KBC

A Yokogawa Company

Petro-SIM®

Simplifying Complexity in Oil and Gas

Petro-SIM powered by digital platforms, artificial intelligence, and machine learning. It supports the entire hydrocarbon value chain, from upstream operations to downstream refineries, LNG plants, petrochemical plants, polymer production processes and EPC firms.

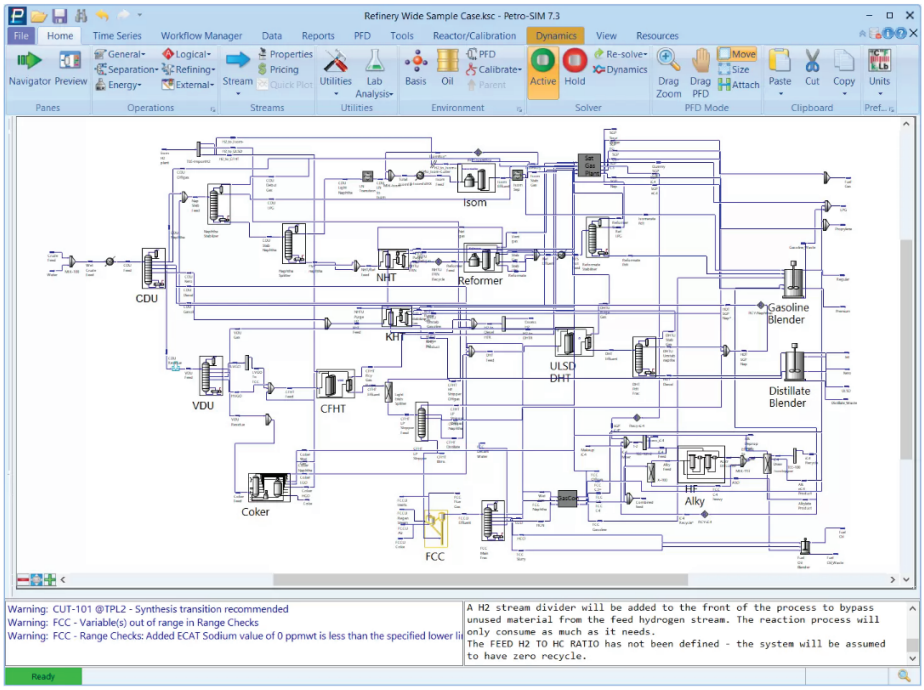
Petro-SIM, an award-winning process simulation platform, features open architecture for seamless technology integration, fostering collaboration and transformation. Its advanced models support confident decision-making, improved plant performance, emissions reduction, and maximized asset value, helping companies achieve fully autonomous operation, reduce scope 1 and 2 emissions, optimize production, and enhance energy efficiency.

2023 Gulf Energy® Excellence Awards FINALIST Best Modeling Technology

Bringing DECARBONIZATION to Life®

Operators face the challenge of balancing profitability with sustainability amid fluctuating feed properties, price volatility, and operational disruptions. To stay competitive, they must improve energy efficiency, scale renewable production, and reduce emissions. Harnessing robust digital technologies, artificial intelligence, and cloud solutions is key to optimize performance, ensuring energy efficiency and driving profitability.

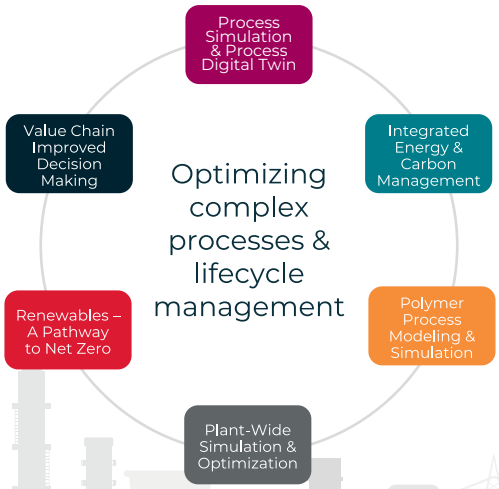
Petro-SIM process simulator models individual units and integrates them into the supply chain-wide simulation from well-head to feedstocks to refining and petrochemical end products due to the robust thermodynamic engines.



Petro-SIM process digital twin simulation of entire refinery

Petro-SIM, the Ultimate Solution for Process Simulation

Petro-SIM software offers a comprehensive suite of tools designed to optimize plant operations, streamline decision-making, and support sustainability goals. Each feature brings targeted benefits that enhance performance, profitability, and alignment with net-zero objectives across the value chain.



Process Simulation & Process Digital Twin Petro-SIM technology centralizes and validates plant data, automating reporting to create a single source of truth that aligns teams across locations, optimizing performance and profitability.

Integrated Energy & Carbon Management Petro-SIM's integrated process and utilities model helps businesses achieve decarbonization targets by optimizing energy use, cutting costs, and simplifying capital decisions for a sustainable, low-carbon future.

Polymer Modeling Powered by Predici Petro-SIM software, integrated with Predici polymer modeling, can be applied to simulate polymer production, tackle the challenges of running a polymer plant such as optimizing grade transition, product yield, energy efficiency, and emissions reduction.

Refinery and Petrochemical Plant-Wide Simulation & Optimization Petro-SIM software enables engineers to optimize the entire refinery and petrochemical supply chain, maximizing yield, minimizing emissions, and supporting decarbonization and waste processing for a circular economy.

Renewables – A Pathway to Net Zero Petro-SIM software, paired with Multiflash ,®optimizes renewable and low-carbon feedstock use for biofuels and leveraging green hydrogen production, increasing profits, lowering emissions, and ensuring safe operations on the path to net-zero.

Petro-SIM's water electrolyser unit models alkaline, PEM, and SOEC electrolysers, allowing for efficient design and optimal green hydrogen production. Its dynamic model helps monitor and control energy use, providing equipment sizing recommendations and operational strategies. Additionally, the improved D HTR SIM ®(renewables) supports isomerization processes for diversified renewable feeds, enhancing cold flow properties for sustainable aviation fuel production. This enables users to explore various co-processing scenarios, including modeling up to 100% bio-feed.

Value Chain Improved Decision Making Petro-SIM's digital twin solution allows technical teams to monitor process simulation and process digital twin models in real-time, enhancing decision-making across the value chain, improving the digital twin solution, and advancing net-zero goals.

A Unique Focus

Design. Operate. Improve. Sustain.

Petro-SIM's process digital twin maximizes asset value by enabling efficient design, seamless operation, and continuous improvement of complex simulations. With industry-leading auto-configuration options and flexible workflows, it simplifies model setup, adapts processes, and sustains long-term performance, reducing emissions and enhancing operational success. Petro-SIM digital twin is a strategic tool deigned to maximize your assets' value. Empowering you with the confidence to make informed decisions to improve your facility's performance, drive organizational excellence while Bringing Decarbonization to Life™.