

UniSim Operations

Confirming Operational Readiness of Plant Assets to Ensure Reliability and Maximized Operating Performance



The Challenge: Balancing Reliability with Maximized Operating Performance

The challenge in improving the plant production environment is finding a balance between contrasting objectives – improving production capacity while maintaining plant reliability. Solutions that assist an operator's understanding and control of current plant operating conditions have obvious advantages.

The Opportunity: Preparing Assets for Operation

Fast-paced operating scenarios leave little time to make well-informed decisions. As incidents remain unchecked, damage to plant equipment, people and the environment quickly escalate. In production, teams rely on procedures, controls and operators to maintain reliable and optimal plant operations through informed decision making. Preparing each of these assets for production must be done methodically prior to initial plant operation and periodically revisited to reassess performance.



The Solution: UniSim Operations

UniSim[®] Operations helps teams visualize and assess the operational readiness of plant assets long before they are applied in real-time production scenarios. UniSim solutions include UniSim Design, UniSim Optimization and UniSim Operations.

UniSim Operations is built on proven technology with more than 25 years of experience supplying process simulation tools to the process industry. It provides an intuitive and interactive process and control modeling solution that enables engineers to develop and optimize operating procedures and control system configurations. It can also form the foundation of a comprehensive training program that is used to prepare operators for production scenarios before initial operations and refresher training. Operators can make better decisions by using UniSim to quickly interpret many real-time production scenarios.

Benefits

UniSim is the key to a robust understanding of plant behavior under normal and abnormal situations. Benefits extend beyond improved operating performance to include safety and the environment.

UniSim Operations offers the opportunity to make sustained and measurable differences in plant reliability and operations performance. UniSim is used by both operations and engineering teams for a multitude of purposes throughout a plant's lifecycle. Improving plant reliability through informed decision making is critical to this success. When this is achieved, plant managers can:

- Accelerate operating profits with faster startups
- Sustain profits through incident avoidance
- Protect people, plant assets and the environment

Applications for UniSim Operations

Procedure Development and Assessment – With UniSim, your process can be operated many times to capture and optimize procedures under normal and abnormal situations, months before actual startup. Such assessment gives your team the confidence that your procedures have been validated against the dynamic behavior of your process and controls.

Once your facility is commissioned, training programs can be extended with remedial exercises to address chronic incidents and to avoid subsequent occurrences.

Control Strategy Assessment – The first time you operate your controls need not be in actual startup with the associated risk that process entails. Using dynamic simulation, the project team can tune controllers, confirm interlocks and safety systems, optimize alarm configuration and stabilize control implementation long before commissioning.

Training Programs – Benefits from comprehensive operator training programs are well known. Immediate benefits are realized through preparation of the operators for an effective startup. Ongoing benefits are realized under normal operating conditions as the focus shifts to maintaining production by recognizing and avoiding incidents that result in production losses, equipment damage, personnel injury and environmental hazards.

Online Performance Monitoring – Introducing the simulator to the control room through an online link provides a decision support tool to assist operators in early event detection. Custom displays that present the difference between predicted and measured conditions assist the operator in recognizing and avoiding abnormal situations. Predicted variables also provide information about equipment operation and product quality where there are no instruments, and as an alternative to analyzers, presents significant cost savings. Snapshots captured from current operations can also be used as the initial condition in scenario evaluation.

Features

Unique Simulation Technology – UniSim simulators are real-time dynamic models that typically incorporate the entire control content. The primary underlying simulation technology is characterized by extremely high levels of fidelity and performance. The simulation models may be of unrestricted size and can be adapted for detailed engineering studies or real-time applications such as operator training.

UniSim uses first principles engineering and thermodynamic relationships to accurately represent plant behavior. These capabilities have been applied extensively and proven repeatedly in live plant applications. When appropriate, other Honeywell component modeling capabilities are incorporated with UniSim in order to derive maximum benefit for customers.

Rigorous Physical Properties – The quality of any simulation model is ultimately dependent on the validity of physical properties and associated thermodynamic calculations. UniSim simulator models make use of the Honeywell advanced properties solution. This is generally recognized as the best commercially available system and enables models to be widely used for multiple applications.

Legacy Support--To better support our customers while protecting their investment in simulation, Honeywell continues to support older process models under a common user interface and control execution environment. Our current customers receive support for their installed solutions while their new models benefit from the strengths of our technologies in a unified simulation environment.

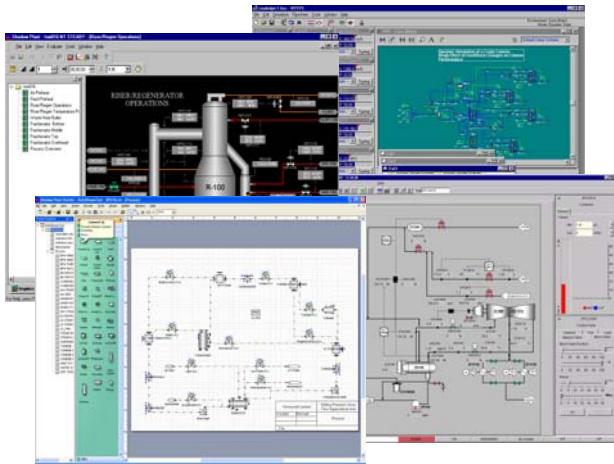
Training features – For operator training applications, UniSim offers facilities for basic coursework, problem solving and trainee assessment. Effective management of these tasks is achieved through a graphical user interface with facilities for:

- Model selection, initial condition selection and snapshots management
- Simulator freeze and time management functions
- Graphical navigation, trending, alarm and event logging, video player and event-driven messaging
- Instructor-less training, scenario definition, scenario replay and process upsets
- Operator performance monitoring, assessment, report generation and recordkeeping
- Instructor variables and remote functions
- WAN-based learning management systems and complete simulator-enhanced training material

Fully scalable simulation architecture – UniSim can model plants of almost any size or complexity. This exceptional capability is made possible by a proprietary computing architecture that permits multiple simulations to run concurrently on single or multiple computers. As a result:

- Large models can be distributed across several computers
- Multiple user interfaces can run on separate monitors
- External hardware systems can be easily interfaced

DCS integration – In many cases, significant added value is derived from UniSim by integrating the model with appropriate DCS facilities. This is especially important for operator training and pre-commissioning validation work.



Integration with Honeywell Solutions

UniSim is compatible with other Honeywell solutions, including:

- **Experion® Process Knowledge System(PKS)**— Honeywell's next-generation DCS, integrating assets, processes and people
- **Profit Suite™**--Honeywell's advanced process control solution that dynamically drives the process to peak performance in real-time
- **Uniformance®**--Honeywell's information management system that collects and stores large volumes of process data and makes it available to other systems for analysis and reporting by users, business systems and production applications

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More Information

For more information on UniSim , visit www.honeywell.com/ps or contact your Honeywell account manager.

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