

EXPERION[®] **PROCESS KNOWLEDGE SYSTEM (PKS)**

Connecting people and processes with industry-leading control and safety



Honeywell

In the 1970s, Honeywell pioneered the Distributed Control System (DCS), which revolutionized plant-wide operations. Honeywell once again redefined industrial automation with Experion® Process Knowledge System (PKS), the first enterprise-wide solution designed to unify people with process, business requirements and asset management.



INTEGRATING PEOPLE AND PROCESS FOR BETTER PERFORMANCE

Today's Experion® PKS represents the most advanced, open and secure control system for a variety of needs – from the smallest applications to the largest systems in the world.

Experion® PKS is designed to merge traditionally disparate functions and systems across the manufacturing enterprise, and captures the knowledge of plant personnel and their workflows to deliver sustainable efficiencies. This union streamlines information flow to the right place, at the right time, to the right people. Abnormal Situation Management (ASM) Consortium principles embedded in Experion result in better overall collaboration and performance of plant personnel, thus improving safety, efficiency and agility. A common and consistent Human-Machine Interface (HMI) over the entire integrated offering provides the essential foundation for improving operator effectiveness.

UNIFIED ARCHITECTURE

Experion PKS allows integration of process control, safety systems, and advanced application software under one unified architecture. A single,

integrated platform encompasses continuous, sequence and batch control, as well as safety, security, electrical, SCADA and asset management. With Distributed System Architecture (DSA), users experience a single integrated solution instead of several independent systems, while retaining the ability to autonomously manage each system. Fault Tolerant Ethernet (FTE) provides the performance, determinism and security for industrial control applications. Experion allows you to securely add advanced applications as needed but with greater, ongoing benefits and lower cost than point solutions tied together.

HUMAN-MACHINE INTERFACE

A common and consistent HMI across everything improves operator effectiveness, ties your entire facility together, and enables your people to succeed. Experion provides seamless data visibility through

a pre-built operator environment. Capabilities such as video event detection, comprehensive built-in alarm management, a large number of standard displays, and the ability to connect separate plants or units seamlessly together, gives your teams one of the most powerful tools available for collaboration and real-time decision-making. Experion is the only process control system with ASM Consortium principles built into its design¹. Knowledge capture through automation of procedural operations as well as advanced alarming capability allows people to better prevent and respond to abnormal situations.

EXPERION ORION CONSOLE

Provides effective operations with ergonomic design and clear status assessments, operating limits, and targets at a glance.

- Profit Controller, embedded in the primary and supervisory controllers, optimizes performance, production and cost.
- Profit Suite, Profit Loop, and Asset Manager reduce instrument and maintenance costs.



¹ <https://process.honeywell.com/us/en/site/asm-consortium/member-organizations>



PROJECT IMPLEMENTATION

LEAP™, the first approach to revolutionize automation project lean execution, enhances our project implementation services using innovative technologies to revolutionize project execution—Universal IO Cabinets, virtualization, cloud engineering, and auto-device commissioning. LEAP separates physical from functional design, allowing parallel workflows, using standardized designs, and enabling engineering to be done from anywhere in the world. A large capital project can realize up to 30% capital savings in automation infrastructure projects, and flexibility for up to a 25% improvement in schedule.

ANY OF THE FOLLOWING TECHNOLOGIES CAN BE OFFERED INDIVIDUALLY OR TOGETHER FOR THE FULL SOLUTION BENEFITS.

Universal Channel Technology

Universal IO enables instant remote configuration of channel types, standardized input/output cabinets, reduction or elimination of marshalling cabinets and reduction in equipment needed for both process and safety IO. Additionally, Universal IO can future-proof small projects and plant cabinets as well without the rest of the LEAP solution.

Virtualization

Honeywell's award-winning Experion Virtualization Solutions² remove the dependency between functional and physical supervisory designs, enabling standardized server cabinets and reduced hardware requirements

providing opportunities for corresponding savings in space, power, cooling and weight. Our Virtualization Premium Platform includes advanced virtualization technology, which provides for automatic node recovery and hardware protection for mission critical applications.

Virtual Engineering

Our Virtual Engineering Platform, VEP, enables engineering in a secure, centrally hosted cloud environment allowing project execution and testing independent of location, delivering improvements in collaboration and travel savings.

Automated Device Commissioning

Auto Device Commissioning automatically binds control configuration engineered in our secure cloud to field devices connected to any Universal IO channel.

SECURE CLOUD, GLOBAL EXCELLENCE

- More than 3,000 projects are completed in our secure cloud per year.
- Experion PKS is supported by an unsurpassed project execution and service team with a global network of more than 6,000 engineers and designers.



REDUCED TRANSMITTER COMMISSIONING TIME



FASTER BALANCED CABINET COMMISSIONING



SAVED TROUBLESHOOTING TIME WITH EVERY MISTAKE AVOIDED

²Honeywell is a proud recipient of the 2022 IGEL Ready Synergy Partner of the Year award (<https://www.igel.com/about-us/press-releases/igel-announces-2022-igel-ready-partner-of-the-year-award-winners/>)

INTRODUCTION

Experion® PKS Highly Integrated Virtual Environment (HIVE) uses Honeywell's Lean Execution of Automation Projects (LEAP™) principles, software and networking to unchain control applications from physical equipment, and controllers from physical IO. This enables control systems to be engineered and implemented in less time, at lower cost and risk, and with simpler, modular builds.

The solution also transforms the way control systems are maintained over their lifecycle, shifting day-to-day management of servers to a centralized data center, where experts and established protocols can mitigate cybersecurity risk, allowing plant engineers to focus more proactively on optimization of their control systems.

EXPERION PKS HIVE IS MADE UP OF THREE MAJOR COMPONENTS:

1. Experion PKS IO HIVE

– decouples IO from control, providing flexible IO and control distribution, enabling the control system to become a natural extension of process equipment and to facilitate modular and parallel project execution.

2. Experion PKS Control HIVE

– uniquely applies control application containers to provide flexibility and standardization of control hardware platforms, control location, and control engineering.

3. Experion PKS IT HIVE

– extensively centralizes the IT infrastructure used in project engineering. This allows industrial manufacturers to lower project delivery and lifecycle costs, better leverage skills and drive consistent physical and cybersecurity management.



EXPERION PKS IO HIVE

Experion PKS IO HIVE enables any Experion controller to access any IO channel on the IO HIVE network. IO HIVE provides flexible IO and control distribution enabling the control system to become a natural extension of process equipment and facilitate modular and parallel project execution, using a scalable and modular approach to allow for up to a 15% reduction in IO and cabinets and up to 10% reduction in project time and engineering.

EXPERION PKS CONTROL HIVE

Experion PKS Control HIVE integrates multiple individual controllers in a way that makes them look and act like a cluster of shared compute resources with universal access to IO. Control HIVE offers significant flexibility to accommodate design changes, modifications expansion while simplifying lifecycle management and support, also providing the potential for infinite availability³ for resilient control, simplified commissioning, and automated assignment and load balancing functionality.

EXPERION PKS IT HIVE

Experion PKS IT HIVE uses Honeywell virtualization hardware at a local process area and a central datacenter location to offer customers flexibility in where they host their control system virtual machines (VMs). Customers can run their VMs with the flexibility of either onsite or offsite via a secure WAN link while improving both cybersecurity and the lifecycle experience



³Infinite Longevity and Availability is the name for Honeywell's redundancy offering. Depending on the design of a particular application, it is intended to allow control applications to transition to other linked controllers in the event of multiple simultaneous failures or disruptions. It is contingent upon multiple factors including availability of additional computing capacity within the customer's control system.

EXPERION® PKS REMOTE OPERATIONS

Experion® PKS remote operations capabilities increase operational efficiency and help reduce production downtime by providing operations personnel with highly secure access to the control system from outside the control room via your business network or off site via Virtual Private Network.

Remote operations and engineering

Provide secure access to Experion Station and engineering tools on a tablet or laptop to enable commissioning, engineering, and process control from outside the control room.

Increase productivity of field personnel

Put live Experion data into the hands of field workers and eliminate time spent in repeated radio calls with control room operators to obtain process information required for routine rounds and troubleshooting.

Remote expert support for critical operations and rapid troubleshooting

During abnormal situations, swift effective troubleshooting is often required to avoid potential production downtime. With Experion PKS remote operations capabilities, process experts can quickly access the control system information needed to troubleshoot issues and provide operational support from distant locations.

Securely monitor operations from offsite

Provide operational support personnel with quick, convenient read-only access to process displays, alarm summaries, historical data and key control system information required to make the best operational decisions.

Remote operation centers

Support on-site operations by replicating the control room operator console offsite for remote process monitoring and temporary control.

The Experion® PKS suite of remote operations capabilities consist of:

- Experion Augmented Remote Operations
- Experion Remote Gateway
- Experion Mobile Station
- Experion Mobile App
- Experion Collaboration Station.

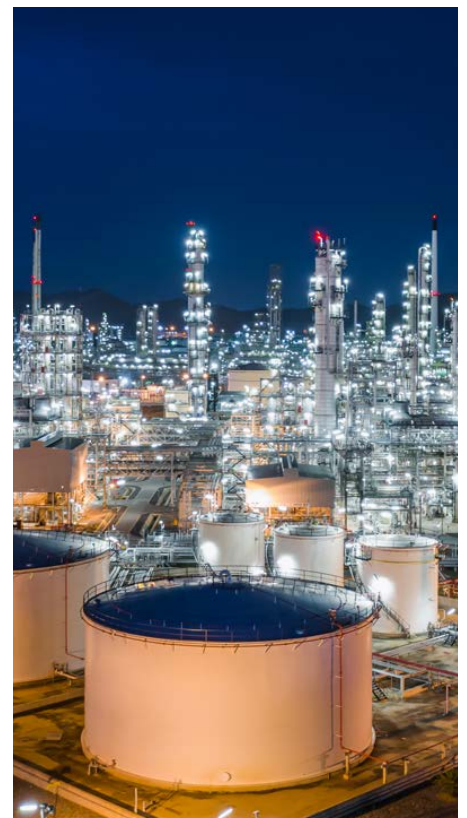
Experion® Augmented Remote Operations (ARO) solution allows customers to maintain production with minimal on-site staff by securely augmenting their local control system with remote operations capabilities. Experion ARO provides secure read-write access to Experion Station or engineering tools from any location on your corporate network.

Experion® Remote Gateway provides secure access to read-only Stations from your business network or anywhere off site via a Virtual Private Network. Experion Remote Gateway's read-only Station client provides the same user interface as a single window Station, with live updating custom and system displays including alarm and event information.

Experion® Mobile Station provides secure mobile access to your Experion control system from outside the control room on any laptop or tablet. Increase the efficiency of field personnel by enabling them to perform daily tasks and troubleshooting faster with instant access to a full function Experion Station on their mobile device. Experion® Mobile App provides quick, convenient

and secure access to Experion control system information on your smart phone or tablet. With Experion Mobile App you can access key process information anywhere, anytime.

Experion® Collaboration Station is an extension to your control system designed for more effective collaboration and faster, better decisions for optimizing operations. Collaboration Station helps operational support personnel improve production and efficiently manage site wide issues, by providing real-time access to Experion control system displays and business applications on a single large, intuitive multi-touch monitor.



CONNECTIVITY AND OPEN SYSTEMS

Along with tight integration and improved project execution comes a truly open system, connecting equipment to leverage data and turn it into actionable information. The new capabilities below illustrate Honeywell's advancements realm and open system integration.

One of the key aspects of LEAP which is our methodology to simplify and streamline the automation project lifecycle, is the decoupling of hardware and software, which allows design and test control strategies independently of the physical IO modules and controllers.

With IO HIVE, we are taking this decoupling to the next level, by allowing IO modules and IO channels to be distributed in the field, and for a variety of controllers to be assigned to a variety of IO channels, without being limited to any particular physical location. The Ethernet interface module, or EIM, expands this flexibility and opens up new possibilities for communication and integration with other systems and devices.

With the support for smart protocols as part of IO HIVE, you can now easily connect and communicate with a wide range of devices and systems, such as PLCs, smart sensors, analyzers, drives, and skids. This makes it easier to integrate and expand operations, and leverage the data from these smart devices for better decision making and optimization.

This gives even more flexibility, where IO modules are fixed to controllers and with the use of the EIM we are taking the load of those controllers that are doing a lot of peer-to-peer communication that is present as the system starts to grow and expand.

So with the use of IO HIVE and now the EIM as part of this HIVE ecosystem, the system architecture is cleaner and the footprint is reduced.

It becomes irrelevant whether the IOs are coming from an IO module, smart device, PLC or other device in the field, because those signals can be integrated into the control strategies or monitoring to help achieve operational excellence, improve safety, security, and optimize assets and processes.

Mobility

Data needs to not only be interpreted and organized; it must reach the right people, bring together a range of input, and enable collaboration to make better decisions. While wireless brings data into the control room, mobility enables remote collaboration and decision making. Honeywell has several solutions, including the Pulse mobile app, to allow remote access to real-time plant performance.

Integrated Safety and Security

Honeywell's holistic approach improves business performance by reducing the risk of incidents, faults and failures that can threaten people, assets and the environment, and disrupt normal operations. Experion provides an integrated safety and security solution, supporting operational integration through a single dashboard, while providing safety network segregation options for greater protection.

Honeywell Industrial Cyber Security Solutions further extend the built-in security of Experion systems and help protect the availability, safety, and reliability of industrial facilities and critical infrastructure. Leveraging advanced technology and industry-leading process control and cyber

security expertise, we deliver proven solutions designed for the specific needs of industrial environments.

- Auto Device Commissioning further optimizes LEAP lean project execution by enabling late binding of devices with loop configuration created in the cloud. The result reduces loop commissioning from hours to minutes.
- Automated skid integration applies our LEAP lean project solution to PLC integration—with easy automatic detection and configuration of Ethernet IP controllers in Experion's SCADA system.
- Experion for Electrical System Control and Management allows the integration of the Energy Management Control System with process control systems, with one control system with one HMI.
- Field Device Manager provides efficient smart instrument management.
- Experion Profit Controller in C300 and ACE moves multivariable predictive control out of the Microsoft® operating system and into the Experion Control Execution Environment. With this Advanced Process Control running on the C300, there is also the option for full controller redundancy.
- The Experion UOC provides a broad set of Experion DCS control features and can be mounted in a cabinet (or without a cabinet) or additional hardware. The controller

reduces hardware footprint and the Virtual UOC (vUOC) utilizes industry-standard virtualization technology. The UOC also provides unit-based control without requiring expensive centralized controllers.

- Experion Batch provides differentiated batch control and provides patented visualization technology that automatically constructs timeline views, insights to upcoming events or potential delays, inherently redundant controller-based

batch execution of all 4 layers of the S88 model (no batch server), and Experion Unit Operations Controller (UOC) and Experion C300.

- Experion supports a variety of wireless standards with our OneWireless™ Network. OneWireless is a multiprotocol wireless IO network connecting ISA100 Wireless, WirelessHART and Wi-Fi devices all in one end-to-end redundant, cyber secure network. OneWireless delivers performance even when scaling to thousands of IO.

EXPERION PKS RESULTS

- **15%**
Improved Project Effectiveness
- **40%**
Reduced Operator-Related Incidents
- **30%**
Reduced Lifecycle Management Costs



WHY CHOOSE HONEYWELL?

Honeywell offers the assurance of a reliable partner boasting a large installed base of integrated systems, unparalleled longevity⁴, and a commitment to ongoing innovation. With a presence across major process industries, including refining, chemicals, oil and gas, metals and mining, pulp and paper, and pharmaceuticals, Honeywell is dedicated to serving diverse industrial needs. Experion is used by small purpose-built applications to large megaprojects and multi-site architectures. Additionally, we help customers cost-effectively manage their control and safety infrastructure in the face of constantly evolving technology.

Global Experience with Local Support

Honeywell can tap into over 12,000 process solution employees located in approximately 125 countries. Honeywell's Global Technical Assistance Center (TAC) helps customers avoid revenue loss through faster problem resolution, with remote diagnostics to help proactively manage automation systems. Honeywell delivers comprehensive services to maintain operating performance and maximize ongoing value.

Unified and Comprehensive Solutions

Experion is modular, flexible, scalable, and extendable. Starting with our base platform, additional systems and applications (including security, digital video, advanced process control, and fire and gas systems) can be added easily for a completely integrated, open system.

Continuous Innovation

Honeywell continues to evolve and innovate to bring significant advances in automation technology, while also providing a smooth migration path to today's technology when the time is right. Honeywell continually guards customer investments by providing easy upgrade paths to the latest control system technology. In addition, we have a wealth of experience in migrating legacy control and safety systems, from various manufacturers. We offer true on-process, virtualized and step-by-step migrations. Honeywell has continued to support products for over 40 years while helping companies transition to modern technology.

WHY HONEYWELL?

- **20 Million**
IO Channels in operation around the world
- **6,000+**
Engineers and Designers in projects and services
- **40 years**
Of continuous evolution and modernizing intellectual property
- **3,000+**
Projects completed in our secure cloud per year

⁴Honeywell pioneered the field of Distributed Control Systems (DCS) with the introduction of the first DCS in 1975.

For more information

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**THE
FUTURE
IS
WHAT
WE
MAKE IT**

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