



Schlumberger



Symmetry

Tailored workspaces—optimized facility



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Symmetry*, a process software platform, is a comprehensive simulator that captures all aspects of your models from reservoir to product distribution. The Symmetry platform is built using VMG's industry proven simulation technologies that have been optimized to scale to your engineering needs.

The Symmetry platform uniquely integrates the modeling of fields, pipe networks, process plants, and flare systems, providing an unprecedented level of collaboration and cooperation that enables teams to seamlessly transfer knowledge and expertise and maximize the total value of the asset.

The Symmetry platform contains a proven thermodynamic fluid representation that can be used throughout the simulator and an integrated dynamic mode tailored for each workspace that can be used when required.

Tailored Workspaces—Optimized Facility

VMGSim (Process): World-class process simulation for facilities and plants

Pipe workspace: Rigorous multiphase pipe network for complex and looped networks

Flare workspace: All-inclusive relief system analysis with integrated platform supply vessel (PSV), network header, and stack design

Field workspace: Fully integrated gas reservoir and multiphase gathering system with forecasting functionality

Production

- Inflow production relationship
- Field forecasting
- Compositional reservoir

Network

- Gathering systems
- Pipelines
- Mechanistic models
- Flow assurance
- Geographic information system (GIS) input
- Pigging and slugging

Process

- Gas processing
- Oil and heavy Oil processing
- Oil refining
- Petrochemicals
- LNG
- Utilities
- Gas-to-liquid
- Power generation

HSE

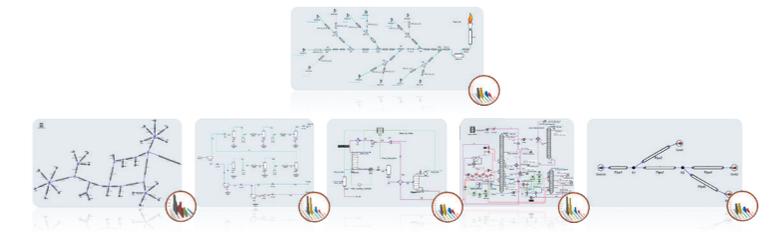
- Flare Systems
- Sizing (PSV, separator, etc.)
- Emissions
- Depressuring, blowdown studies

Fluids: Thermodynamics and characterization

Engines: Steady state, dynamics, pressure flow solver

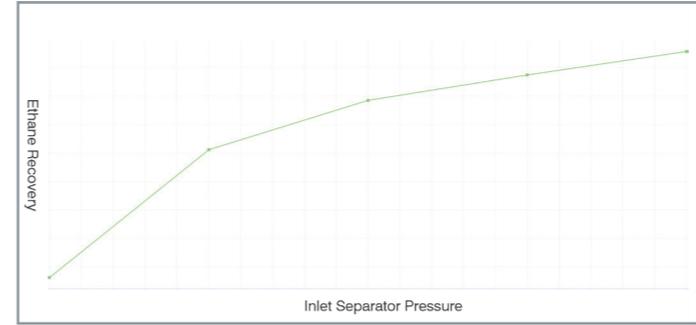
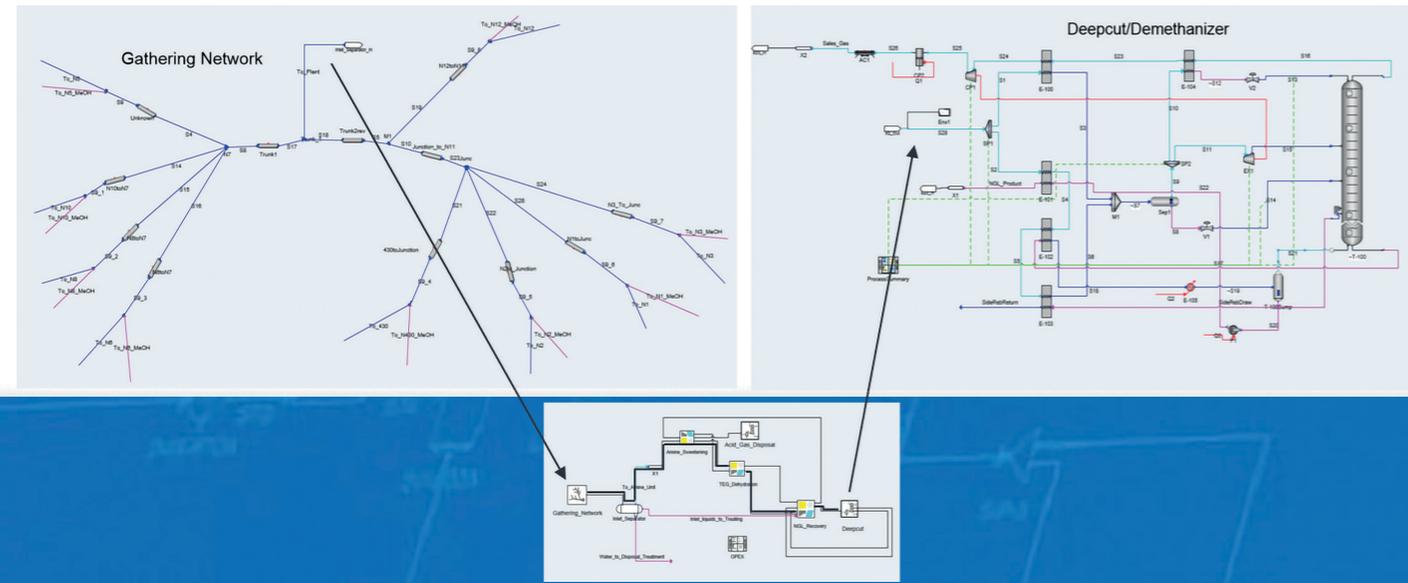
Productivity: Parametric studies, optimizer

Connectivity: OPC, historians, web



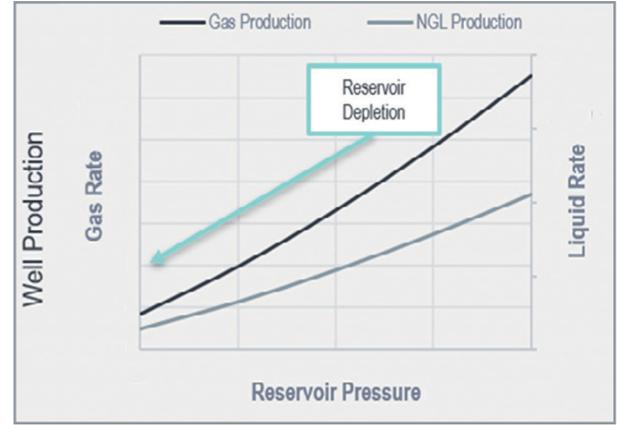
Asset-Wide Analysis

- Seamlessly assess impact of upstream changes on process operations
- Develop models to required fidelity
- Reveal interactions that may be overlooked

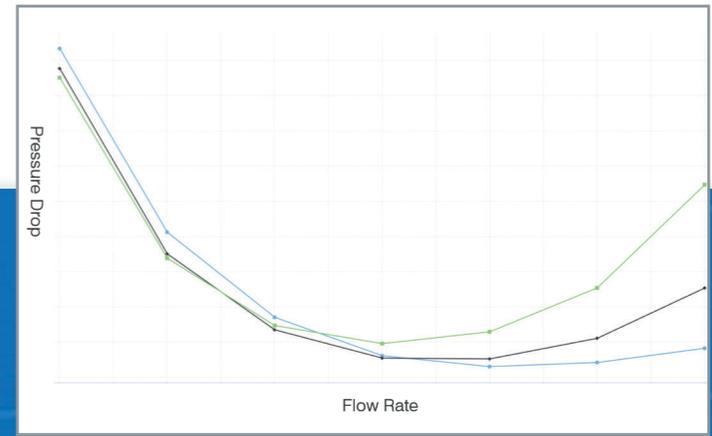


Effect of plant inlet separator on ethane recovery.

- Model conditions at any point of the asset (field and facility)
- Long term evaluation as production characteristics change
 - Early production facilities
 - Requirements of additional equipment
- Relevant economic analysis



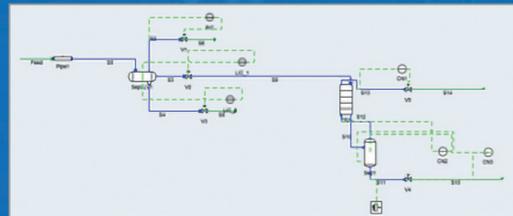
Effect of different GOR and flow rates or gathering system pressure drop.



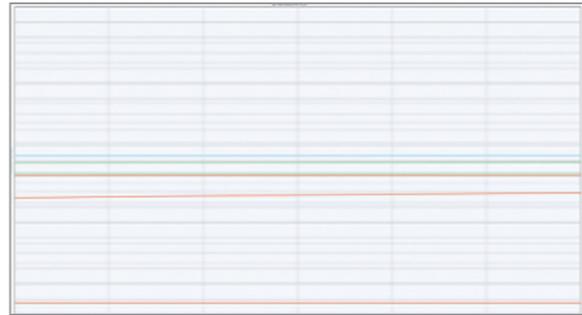
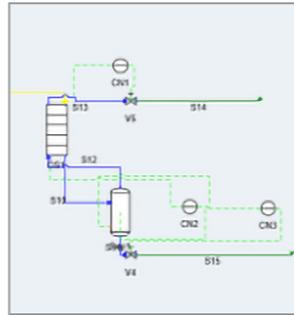
Multi Engine Analysis

- Create and initialize dynamic models from existing steady-state models
- Evaluate systems using both steady state and dynamics in the same case
- Use the best engine for the task at hand
- Dynamics provides additional hydraulics and transient effects
- Investigate disturbances in the process starting from the gathering system or egress lines
- Develop or troubleshoot control systems based on more realistic system disturbances

Control system implemented with feed from liquid loaded gathering line.



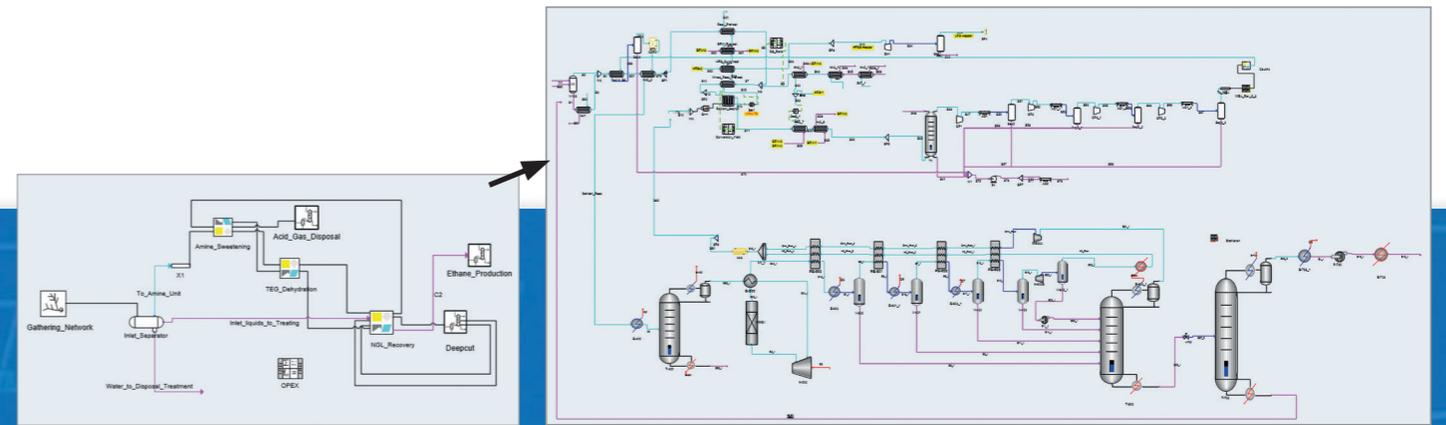
Control system developed with isolated feed.



Component Tracking

- Track components throughout the entire asset, including those that impact HSE and operations (e.g., BTEX, H₂S, CO₂, methanol, mercaptans, etc.)
 - Provide awareness and quantify risk
- Develop mitigation strategies and define impact for field- or facility-based components or a combination
 - Model blending, separation, and reactive systems with leading fluid characterization
 - Accurately track properties
 - Meet desired product specifications
 - Utilize more of the available data to maximize field development
 - Evaluate a wide range of alternate processes

Add downstream processes to model to evaluate viability asset wide (e.g. ethylene production from produced ethane).





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slb.com/symmetry

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