

Solution Note

Optimize Power Generation With PlantCruise by Experion[®]



Honeywell offers PlantCruise by Experion to meet the unique requirements of differently sized power plants. This scalable Distributed Control System (DCS) optimizes electrical power generation processes by enabling improvements to reliability, agility and efficiency.

In today's demanding environment, power generation facilities must ensure flexible and reliable operation with minimum forced outages. They must also implement innovative strategies to reduce emissions and deal with volatile market conditions, while achieving the lowest costs possible.

A typical power plant has three main operational areas: boilers, turbines and balance-of-plant. Tight integration of these areas is crucial, especially as each has specific control requirements. For example, a boiler requires very precise proportional-integral-derivative (PID) control, whereas in the balance-of-plant area, control depends on the correct handling of discrete inputs/outputs.



Figure 1. Electrical power producers are faced with a wide range of automation challenges.

Power plant owners must establish a seamlessly integrated control architecture that encompasses key operational areas while improving the overall productivity of their facility.

A particularly important consideration for a power plant is how well the control system integrates with the electrical area, which can consist of a whole range of equipment such as smart relays, intelligent drives and smart switchgear. This is vital to allow an operator to control the entire plant from a single system in the control room.

An effective automation solution can help meet these challenges by addressing the need for greater reliability, agility and efficiency — the keys to a sustainable performance advantage.

The Right DCS for You

Honeywell offers PlantCruise by Experion[®] to meet the unique requirements of differently sized power plants. With this scalable DCS, various system functions and applications aimed at optimizing performance are inherently available in the context of power generation. Data from these functions is also presented in an integrated operating environment.

Honeywell is a leading automation provider for power generation, present in every region of the world. We provide flexible and cost-effective control solutions to a variety of customers, ranging from small co-generation plants to major power generation facilities.

PlantCruise by Experion is based on Honeywell's award-winning Experion Process Knowledge System (PKS) with innovatively designed Series 8 I/O modules and cabinets, a validated and wide range of commercially available technology (COTS) options, easy engineering and maintenance capabilities, and integrator-friendly programs and tools.

Proven Technology

PlantCruise by Experion leverages Honeywell's proven track record in distributed control system (DCS) applications, and is a mature system with well-defined function blocks and highly proven technology.

For smaller to mid-sized power plants, PlantCruise by Experion provides a unique automation solution that is superior to traditional Programmable Logic Controllers (PLCs). It is designed for high-performance PID control for boilers, turbines and other power-related applications. Indeed, PlantCruise by Experion is a unique solution for the power segment as it provides continuous process control integrated with the electrical control area.

PlantCruise by Experion's innovative technologies are vital to improved plant performance and better business results, and can be implemented in a way that suits your individual site.

- Tightly integrated DCS and Supervisory Control and Data Acquisition (SCADA)
- Honeywell's Experion C300 controller for robust and versatile control
- C300 simulation for proving out control strategies
- Honeywell's patented, high-performance Fault Tolerant Ethernet (FTE) control network
- Optional redundancy at all levels: server, network, C300 controller and Series 8 I/O modules
- Direct Station never loses view or control of field devices
- Honeywell's patented, revolutionary Profit® Loop algorithm for predictive control
- Unique I/O module design for compact footprint, and efficient installation and maintenance
- Improve accuracy and reduce installation footprint by up to 54% with new TC/RTD module design
- Improve efficiency and reduce configuration time by up to 30% with Honeywell's enhanced Control Builder and newly styled Human-Machine Interface (HMI)
- IEC 61850 interface enables integration with the electrical system in a single control/SCADA platform
- IEEE 1588 Precision Time Protocol (PTP) support for system-wide SOE
- Powerful reporting tool for debugging and system maintenance
- Smart device integration through industry-standard protocols such as HART®, FOUNDATION™ fieldbus, PROFIBUS and Modbus®

- Asset management using Honeywell's integrated Field Device Manager (FDM) software
- Enhanced SCADA features with Pan and Zoom Displays, Equipment Templates, Dynamic Scanning, etc.
- Extensive integration of PLCs, DCSs, Remote Terminal Units (RTUs), drives, safety systems and weigh scales through rich SCADA capability and Matrikon OPC servers
- Honeywell's flexible Distributed Server Architecture (DSA) for integration of processes across multiple units, control rooms or geographically separated locations for optimum flexibility and system maintenance
- Virtualization solutions intended to improve performance and reliability in the industrial automation domain

Purpose-Built

PlantCruise by Experion enables power companies to realize the performance advantages of a true distributed control solution at a reduced cost. This purpose-built DCS can be tailored to fit your specific control applications — regardless of their scope — and extended at any time to include personnel and assets, and even to integrate entire business operations.

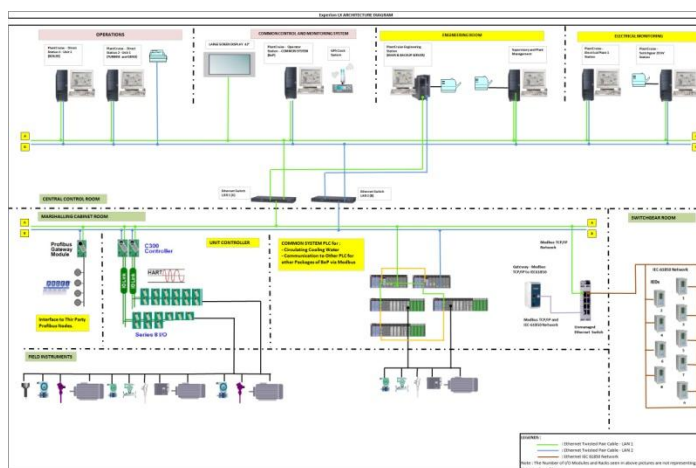


Figure 2. PlantCruise by Experion architecture.

Built-in Function Blocks: Designed to suit power applications and DCS requirements with specific function blocks, including Drum Level, HT/LT Motor, Main IBV, Valve/Damper, Solenoid Valve Control, etc., as well as support Custom Algorithm Blocks for building user-defined algorithms and data structures.

Rich Function Libraries: Easily create control strategies with the single, integrated Control Builder tool for continuous, sequential, batch and model-based control.

Pre-built Templates: Solution pack with a wide range of templates ideal for general control applications.

Application Development Toolkit: Develop custom applications that communicate with PlantCruise by Experion through the Network Application Programming Interface (API), Server API, Open Database Connectivity (ODBC) Data Exchange, Server Automation Object, etc.

FTE: Reliable, industrial-grade network providing multiple communication paths between nodes — thus eliminating all single points of failure —and utilizing commercial Ethernet technology for lower costs.

C300 Controller: The Experion C300 controller operates Honeywell's deterministic Control Execution Environment (CEE) software, which executes control strategies on a consistent and predictable schedule.



Figure 3. Honeywell's robust Experion C300 controller.

Direct Station: Powerful operator station functions as a client to the PlantCruise by Experion Engineering Server, and at the same time, allows direct access to the C300 controller for process data, alarms and messages.

Safe Operations: In collaboration with the Abnormal Situation Management (ASM®) Consortium, Honeywell has developed safe operator functions like Procedural Operations to reduce incidents related to improper execution of operating procedures. It has also created alarm handling and display layouts to improve overall operator response to abnormal conditions.

Ease of Use and Configuration

PlantCruise by Experion not only provides the most advanced DCS and SCADA functionality on the market, but it is also simplifies the use and configuration of these capabilities.

Reduced engineering effort: Users can reduce the time spent getting their system ready for first production by employing features such as drag-and-drop configuration, prebuilt algorithms, a global database and integrated tag configuration. They can also access a complete Honeywell HMIWeb solution pack to develop ASM-compliant displays. In addition, the system comes with common engineering tools, bulk build/bulk edit capabilities, automatic loop tuning, control strategy simulation and equipment templates for the entire SCADA configuration.

Improved decision-making: PlantCruise by Experion provides the information operators need to make timely decisions without a cluttered view of the process. Features include: configuration changes without stopping production, run-time view of control strategy and sequence status, advanced operator alarm management tools, and integrated workflow for operators.

Complimentary Offerings

Honeywell supplies a variety of best-in-class technologies to enhance and extend the capabilities of the PlantCruise by Experion system. These include:

OneWireless™

Honeywell's OneWireless network provides manufacturers with a single, optimized, multifunctional network that supports many applications with comprehensive end-to-end security. Mobile Station technology, an extension of Experion PKS, enables engineering, operations and maintenance personnel to safely capture and share process data locally at the source.

Process Optimization

Honeywell's Profit Loop is a single input/single output (SISO) model predictive control application offering the operating simplicity of a standard PID controller. It serves as a Smith Predictor, gap controller and optimizer all in one. Profit Loop can be incorporated into complex and custom control strategies to drive better control of processes.

OPC Integration

PlantCruise by Experion integrates OPC with the DCS solution to create the most flexible and powerful OPC suite available, with a broad range of Client, Server and redundant OPC technologies.

Historian

The PlantCruise by Experion provides fully integrated, on-board historian allowing users to collect standard history snapshots and averages, as well as fast or extended history snapshots.

Configuration of history is done at the same time, using the same tool as database configuration.

Equipment Procedures

By automating routine or infrequent equipment procedures, PlantCruise by Experion integrates best practices for sequence control, modulating control, coordinating control and system start-up/shutdowns to improve operator performance, reduce cycle times and improve quality. This capability prevents downtime by capturing knowledge gained by operators over years of performing cyclic procedures.

Material Handling

Honeywell has a host of solutions to help manufacturers control and reduce raw material usage. For instance, our VersaFlow flow meters are available in electromagnetic, ultrasonic, vortex and Coriolis technologies. We also offer built-in algorithms and integration with Mettler-Toledo weighing terminals, which are integrated with PlantCruise by Experion through specialized interface function blocks to tighten material transfer control, decrease batch cycle time and improve production quality.

Benefits to Customers

Because PlantCruise by Experion is based on the Experion PKS platform, it enables power plants of all sizes to realize the advantages of a robust and secure DCS solution:

Faster Projects and Reduced Lifecycle Costs: PlantCruise by Experion was specifically designed to help industrial organizations stay competitive, meet customer demands and respond quickly to opportunities. It allows for faster projects and less engineering effort to make ongoing changes to your automation strategy over the life of your system.

For More Information

Learn more about how Honeywell's PlantCruise by Experion solution can optimize your performance, visit our website www.honeywellprocess.com or contact your Honeywell account manager.

Honeywell Process Solutions

Honeywell
1250 West Sam Houston Parkway South
Houston, TX 77042

Honeywell House, Arlington Business Park
Bracknell, Berkshire, England RG12 1EB

Shanghai City Centre, 100 Zunyi Road
Shanghai, China 200051

www.honeywellprocess.com

Increased Uptime: With PlantCruise by Experion, you can easily make changes to your automation configuration without halting operation. The solution supports incremental editing and loading of control strategies online; addition of I/O, controllers and control strategies; and online upgrades. Plus, it includes simulation functionality to test changes before putting them on process.

Improved Operational Efficiency: PlantCruise by Experion has a sophisticated and rich alarm/alerting system capable of handling alarms and alerts for your process. This alarm system supports not only Experion application alarms, events and messages, but also provides full integration with third-party alarms and events via OPC. The standard ASM-conformant alarm summary display allows operators to focus on the problem at hand.

Recognized Power Expertise

Honeywell has a rich legacy and commitment to power generation. We are a full-scope provider of control systems; safety systems; field solutions; advanced applications; project engineering; E&I construction; project management; and installation, startup and commissioning services to help drive safety, reliability and efficiency for the power generation industry.

Around the world, nearly 75% of all power utilities employ Honeywell solutions. We have executed hundreds of large power industry automation projects — on time and on budget.

Global Service and Support

Choose PlantCruise by Experion and know that Honeywell stands behind you over the life of your investment. Our channel partners are fully trained, authorized and experienced to implement and support your project — whether small or large, new or an expansion. You can rely on readily available local service when you need it.

In addition, PlantCruise by Experion users have full access to Honeywell's Global Technical Assistance Center (GTAC) for product support and consulting. Our experts can help you resolve issues in a timely manner and keep your system running at peak performance.

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