UPSTREAM OIL & GAS

Invensys is now Schneider Electric
Choose the Leader

Invensys is a world leader in Upstream Oil & Gas automation, providing a full range of control, safety and productivity products, applications and services to satisfy safety requirements, increasing demand and operational efficiency – in an increasingly competitive market. Our operational excellence approach brings you superior technology, reliable and accurate industrial-grade instrumentation, and enterprise-wide, real-time control and information solutions.

Upstream Oil & Gas solutions from Invensys employ components of the holistic InFusion™ Enterprise Control System. Each component is designed to provide specific functionality, and can be easily combined, integrated and managed along with other InFusion components. All InFusion Enterprise Control System components communicate with the open, industry standards-based ArchestrA® System Platform software, which easily and affordably unites process and production control with business operations control. InFusion can help save significant time, effort and money by improving the ability to view and synchronize information from multiple systems and applications, improving collaboration, workflow execution and operations management.
MEETING THE CHALLENGES

Invensys is Helping the Upstream Oil & Gas Industry Meet Unique Challenges

**Safety** — Production from onshore and offshore wells, processing and transportation of oil and gas must be done safely and according to regulations

**Demand Growth** — Demand is growing, in both mature and emerging countries

**Time To Value** — Minimize the time to “first oil” or “first gas” on new well projects, with the resulting financial and timing rewards

**Efficient Production** — Run well, at volume, at demand capacity, with minimal failures, slowdowns or upsets in production, all while maximizing assets

**Aging** — Modernize obsolete control and safety systems, and capture the knowledge of an aging workforce

**Dynamic Demand** — Economically balance changing demand with volatility in oil and gas prices

**Invensys Solutions**

- Use Net Oil and Wet Gas (Multi-phase Metering) to reduce capital expenditures, physical footprint of well fields and environmental risk
- Optimize gas plant profitability by modeling complex facilities and tuning the plant and streams
- Design and optimize plants before they are built, shortening time to full production
- Manage and control a well field or area from one interface, from one location
- Increase safety with award winning safety offerings
- Manage the system lifecycle
- Reduce and control emissions
- Increase operator effectiveness with advanced solutions such as operator training
- Support simulation and alarm management
- Provide enterprise asset management
**INvensys Differentiators**

**Knowledge**
- Enables true, real-time optimization of production assets
- Enables faster project delivery
- Provides the best possible throughput and output rates
- Prevents trips without operator intervention – reduces cyclic life expenditure
- Speeds return to service with the industry’s best analysis tools
- Provides engineering tools that reduce project risk and help assure an on-time, on-budget project
- Utilizes the industry’s most reliable Distributed Control System (DCS) to improve availability
- Extends the life of any control system investment

**Experience**
- Invensys’ Upstream Oil & Gas industry installed base exceeds $20 billion
- Most of the world’s largest gas plants and offshore platforms depend on the Foxboro® I/A Series® DCS
- Invensys helps produce over 60% of the world’s LNG, with over 50% of capacity protected by Triconex® Safety Instrumented Systems
- Invensys works with 24 of the top 25 petroleum companies

**Value**
- Reduce cost to produce, process and transport oil and gas
- Optimized production and processing
- Improve well head availability and capability
- Capital investment protection
- Lowest maintenance/operational cost
- Reliable, low-risk implementation
- Faster plant design and startup
- Continued operational improvement
NET OIL & WET GAS SOLUTIONS

Multi-phase Metering

Foxboro Multi-phase Metering Net Oil & Wet Gas Solution meters are built around proprietary Coriolis metering technology and other technology developed with Oxford University. This modeling-based system measures the multiple phases and multiple components — liquids and vapors like water, oil and gas — in the same stream without the need to separate them so gas production can be measured at the wellhead without separation. Liquids can be pumped to a central place without separation first, eliminating trucking, handling and potential spills in the transfers between tank and truck, and reducing cost because there is no need for a separator and tanks at each well site. In oil production, a “well test” may use a test separator to measure oil and water production out of the well in order to estimate production. Using Foxboro Net Oil & Wet Gas Solutions, the test separator can be eliminated, while still measuring net oil production. This significantly reduces cost, maintenance, leakage and other potential problems, while providing better readings and faster performance.

PRODUCTION OPTIMIZATION SOLUTIONS

Modeling Operations for Optimized Production

Oil and gas producers gather oil, gas and water from a set of wells and feed separation facilities, and the gas, oil and water are separated out and go on for further processing and sale. All these complex interacting systems have constraints — hydraulic, separation, compressor capacities — that result in suboptimal operation and limit production. Using modeling technology — SimSci-Esscor’s™ ROMeo for process units and PIPEPHASE for the gathering network — pump and wellhead settings are recommended that fully use the capacity, maximizing the financial return and production of oil and gas from the field.
GAS PROCESSING SOLUTIONS

Maximizing Processing Yields through Modeling

Processing gas is a complex operation. To process gas and its valuable byproducts, parallel gas processing units are fed from a range of facilities, with demand varying based on business requirements. All of these factors change a facility’s optimum production requirements. Using SimSci-Esscor’s ROMeo software technology, gas processors can understand many aspects of the performance efficiency of individual processing trains such as: which operates best at removing sulfur; which best extracts a particular byproduct like propane or butane, considering the current environment, the current catalyst state, etc.; which streams are producing the particular mixture of propane gas and other things; and the price of the market. Facilities’ statuses, their current efficiencies based on the age of their components and catalysts, what is being produced from several different pipelines that are feeding the facility, and the market demand and price for the products that are required … that is a very complex optimization. ROMeo considers all these factors, then recommends – or in some advanced cases, actually sets – set points, directing the streams to the plant that can handle them most effectively to produce the highest value products and the highest total production for the facility.

GAS PRODUCTION SOLUTIONS

Well Field Monitoring and Control for Gas Production

The Wonderware® Well Field Application enables monitoring and control of an entire field or area of gas wells from a single control room interface, on a unified platform. Using the InFusion Enterprise Control System to draw data together from a wide range of sources (RTUs located at the wellheads, measurements scattered along the pipeline, etc.) from a geographically spread-out field, operators can look at the overview of an individual well or a group of wells, zoom into a well that is not performing to its requirements, then decide what needs to be done, like dispatching someone to physically visit the wellhead to clean out the separator or replace a piece of equipment that is not operating properly. And when unconventional wells change their character and need mechanical modifications
at the well (e.g., add a pump, change the type of separator or change the type or size of compressor), the authorized control room operator can make the changes to the operator interface, without assistance from IT personnel. The Well Field Application significantly reduces cost, improves operations and synchronizes the control world with the real world, without having to undertake a project that requires involvement of IT and mechanical people. It is a cost saver that gives closer, more dynamic control.

† REAL COLLABORATION. REAL TIME RESULTS™

Invensys enables Oil & Gas producers to achieve operational excellence by helping them get the most from their operations, controlling their processes and their businesses. Enabling the workforce to work together in a collaborative environment across systems, people, processes and assets, Invensys integrates upstream and downstream, suppliers and customers, in real time with real time results. For more information on Invensys’ Upstream Oil & Gas solutions, please visit us at iom.invensys.com.

RasGas (Doha, Qatar), the world’s largest LNG supplier, installed Foxboro I/A Series DCS and Triconex Safety Instrumented Systems allowing shutdown of remote offshore wellheads from a distance of 130 km.