ДРАЙВЕРЫ

Технические характеристики

на UniSim

Honeywell

UNISIM ® DESIGN SUITE

PRODUCT INFORMATION NOTE

Process modelling software for process design, simulation, safety studies, operations monitoring and debottlenecking, digital twins, process optimization and business planning.

The Challenge: Optimum Process Designs

Engineers in the oil and gas, refining, petrochemical and chemical industries must optimize their work to ensure safe, energy efficient and cost-effective process designs. Optimum designs must be accurately identified to ensure companies comply with regulations and, at the same time, maximize their business performance. Process engineers are challenged with making timely business decisions while meeting the business objectives of designing and operating efficient, safe and profitable plants with optimal carbon footprint.

The Opportunity: Linking Business Objectives to Process Design

UniSim Design is a powerful technology that enables decision makers and engineers to link critical business objectives to process design, by:

- Utilizing the same technology and process model throughout a plant asset lifecycle by different functions and for multiple purposes.

- Ensuring process equipment is properly specified to deliver desired product throughput and product specifications.

- Performing 'what-if' scenarios and sensitivity analyses to identify the optimal design based on operating and business targets.

- Evaluating the effect of feed changes, upsets and equipment downtime on process safety, reliability and profitability.

- Improving plant control, operability and safety studies using dynamic simulation.

- Monitoring equipment/plant asset performance and comparing to model predictions.
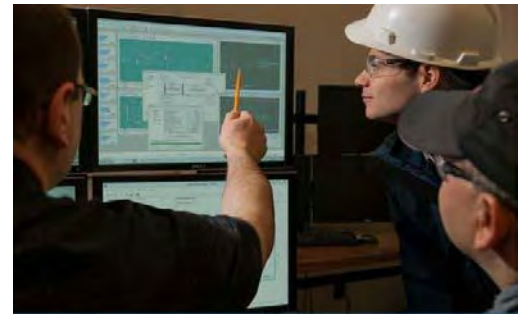
De-bottlenecking Operations with UniSim® Design.

As a true life-cycle simulation application, UniSim® Design Suite allows process models to be built, updated and used for multiple applications throughout a project or plant asset lifecycle. The same process model that is built for a feasibility study can be re-used and updated for:

- Front-end engineering design
- Detailed engineering design
- Engineering studies
- Process de-bottlenecking
- Control and safety system check-out
- Advanced applications such as: Operator Training Simulator, Advanced Process Control, Asset Management and Operations Analysis and Business Support.

WHY DO CUSTOMERS CHOOSE OUR SOLUTION?

Best-in-Class Support

Our after-market services engineers, averaging 9 years of UniSim Support experience are:

- Responsive
- Knowledgeable
- Reliable
- With a solid process engineering background.

Robust Technology

UniSim Design Suite technology is:

- Robust
- Scalable
- Stable
- Accurate
- Fast
- A Life-Cycle simulation software

Innovation

Leveraging in-house process, control, and software development expertise, we bring to market features:

- Developed with users
- For the users
- Adopting best practices & efficient workflows

Joint-Development

We actively engage in joint programs with customers to:

- Address specific customer needs
- Accelerate development
- Pilot new technologies.

Commercially flexible

Flexible licensing model aligned with customer expectations in terms of:

- Product Options
- Access Type
- Contract length.

The Solution: UniSim Design Suite

UniSim Design Suite provides an accurate and intuitive process modeling solution that enables engineers to create steady-state and dynamic models for plant and control design, energy & emissions evaluations, safety studies, performance monitoring, troubleshooting, operational improvement, digital twins, business planning and asset management. Leveraging the UniSim's high-performance engine, design and optimization are enabled under the same simulation environment.

UniSim Design Suite helps process industries improve productivity and profitability throughout an engineering project or plant asset lifecycle. The powerful simulation and analysis tools, real-time applications and the integrated approach to engineering solutions provided by UniSim Design Suite enable companies to optimize the carbon footprint, improve designs, optimize production, and enhance decision- making. Process models are at the core of advanced online & offline applications for operational monitoring and asset management, process optimization, operator training, and cloud- enabled services.
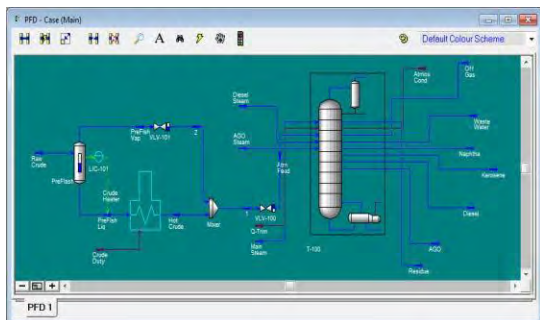
PFD (Process Flowsheet Diagram) Modeling Environment.

The Benefits: Lower Lifecycle Costs

Improved Process Designs
Engineers need to rapidly evaluate the most profitable, reliable and safest design. It is estimated that changes made during commissioning constitute 7% of the capital cost of a project. UniSim Design enables engineers to evaluate the impact of design decisions earlier in the project. For new designs, UniSim Design enables users to create models quickly to evaluate many scenarios. The interactive environment allows for easy 'what-if' studies and sensitivity analysis. The top candidates can be used to create high fidelity models in which additional equipment and process details are included.

Reduced Engineering Costs
Simulating with UniSim Design reduces engineering costs by creating models that can be leveraged throughout the plant lifecycle, from conceptual design to detailed design, rating, training and optimization; providing a work environment that ensures work is completed quickly, effectively and consistently. This avoids the time-consuming and error-prone manual process of transferring, formatting and analyzing production and process data that can account for up to 30 percent of engineering time.

Plant Safety and Reliability
As a desktop application, UniSim Design empowers users to rapidly determine whether safety equipment is designed and rated according to the industry standards and whether all other equipment are properly designed and rated. For example, engineers engaged in retrofit work can quickly evaluate equipment employed in different services or evaluate the consequences of a design basis change.

Featuring as the digital twin in an online or cloud- enabled solution, UniSim Design allows users to monitor the performance of plant assets and equipment. For example, engineers monitoring and troubleshooting plant operations through online systems can assess equipment deficiencies and predict/prevent failures, such as heat exchanger fouling, column flooding, and rotating equipment failures.

Features

In order to operate with maximum effectiveness and provide the necessary insights and knowledge, a process modelling tool must combine ease-of-use with robust engineering power. UniSim Design is built upon proven technologies with more than 30 years of experience supplying process simulation tools to the oil and gas, refining, petrochemical and chemical industries.

Our features include:

Tools for modeling of processes for lowering carbon footprint

Built-in unit operations, enhanced thermodynamics, and extended component database to model the following: Carbon Capture, Transportation and Storage; CO2 Emissions and Green H2 plants

Easy-to-Use Flowsheet Environment

PFDs provide a clear and concise graphical representation of the process flowsheets, including productivity features such as cut, copy, paste, auto connection and organizing large cases into sub- flowsheets.

Comprehensive Thermodynamics

UniSim's thermodynamic options ensure accurate calculation of physical properties, transport properties and phase behavior. UniSim Design contains an extensive component database and the ability to add user components or modify component properties. It also includes a pure compound database loader system which provides users with direct access to external compound property databases, such as DIPPR (Design Institute of Physical Property Research), and DDBST (Dortmund Data Bank). UniSim thermodynamics are extensible, offering tremendous flexibility for users to develop and use custom compound and thermodynamic properties to simulate, protect and maintain their IP.

PVT and Crude Assay import tools allow users to read into the UniSim flowsheet PVT regressions from CALSEP's PVTSim Nova and Schneider Spiral Crude or Haverly H/CAMS crude assay databases, respectively. Users can synthesize their own crudes as well.

Finally, 3rd party thermodynamics may be used with UniSim Design.

Comprehensive Unit Operation Library and Custom Extensions

UniSim Design supports process modeling of separation, reaction, heat transfer, rotating equipment and logical operations in both steady-state and dynamic environments. These models are proven to deliver quality realistic results and handle various situations such as vessel emptying or overflowing and reverse flow. In addition, users may build and use their own extensions in the UniSim simulation environment, leveraging and protecting their IP.

Flexible License Manager

UniSim License Manager supports temporary license locking to laptop computers (commuting), token-based or hybrid (token-network) licensing models and provides insightful administration tools for monitoring usage and managing access control.

Options

UniSim Design Suite provides maximum flexibility and power to users by using an open architecture which enables industry-specific capabilities to be easily added by Honeywell or third-party suppliers. The following options are available for UniSim Design to help ensure client needs are met and enhance the use of simulation throughout the plant lifecycle.

UniSim Design is the core steady state flowsheeting environment. It provides an intuitive and interactive process modelling solution that enables engineers to create steady state models through the appropriate selection of thermodynamics properties, feed compositions and conditions; unit, control, and logic operations. R492 release now includes the CO_2 emissions utility.
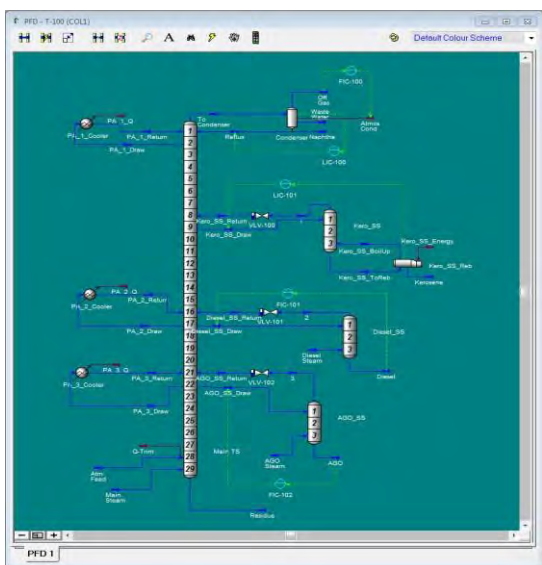
CDU Modeling in the UniSim Dynamic Option Environment

UniSim Dynamic Option provides dynamic simulation capability and is fully integrated with the UniSim Design environment. A steady-state model can be easily converted into a dynamic model with the use of the dynamics assistant. The dynamic model offers rigorous and high-fidelity results with very fine level of equipment geometry and performance detail. Special features for dynamic modelling include pressure-flow dynamics, a rich set of control functionality to support process control and detailed process monitoring, cause and effect matrices, and an event scheduler.

UniSim EO (Equation Orientated) is the simulation environment under which equations are solved simultaneously to reach solutions faster, making it suitable for both design and optimization applications. An integral part of the UniSim Evolution platform, the UniSim EO environment leverages Honeywell's proprietary NOVA solver. This solver is well suited for solving hundreds of thousands of equations with up to a thousand degrees of freedom, so it can be employed to simulate sizeable processes across all industries, for offline and online applications.

UniSim Sustainability: Provide capability to evaluate alternate operations and designs for reducing carbon intensity with CO2 emissions utility including Scope 1 and Scope 2 emissions categorization.

Modelling and documentation for Benfield and physical solvent-based CO2 capture technologies. Design CO2 transportation with UniSim Design's specialized property packages, enhanced flash solver and solid formation and CO2 freeze out utility for risk areas prone to CO2 solid formation.

Alkaline electrolyzer and Proton Exchange Membrane (PEM) Unit Operations for evaluating electrolyzer specs and conducting green hydrogen plant feasibility studies.

UniSim Refining Reactors are unit operations built within the UniSim EO environment and represent kinetic, high fidelity unit operations that reflect refinery conversion units. The following modules are currently available: hydrocracker, hydrotreater, catalytic reformer, delayed coker, fluid catalytic cracker, isomerization and alkylation reactors. The refining reactor modules can be calibrated using engineering data or real plant data, leveraging the data reconciliation utility in UniSim Design. Also, in conjunction with the LP vector generation utility, the refining reactors may be used to generate LP vectors for use in scheduling and planning tools.
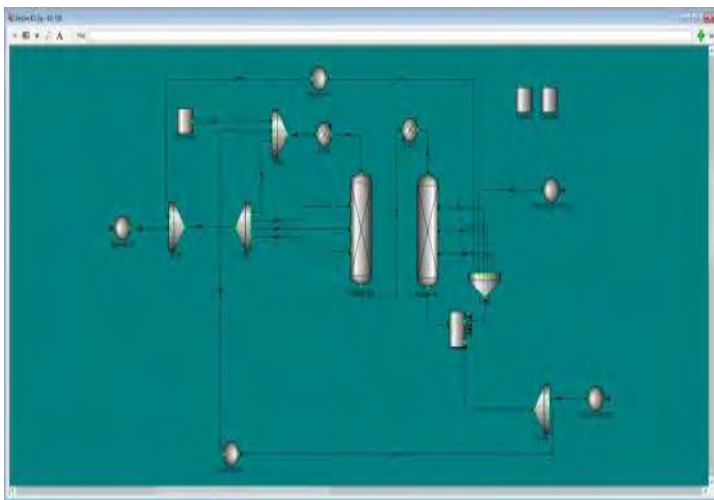
Hydrocracking Modeling within the UniSim EO Environment

UniSim Optimize is an option in addition to the optimizer which is offered with UniSim Design. It includes a number of optimization algorithms (SQP, MINLP and NOVA), allowing UniSim Design to handle more complex optimization problems than the Original Optimizer, and a utility for data reconciliation which allows models to be matched to operational data.

UniSim Sulfur Recovery Unit (SRU) is Included as part of the base UniSim Design package, the UniSim SRU Model enables refiners and gas processors to leverage ongoing sulfur recovery innovation and decades of Ortloff experience with specialized oil and gas applications, including SRU, TGCU and TGO models with an aligned component list and thermodynamics package. SRU functionality has been built using expertise from Honeywell's Ortloff division, experts in sulfur recovery technologies.

UniSim Blowdown Customize is a dynamic simulation utility for blowdown studies. It allows for flowsheeting and event scheduling, has very detailed heat loss models for vessels and vessel heads and it implements the API 521 6th edition fire method.

UniSim PRS is a standalone tool for sizing and rating PSVs and BDs and surrounding pipes. Originally developed as an internal tool, it is now commercialized and made available to UniSim customers. The UniSim PRS interfaces with UniSim Flare for easier data transfer between the two products.

UniSim Spiral Wound Tube Bundle Option for accurate dynamic modeling of complex spiral wound tube bundle exchangers commonly found in LNG production.

UniSim Design Gasifier Option unlocks the gasifier operation block inside UniSim Design, allowing the user to model these complex units in both steady state and dynamic modes.

UniSim Heat Exchangers is a suite of products that allow thermal specialists to design, check, simulate, and rate heat exchange equipment rigorously. Used on their own, they enable the determination of the optimum heat exchanger configuration that satisfies all process constraints. Integrated with UniSim Design, opportunities for capital savings in the overall process design may be identified.

These products are the result of over 35 years of industry collaboration and research. The heat exchanger products offered in this suite include:

- Shell-Tube Exchanger Modeler
- Crossflow Exchanger Modeler
- Plate-Fin Exchanger Modeler
- Fired Process Heater Modeler
- Plate Exchanger Modeler
- Feedwater Heater Modeler
- Process Pipeline Modeler

UniSim Flare is a steady state flare and relief network simulator used to design new flare and vent systems from relief valve to flare tip, or to rate existing systems to ensure that they can handle all possible emergency scenarios. UniSim Flare can also be used to debottleneck an existing flare system that no longer meets the need for safe operation in a plant.

UniSim ExchangerNet is an advanced tool for the design and optimization of heat exchanger networks, pinch analysis, and capital and operational cost optimization. The optional Exchanger Net Operations module may be used to monitor the plant operation of the heat-exchanger networks and understand the impact of different modes of operation on operating costs.
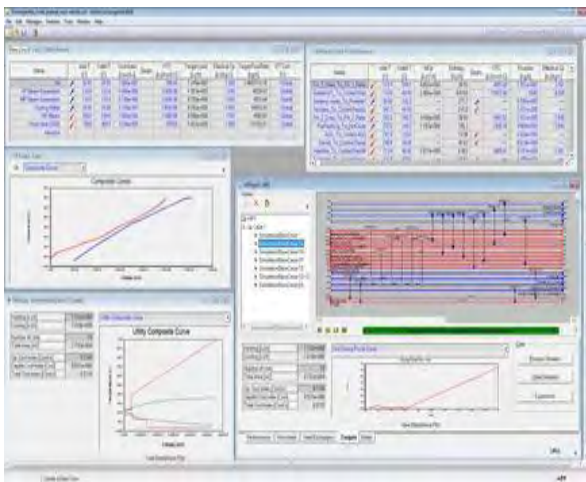

Crude Pre-Heat Train Monitoring with UniSim ExchangerNet Operations.

UniSim ThermoWorkbench provides users with the ability to create and analyze thermodynamic packages by regressing parameters against laboratory data and for analyzing the resulting predicted phase equilibria behavior. These packages may then be used in UniSim Design or other applications using UniSim Thermo. UniSim ThermoWorkbench also allows users to perform azeotropic calculations for multiple compound systems, and to view results using a number of different graphical tools such as Txy and ternary phase equilibria diagrams.

UniSim 3rd Party Options are specialist technologies which complement the UniSim Design Suite through smooth integration of products, models, and data. Honeywell collaborates with third parties to provide access to the following applications:

- HTRI's XchangerSuite and XSimOp
- OLI's Electrolytes
- Schlumberger's AMSIM, PIPESYS, and OLGAS
- Cost Engineering's Cleopatra Plus
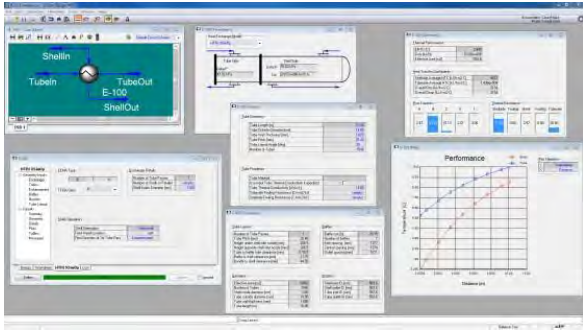
HTRI's XSimOp Shell-Tube is seamlessly integrated within UniSim Design.

In addition, UniSim Design links to a number of other technologies, such as:

- Schlumberger's OLGA and PIPESIM
- Petroleum Experts' Suite
- CALSEP's PVTSim Nova
- Haverly's H/CAMS
- CalSep's MySep
- Siemens' COMOS
- DDBST's DDBSP
- Mathwork's Matlab/Simulink.
- REFPROP

UniSim® Design Suite R492 System Requirements

PARAMETER	SPECIFICATION
PROCESSOR SPEED	Minimum: Intel i3 3.6 GHz or better Recommended: Intel multicore i7 4.6 GHz or better
RAM REQUIREMENTS	Minimum: 4 GB RAM Recommended: 8 GB RAM
DISK SPACE	Minimum: 25 GB of free disk space Recommended: 50 GB of free SSD space
DISPLAY	Minimum screen resolution: 1280 x 720 Recommended screen resolution: 1920 x 1080 with graphics card.
DESKTOP CLIENT OPERATING SYSTEM	Microsoft Windows 7, 8.x (Home, Business, Ultimate or Enterprise - 32 and 64 bit) Microsoft Windows 10 (32 and 64 bit)
SERVER OPERATING SYSTEM	Microsoft Windows Server 2008 Microsoft Windows Server 2012 Microsoft Windows Server 2016
VIRTUALISATION COMPATIBILITY	VMWare EXSi MS Hyper-V
MICROSOFT OFFICE COMPATIBILITY	Microsoft Office 2013 Microsoft Office 2016 Microsoft Office 365

UniSim® Design Suite

Giving users the power to determine process workflows, equipment operation and implementation requirements, UniSim Design Suite products help capture and share process knowledge, improve plant profitability, and maximize returns on investments in simulation technology.

UniSim Design Suite offers:

- An integrated steady-state and dynamics environment to easily re- use, update and transition the process models throughout a project or plant asset lifecycle

- Sustainability features for CO2 Emissions, Carbon Capture, Transport & Storage, and Green H2 elecrolyzers

- A user-friendly interface which helps engineers to easily access and visualize the process information and identify trends.

- Built-in industry standards that minimize the need for literature search when sizing and rating equipment.

- Integration with 3rd party specialty technologies which allow for the best technical solution for process simulation.

- Interfacing capabilities with process historians, DCS & safety systems, and other advanced applications that maximize the benefits for green-field, brown-field, and revamp projects.

UniSim Design Suite is also the engine or key enabler of a number of solutions and outcomes, as follows:

- **Honeywell Workforce Competency** to plan, deploy and manage a structured program to develop and maintain operator competency

- **UniSim Live** to monitor, predict, and optimize plant performance; this is a cloud-based solution.

- **End-to-End Optimization** to bridge gap between planning and control and deliver broader scope closed-loop optimization in real-time

- **Honeywell Asset Sentinel** to monitor equipment in real-time, predict failure, and improve asset reliability.

UniSim Design Suite Support Services

UniSim Design Suite comes with worldwide, premium support services through our Benefits Guardianship Program (BGP). BGP is designed to help our customers improve and extend the usage of their applications and the benefits they deliver, ultimately maintaining and safeguarding their advanced applications.

Honeywell provides a complete portfolio of service offerings to extend the life of your plant and provide a cost-effective path forward to the latest application technology. Honeywell services include:

- Standard and Customized Training

- Consulting

- Model Building

- Engineering Studies

- Custom Thermo/Unit Operations

По вопросам продаж и поддержки обращайтесь:

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48

Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курган (3522)50-90-47
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Ноябрьск(3496)41-32-12

Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37
Ростов-на-Дону (863)308-18-15
Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саранск (8342)22-96-24
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35

Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97
Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Улан-Удэ (3012)59-97-51
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
Чебоксары (8352)28-53-07
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Россия +7(495)268-04-70   **К**азахстан +7(7172)727-132   **К**иргизия +996(312)96-26-47

сайт: www.honeywell.nt-rt.ru || эл. почта: hwn@nt-rt.ru