

UniSim Operations Suite R400



Confirming operational readiness of plant assets with UniSim Operations Suite helps teams ensure plant reliability and maximize 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. What good is improving production capacity by 2-5 percent, if pushing equipment harder results in plant shutdowns, equipment damage or personal injury? 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 can 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 in lieu of operational experience.

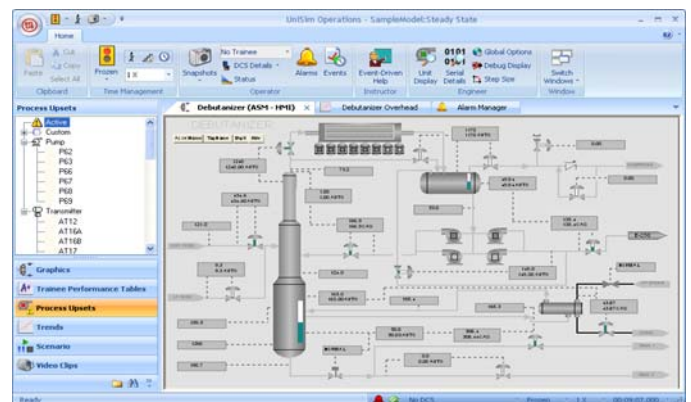
The Solution: UniSim Operations Suite

UniSim® Operations Suite is a collection of tools that help teams visualize and assess the operational readiness of plant assets long before they are applied in real-time production scenarios.

Included in this suite are:

- UniSim Training Software
- UniSim Process and Control Simulation
- UniSim DCS Interfaces/Toolkits
- UniSim ProcessSync
- UniSim Process Monitor

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



UniSim Operations Suite is completely compatible and interoperable with simulations created in UniSim Design and Optimization Suites.

UniSim Operations Suite Benefits

Honeywell's UniSim Operations Suite offers an unrivaled range of capabilities to achieve these goals and is field-proven at sites worldwide. Its effective use provides the foundation for a sustained competitive advantage. The UniSim simulator 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 Suite offers the opportunity to make sustained and measurable differences in plant reliability and operations performance. These products are 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 knowledge transfer to operators
- Deliver earlier operating profits with faster startups
- Protect profits through incident avoidance

Honeywell UniSim Operations Suite yields substantial financial returns and becomes an indispensable part of a company's plant technology infrastructure.

Applications for UniSim Operations Suite

Procedure Development and Assessment – With a UniSim simulator, 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. In this manner, peers can learn from the mistakes of others.

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 system, optimize alarm configuration and stabilize control implementation long before it is commissioned. If this validation is not done before the process is operational, there may not be another opportunity to resolve any issues until the next turnaround.

Comprehensive 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. The focus shifts to maintaining production by recognizing and avoiding incidents that result in production losses, equipment damage, personnel injury

and environmental hazard. You can also define additional training objectives for experienced operators interested in training on advanced process control and plant or mill information systems.

Scenario Assessment – UniSim ProcessSync is a unique software tool used to maximize operator efficiency. It is built on Honeywell's proven Uniformance® technology that retrieves plant data to capture actual incidents for assessment, remedial training and sharing experiences with those not present at the time.

ProcessSync represents a quantum leap forward in the ever-increasing requirement to keep operations staff trained and ready to effectively respond to potential incidents. By avoiding incidents and understanding the impact of anticipated control actions ahead of time, operations can improve decision-making and maximize bottom-line performance.

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 annual cost savings. Snapshots captured from current operations can also be used as the initial condition in scenario evaluation.

Uses of UniSim Operations Suite

In industrial applications across key industries, Honeywell UniSim simulators are being supplied for an increasingly diverse range of process plant applications. Honeywell project experience includes:

Refining	Petrochemical
Chemicals	Polymers
Oil & Gas	Power
Pulp & Paper Mining, Minerals, Metallurgy	

UniSim Operations Suite Features

Unique Simulation Technology – Based on the detailed definition of a plant as represented by piping and instrumentation diagrams and equipment data sheets, Honeywell 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.

The UniSim simulator 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 the UniSim simulators 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.

Advanced Simulation Engines – UniSim Operations Suite is founded upon comprehensive dynamic plant simulators bringing the accomplishments from the past 20 years forward in tomorrow's solutions.

To better support our customers while protecting their investment in simulation, UniSim continues to support process models previously developed in Honeywell's Shadow Plant and Aspen's Virtual Plant Simulator under a common user interface and control execution environment. In this way, our current customers receive support for their installed solutions while their new models benefit from the strengths of our best technologies under a unified simulation environment.

Comprehensive Training Features – For operator training applications, the UniSim Instructor Station offers fully featured facilities for all aspects of session management. Key tasks include basic coursework, problem solving and trainee assessment. Effective management of these tasks is achieved through a graphical user interface with facilities for:

Welcome Screen, Operator Guides, Support

Basic User Features – snapshots, initial conditions, backtracks, time management (freeze, step, fasttime), feature navigation bar

Instructor Tools – exercises, scenarios, upsets, instructor variables, performance monitoring and assessment, alarm and event summary

Operator Tools – graphic displays with faceplates, remote functions, operator trends, alarm display and annunciator, document library, video player, event driven help

Centralized Simulation Server – repository for downloadable models, performance reporting and license management

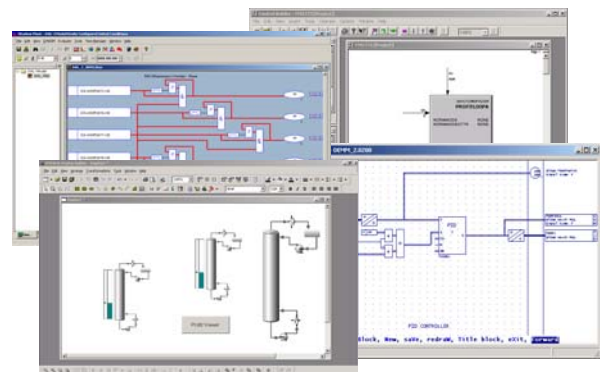
Fully scalable simulation architecture – The UniSim simulator can model plants of almost any size or complexity. This exceptional capability is made possible by a proprietary computing architecture that permits multiple simulations to run concurrently on single or multiple computers. As a result:

- Large models can be distributed across computers
- User interfaces can run on multiple computers
- DCS/PLC systems can be easily integrated

Integration with Experion PKS

The UniSim simulator is qualified with other key Honeywell Experion® Process Knowledge System (PKS) components, including:

- Experion PKS R400 Control Execution Environment composed of Station, Server, SimC200E, SimACE, HMIWeb
- Profit Suite--Honeywell's multivariable control that dynamically drives the process to peak performance in real time
- PHD plant historian



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

As an experienced solution provider, Honeywell offers direct-connect solutions for a wide range of control and safety systems. Our recent experience encompasses:

Honeywell	Invensys	Emerson
Yokogawa	ABB	Siemens
Yamatake	Rockwell	Modicon
HIMA	ICS Triplex	others

Hardware and Software System Requirements

Honeywell UniSim Operations Suite is supplied for use on Windows XP PCs configured with high-resolution color monitors and associated peripherals. For most applications, a client/server network of PCs will be supplied for the simulator, instructor station and engineering station. Linkages to DCS systems are provided using appropriate hardware and software.

Honeywell Services

Honeywell provides a comprehensive range of services for the supply of UniSim simulators, including project management, cost control, planning, purchasing of any associated computer platforms and DCS consoles, model building, acceptance testing, documentation, training courses, operational support and sustained benefit services.

Staffed by specialists in process engineering, control, systems integration and project management, Honeywell teams have expertise in all key areas. Over 100 professionals operate from locations in Europe, North America and Asia. In addition, project teams make use of specialized resources within Honeywell, which offers added flexibility in providing the best service to our customers.

More Information

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

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