Safety System Migration

Proven and Cost Effective Path to the Latest in Safety System Technology

Honeywell’s safety system migration solution helps reduce the risk of incidents, maximize process uptime, lower the cost of compliance and ensure peace of mind.

In the process industries, plant owners are responsible for maintaining the highest standards of safety at all times. Production facilities demand utmost safety in order to protect personnel, the environment and production assets while maintaining maximum uptime and minimal operational disruption.

As process safety systems age and become obsolete, they not only increase safety risks, but can also cause lost production time due to unnecessary trips or shutdowns.

Process Safety Challenges
Replacing or migrating process safety systems has a unique set of concerns and considerations compared to process automation systems. Conforming to international safety standards, such as IEC 61511, IEC 61508 and ISA 84.01 means plants must conduct a hazards and risks analysis in addition to allocating safety functions to protection layers.

Users should also consider the benefits of remote diagnostics provided by today’s intelligent Safety Instrumented System (SIS) devices and control valves.

There are many important reasons to migrate process safety systems to the latest technology. These include:

- Reduce unplanned downtime—decreased reliability causes unplanned shutdowns, which have a direct impact on profitability
- Prolong equipment life—upgrades can help lower annual maintenance costs while reducing unexpected repair costs
- Meet current codes and standards—many legacy systems have not been reassessed to determine if they comply with the IEC 61508 standard (some local authorities or insurance companies also require reassessment based on the age of the system)
- Enhance process functionality—plants need improved maintenance, faster troubleshooting and closer alignment with other systems for better decision-making
- Improve safety response—older legacy systems may be too slow to capture and identify process conditions
- Improve operator effectiveness—enhanced safety tools and work practices help operators to better manage abnormal situations or the eventuality of an incident

Reasons for Migration
Many process plants around the world currently utilize outdated safety systems integrated into the Honeywell TotalPlant™ Solution (TPS) via Enhanced Programmable Logic Controller Gateway (EPLCG) or Universal Control Network (UCN) communication interfaces. Honeywell TPS users should consider migration from obsolete safety systems if they are:

- Facing new safety regulations
- Dealing with system support challenges
- Considering implementation of Honeywell’s new generation Experion® Process Knowledge System (PKS) solution
Honeywell TPS users migrating from an outdated safety system will ensure better safety compliance and control performance. Migration will enable these users to integrate standalone safety systems with the plant’s Distributed Control System (DCS) and comply with the latest rules, regulations and standards, including cyber security. Migration also provides the means to improve safety system robustness, reduce system footprint and adapt to local situations.

Unlike many outdated safety systems, Honeywell’s Safety Manager™ solution can be upgraded via software. This philosophy was already adopted with the Fail Safe Controller (FSC) platform many years ago, allowing easy migration to the most recent software releases and latest functions and features.

Honeywell’s Integrated Approach
For more than 35 years, Honeywell has protected the investments of customers around the world. This is demonstrated by a commitment to integration and evolution of TPS systems within the Experion PKS architecture.

Honeywell provides a complete solution based on advanced control and safety products, comprehensive services and proven domain expertise. Customer benefits include:

- Longevity of equipment support
- Reduced total cost of ownership
- Opportunity to utilize latest technology developments

Honeywell’s commitment to plant operational safety extends beyond the boundaries of a traditional safety system. Our integrated, layered, holistic approach to safety helps customers improve their business performance and peace of mind.

Honeywell’s defense-in-depth strategy protects your operation from the process control network to the perimeter of the plant, including independent yet interrelated layers of protection to deter, prevent, detect, and mitigate potential incidents.

With Honeywell’s migration strategy, installing an upgraded safety system does not necessarily require a lengthy shutdown. With careful planning and detailed engineering, legacy safety systems can be upgraded with minimal disruption to operations. Honeywell’s safety management solution provides tight integration and peer-to-peer communication between the DCS and safety system while maintaining the security of an independent environment from the mainline control system.

With goals for increased productivity and decreased maintenance costs, many Honeywell TPS users are looking to the Experion solution as a path to the newest technology. Experion is the only process automation solution designed to manage your business, processes, and assets in one unique system.

Honeywell systems deliver integrated process control and advanced safety with better lifecycle support to protect your investment and meet your desire to migrate at your pace.

Honeywell’s Experion PKS Orion release offers a wide range of advanced capabilities, including platform and application virtualization. Virtualization enables customers to lower the quantity of PC hardware required in their facility; reduce the impact and frequency of operating system and hardware changes; simplify system management; and improve availability, reliability and disaster recovery.

Honeywell’s virtualization capabilities include:

- Virtual infrastructure providing the software and hardware needed to run virtual machines
- Virtualization-ready applications tested and certified for virtual environments
- Virtualization solutions for the industrial domain, including the Experion Backup Control Center and Off-process Testing and Development
- Virtualization services supporting customers from pre-sales to after-market
- Virtualization ensures hardware and OS platform independence
Benefits of Safety Manager

Plants migrating to the latest Honeywell technology can lower the cost of safety and improve performance. This includes reducing the risk of incidents, maximizing production uptime and reducing the cost of compliance.

Safety Manager embeds Honeywell expertise for integrating process safety data, applications, system diagnostics and critical control strategies. It tightly integrates with Experion alarm and event capabilities for smooth plant operation and easy analysis via single window access on an Experion Station.

With Safety Manager, TPS users can move away from obsolete safety technology to a modern and cost-effective process safety architecture supported by a single, reliable vendor. This solution enables compliance with current industry safety requirements and the latest cyber security standards, as well as true integration with the DCS environment (both Experion and TPS). Users can also lower the cost of safety system ownership, achieve a smaller equipment footprint, and ensure a secure and future-proof solution. In addition, Safety Manager supports HART® pass-through and full integration into Field Device Manager (FDM).

Safety Manager Universal Safety I/O maximizes architectural flexibility in the most demanding environments, such as when safety is required at remote locations.

With this approach, each channel can be configured individually to a different I/O type. And by using soft marshalling, the Universal Safety I/O module can be mounted close to the process unit. This eliminates the need for marshalling panels and homerun cables, and reduces or eliminates field auxiliary rooms.

Furthermore, multiple redundant Universal Safety I/O modules may be connected to Safety Manager using a SIL3-certified communication network.

EHPM Solutions

Honeywell’s technology evolution vision allows full flexibility in your lifecycle planning, starting with long-term support of existing equipment through modernization for life expectancy extensions or upgrades for plant performance improvements. Linearity of capital investments, together with efficiency improvements is fully supportable using an incremental modernization and upgrade approach.

Our Enhanced High-performance Process Manager (EHPM) solutions represents the ongoing evolution of the TPS/TDC system to the advance technology of Experion® PKS and is named on the industry’s most widely used and reliable controller. Enhanced Universal Control Network (EUCN) evolution vision is based on control-level integration applying the latest technology trends. As part of the evolution, controllers will be modernized to the new Fault Tolerant Ethernet (FTE) technology with connection to the FTE based Enhanced Universal Control Network (EUCN). EHPM is a long-term/multi-phase evolution vision to integrate the control environment of Honeywell’s TDC/TPS–Experion PKS systems within a single unified physical network for safety and control devices.

The EHPM solutions will make it easy for TPS users to migrate their legacy installed base to an Experion infrastructure while ensuring investment protection. Control-level integration on a single FTE network will be provided. This will allow controllers to be connected to a common FTE network supporting the Universal Control Network (UCN) protocol for the TPS UCN network, and the Control Data Access (CDA) protocol for the Experion control network.

EHPM solutions will enable close Safety Manager integration for legacy TPS-based systems currently utilizing UCN technology. Safety Manager processors will be able to use the UCN protocol in addition to the Experion CDA protocol. Safety Manager with Safety Manager I/O can also be connected to address expansion...
requirements for new safety functions across the EUCN. Standard Safety Manager hardware will be employed for FTE integration using the UCN protocol.

**Comprehensive Safety Services**

Honeywell provides comprehensive safety lifecycle management services designed to reduce the customer’s costs and provide greater return on technology investments. Available services include:

- Hazards and risks analysis
- SIL validation and verification studies
- Documentation of safety system specifications
- Online SIS proof testing
- Maintenance services
- Parts management programs
- Solution Enhancement Support Program (SESP)

Honeywell’s safety services guarantee customers a fully compliant, certified safety solution. Our safety service experts help ensure compliance with all applicable industry standards. This includes pre-assessment to determine the current status of process facilities, people and organization, as well as IEC 61511 safety lifecycle services for each phase of the lifecycle. Honeywell also provides additional services related to specific IEC 61511 requirements, including management and organization of functional safety, verification services, functional safety audits and assessments, TÜV certification, and training services on functional safety and SIS.

Figure 5. Elements of fully compliant, certified safety solution.

Utilizing Front End Loading (FEL), Honeywell’s migration specialists identify potential difficulties with a migration project and provide plans to mitigate risks. The FEL study analyzes all aspects of the project, including mechanical, civil/structural, instrument, electrical, and controls. This technique results in an overall design specification, outlining the strategy and schedule for migration activities.

**Conclusion**

Significant cost savings and productivity advantages can be gained from an intelligently designed and properly implemented safety system upgrade strategy. Thanks to Honeywell’s safety system migration solution, industrial plants can establish a secure path forward to current technology. The benefits include tight control/safety system integration, enhanced plant automation performance, easier and less costly maintenance, improved alarm management, improved regulatory compliance, and more reliable operations.

For More Information

Learn more about how Honeywell’s Safety System Migration Solution can provide a path to the latest technology, visit our website www.honeywellprocess.com or contact your Honeywell account manager.

**Honeywell Process Solutions**

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