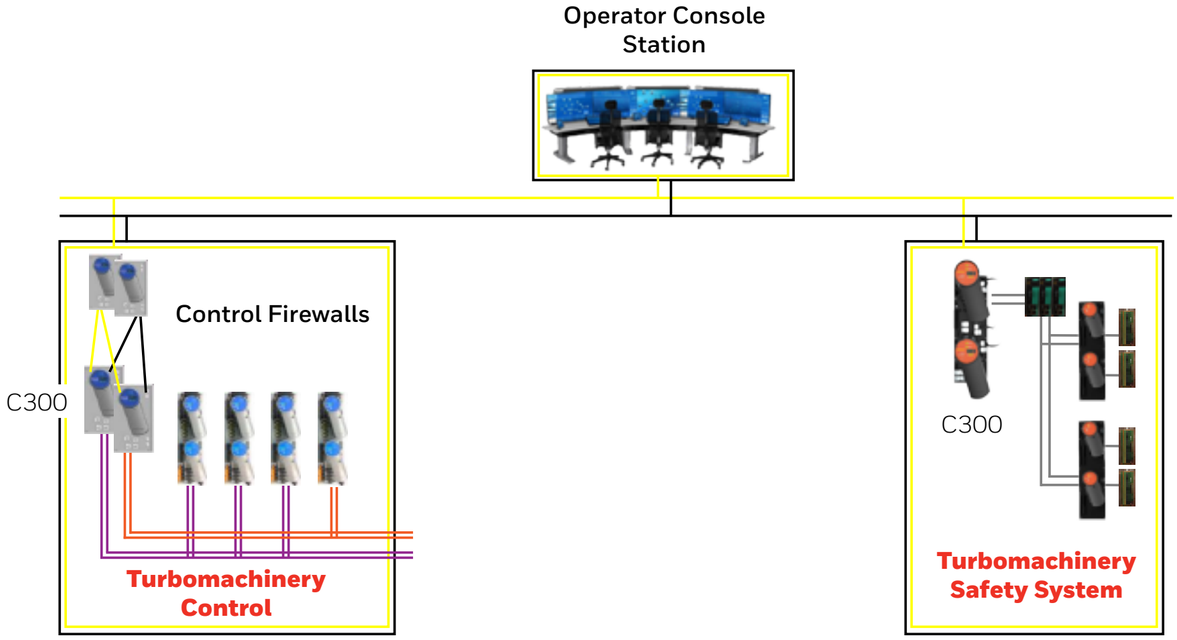
Unlike generic Distributed Control System (DCS) or Programmable Logic Controller (PLC)-based solutions, Honeywell's Experion PKS Turbomachinery Control Solution provides designed and embedded within an advanced and highly capable industrial control system.

Provides regulatory control while meeting the demands of the API-670/ IEC-61508 SIS standard

Ensures optimized production and reliability along with simplified system operations and support

Delivers the benefits of a specialized control package without significant investment

HONEYWELL TURBOMACHINERY CONTROL ARCHITECTURE



DEPLOY AN INTEGRATED PLATFORM

Incorporating Honeywell's innovative technologies, the Experion PKS Turbomachinery Control Solution includes all the key components and sub-systems needed to provide a complete, integrated platform for turbomachinery control applications.

C300 controller running at 20 mS, utilizing the Control Execution Environment (CEE), and supporting full controller and I/O redundancy

Safety Manager S300 safety system built to shut down turbines and/or compressors and offering TÜV SIL3 and ISASecure certification and tight Experion integration

Speed Protection Module (SPM) accepting four speed inputs and providing independent speed control, initial over-speed protection

Servo Valve Positioner Module (SVPM) providing fast performance for closed-loop valve positioning.

Universal I/O module featuring reduced IOTA size, accepting 4-channel pulse inputs with a single HART modem per channel, and including 32 configurable channels for AI/AO/DI/DO

PUT THE SOLUTION TO WORK

Designed for the most demanding operations, the Experion PKS Turbomachinery Control Solution has the dedicated controller and specialized I/O to handle field devices found on turbines and turbine-driven compressor trains such as speed probes, valve feedback, and outputs to servo valves.

- Meets signal conditioning requirements for turbomachinery equipment
- Allows signals to be brought directly into the control system without the need for signal convertors and additional excitation power supplies
- Enables controllers to track closer to the speed control to maintain control
- Enables controller to track closer to the surge line for compressor control
- Enables controller to track closer to the surge line resulting In better compressor efficiency
- Leverages Honeywell's Universal I/O solution to reduce total cost of ownership

BENEFITS TO PLANT OPERATORS

With Honeywell's approach to turbomachinery controls, power and industrial organizations can realize valuable benefits from a fully integrated turbine/generator control, turbine/compressor control or boiler/turbine control solution that makes their operations more efficient, reliable, and cost-effective.

- Enables better coordination among various plant subsystems
- Provides a common operator interface for the entire plant
- Improves ROI from existing Experion PKS technology investments
- Allows for self-sufficient support in a familiar system environment
- Incorporates a common hardware and software platform
- Allows for a common pool of maintenance spares
- Ensures effective and consolidated data reporting and archiving

THE FUTURE IS WHAT WE MAKE IT.

As demonstrated by customers around the world, Honeywell's Experion PKS Turbomachinery Control Solution optimizes visibility of critical plant equipment and expands ROI by having all turbomachinery controls located on a common platform for improved control, historization, maintenance and safety.

As a global automation leader, Honeywell can help you plan your technology roadmap and stay current with the latest solutions. Furthermore, our turnkey project capabilities deliver the successful outcomes you need.

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