



7 OFFSHORE SOLUTIONS FOR TODAY'S CHALLENGES

Invensys can help offshore operations reduce the risk of downtime and optimise production while improving safety. Our solutions are designed to maximise the value of your key assets including:

MATURE FIELD ASSETS

If you need to extract more from your mature oil and gas fields, Invensys can help:

- Optimise production through modeling & simulation from SimSci
- Manage well fields from single point to identify underperforming assets with Wonderware® Well Field Application
- Use Foxboro® Coriolis metering rather than expensive separators to measure oil, gas and water directly from wellheads

AGEING SYSTEMS/EQUIPMENT ASSETS

If your ageing infrastructure is threatening production efficiencies, Invensys can help:

- Evolve control/safety systems while preserving field wiring/cabinets with Foxboro Plug-In Migration solution
- Implement robust safety and critical control systems from Triconex
- Upgrade outdated field devices with reliable Foxboro measurements and instrumentation and Eurotherm equipment
- Extend the life of systems with Customer FIRST support and improvement services

LIMITED HUMAN ASSETS

If high workforce turnover rates and knowledge loss are posing a risk to production and safety, Invensys can help:

- Enable a mobile workforce with IntelaTrac™ mobile solutions
- Locate personnel with wireless people tracking applications
- Synch human and system activity across business and production application with ArchestrA® Workflow
- Track deviations between designed and actual operating risk profile in real time
- Transfer knowledge and increase competency levels with Invensys® Learning Services and SimSci™ Immersive Virtual Reality training systems



INDUSTRIAL AUTOMATION

7 Our Industrial Automation business is a global supplier of control systems and safety systems to customers operating some of the world's largest and most complex industrial plants, such as oil refineries, power stations (both fossil fuel and nuclear) and petrochemical plants. Our Foxboro distributed control system (DCS) is a world leader in industrial automation and our Triconex® emergency shutdown system is recognised as the world's leading safety system. Our Foxboro and Foxboro Eckardt businesses also manufacture and supply a full range of field devices and pressure, flow and analytical measurement and instrumentation products.

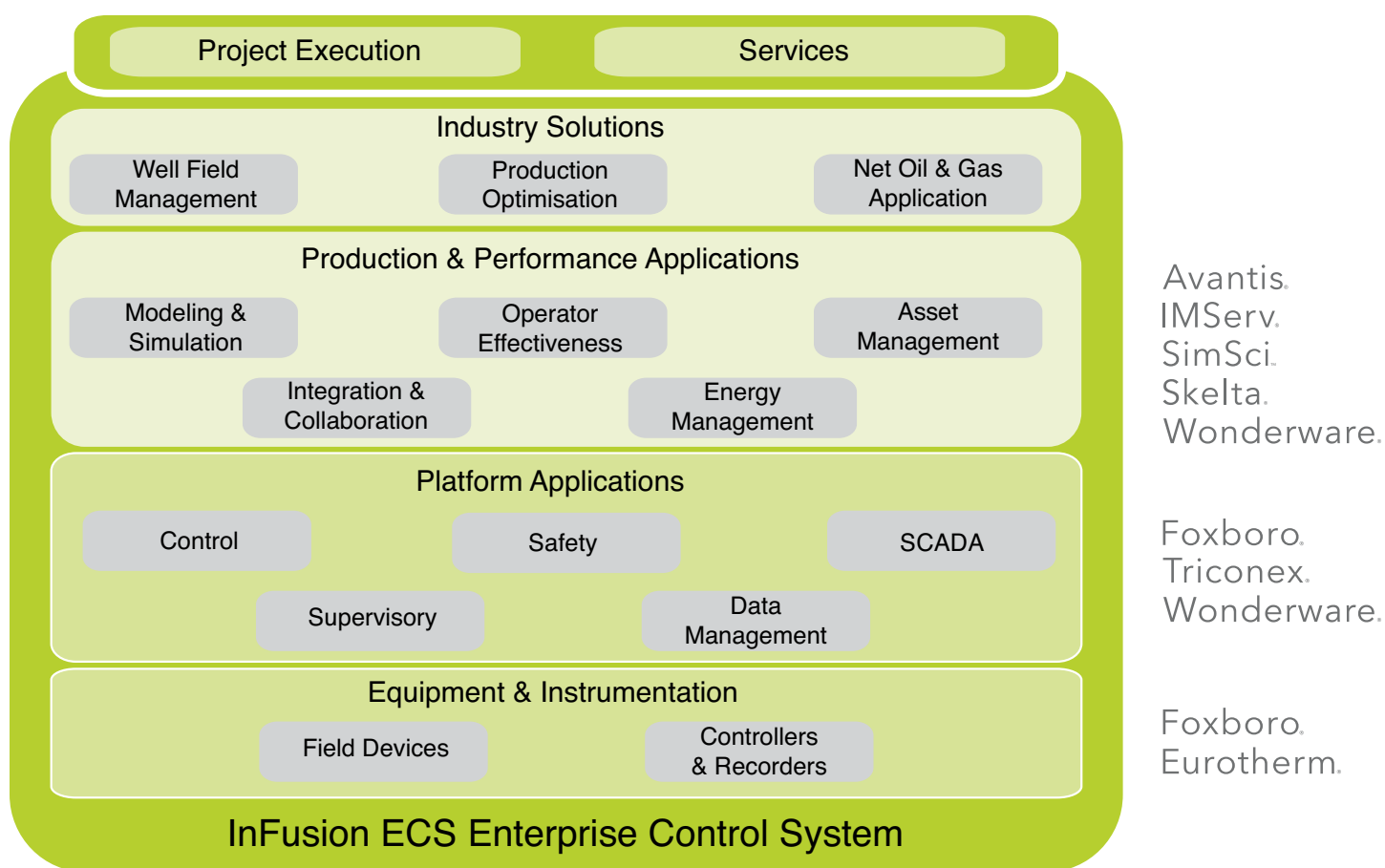
SOFTWARE

Our Software business is one of the world's leading developers and suppliers of industrial software with strong positions in visualisation and supervisory control, process design, simulation and optimisation, real-time operations management and asset management. Wonderware has the world's leading visualisation and supervisory control and real-time production management software SimSci process design, simulation and optimisation software and Avantis® asset management software used to ensure the reliable operation of production plant and processes.

➤ PORTFOLIO

ENTERPRISE CONTROL

The InFusion® ECS is the world's first Enterprise Control System – allowing the use of all of today's leading process automation and information systems together, regardless of supplier or generation, as one unified business environment. InFusion ECS brings the concept of process control to business operations. Furthermore, InFusion ECS fosters a collaborative environment by making the plant or field visible to the enterprise and the enterprise visible to the plant or field, area or site, dramatically increasing operational efficiency, safety and agility. By facilitating the transformation of data to information to action, InFusion ECS accelerates decision-making while enhancing the ability to detect and respond to problems.



Within the Enterprise Control System framework, the Invensys Industrial Automation and Software portfolio encompasses a wide range of products that we have grouped into four main elements – Equipment and Instrumentation, tightly-coupled Platform Applications, Production and Performance Applications and Industry Applications. The marketplace knows the components of these elements by their long history of innovation and quality.

7 EQUIPMENT & INSTRUMENTATION

FIELD DEVICES

For process applications that require high-performance measurement of pressure, temperature, flow, level and analytical variables, Foxboro Field Devices offer high accuracy, long-term stability and field-proven robustness in the toughest applications, giving you more integration, interoperability, and innovation.

Unlike other instrumentation, Foxboro products are shaped by more than 100 years of experience and backed by the longest standard and optional warranties in the industry.

CONTROLLERS & RECORDERS

Our Temperature Control, Power Control, Data Recording and Software product range from Eurotherm combines a long history of application knowledge, world leading control and recording functionality and engineering excellence. A team of 100 engineers continue to develop and enhance products and solutions and keep pace with regulations and your need to improve your process.

Temperature, Pressure and Level

- Temperature
- Pressure
- Buoyancy Level



Flow

- Magnetic Flow
- Coriolis Flow
- Vortex Flow



Process Analytical and Engineering

- Liquid Analytical
- Configuration, Calibration
- Device Management



Equipment

- Valve Positioners
- Recorders
- Thermal and Temperature Control



7 PLATFORM APPLICATIONS

CONTROL

For over a century, Foxboro automation products have been leading the industry with technology firsts. Our ground-breaking I/A Series® Distributed Control System (DCS) exemplifies this commitment to innovation and technology. Introduced in 1987, the I/A Series DCS system has continuously evolved to improve plant-wide operations and performance in today's modern manufacturing enterprise.

If your legacy DCS needs to be replaced but you can't afford the high cost, high risk and extended downtime of typical replacement solutions, Invensys' legacy system migration is the only solution designed to avoid those penalties. We manufacture our I/O modules as form-fit replacements for your original I/O equipment and reuse existing termination assemblies, cabinets, power supplies and I/O racks. Add new controllers and workstations, and you have a 100% new, fully warranted I/A Series system. Our unique solution minimises the cost, risk and downtime of a full DCS replacement.

SCADA

You can count on Invensys to provide world-class SCADA solutions as part of the overall InFusion Enterprise Control System with full global 24/7 support. As part of this, we offer RTUs that provide a singular low cost, ultra low power class 1 div2 solution for collection of a limited quantity of I/O, from very remote sites.

Additionally, InFusion SCADA software provides an efficient and cost-effective system for complete distributed SCADA applications that is more functionally capable and more easily maintained than other products. In addition, we offer industry-specific applications for Oil & Gas Well Field Management.

Distributed Control Systems

- Production Management
- Advanced Process Control
- Self-healing Mesh Network



Legacy DCS Migration

- Honeywell
- Westinghouse
- Fisher
- Siemens/Moore
- ABB/Bailey
- Taylor



Supervisory and Remote Control

- SCADA
- Substation Automation
- Programmable Automation Control
- Pipeline Monitoring



↑ PLATFORM APPLICATIONS

SAFETY

Protect your assets with market leading technology for integrated safety critical applications from Triconex. Our three decades of experience in safety systems includes over 8,000 installed systems, a large number of TÜV Certified Functional Safety Engineers deployed worldwide and patented TMR technology.

Our technologies are certified for Safety Integrity Level (SIL) 2 and 3 applications including Emergency Shutdown (ESD), Fire & Gas (F&G), Burner Management Systems (BMS), High Integrity Pressure Protection Systems (HIPPS) and Turbomachinery Controls (TMC) in order to reliably bring the plant to a safe operating state should an unsafe incident occur.

Invensys takes a holistic and integrated approach to process safety management. We take safety beyond the traditional safety instrumented function and extend into everyday operations, maintenance and management.

We provide a comprehensive set of process and functional safety management capabilities to establish a sustainable safety culture. We also provide real time integration of a plant's operational data with expert knowledge to provide Operations with risk-based decision criteria and effective contingency plans.

Contingency plans are pre-engineered to provide board operators with detailed instructions on how to address infrequent situations such as worst case Hazard and Operability (HAZOP) and Layer of Protection Analysis (LOPA) scenarios. Users are able to query the consequences of a proposed action and accept or reject the resulting risk associated with that action. Operations can move from a reactive to a proactive mindset and make the right safe decisions at the right time, with confidence.

Integrated Control & Safety Systems

- Process Control Systems
- Emergency Shutdown
- Fire and Gas
- HIPPS



Turbomachinery Control

- Turbines and Compressors
- Generators



Safety and Security

- Cyber Security
- Process and Functional Safety
- Burner Management Systems



SUPERVISORY

What the industry now knows as Human Machine Interface (HMI) all began with Wonderware InTouch software over twenty years ago. No other HMI can match InTouch® software for industry leading innovation, architectural integrity, device integration and connectivity, uninterrupted software version migration path and legendary ease of use.

DATA MANAGEMENT

Additional core software platform and application offerings deliver the common integration and application baseline that enables both operations within the plant or production environment and the integration with the higher level components of your operation – including your business systems.

HMI

- Graphic visualization
- Control and operations
- Extensible library of graphics



Historian

- High performance real-time database
- Wide variety of plant data
- Trending and reporting



System Platform

- Single scalable platform
- Supervisory control
- Integration point for all solutions



Information Server

- Data aggregation and presentation
- Plant production and performance data
- Internet and intranet delivery



7 PRODUCTION & PERFORMANCE APPLICATIONS

MODELING & SIMULATION

For more than 40 years, SimSci's advanced applications have improved asset performance and utilisation with integrated simulation, optimisation, training and process control software and services. Spanning the entire lifecycle of modern processing facilities, customers range from the novice user to expert within the oil and gas exploration and production industry as well as EPCs.

Our Upstream Optimisation product Suite (UOS) consists of a set of integrated tools for field-wide production analysis. The suite supports unidirectional data sharing and exchange with many legacy systems including; DCS, PLC, SCADA and data historians. The integrated approach allows time-sensitive process conditions and events to be factored into online optimisation models.

Design

- Process
- Production allocation
- Oil gathering network



Simulate

- Safety and Control System Design
- Verify and validate process changes



Optimise

- Performance monitoring
- Advanced Process Control



OPERATOR EFFECTIVENESS

Operator effectiveness is recognised as one of the foremost contributors to bottom-line performance for industrial operations, safely delivering the highest possible availability, reliability and throughput. At the same time, there are a number of significant challenges - including the loss of critical knowledge as experienced personnel leave the organisation through retirement or restructuring, the scarcity of skilled engineering and operations resources in the marketplace, increased complexity of the operation and increased risk in terms of environmental, health and safety considerations as we push our operations closer and closer to the safe operating limits.

Invensys provides a wide range of solutions aimed at ensuring that your limited resources are focused on the ultimate goal – delivering improved production value. We begin by eliminating the distractions that operators traditionally face – alarm storms, manual control of process loops and tuning/optimisation of those same loops. With the distractions eliminated, we focus on true effectiveness by enhancing operator skills and knowledge with Immersive Operator Training Simulators and Mobile Workforce solutions.

Operator Training

- Competency validation
- Immersive virtual reality
- Dynamic simulation



Mobility

- Mobile workflow and decision support
- Maintenance, production and compliance



Intelligence

- Aggregate, contextualize, visualize
- Dashboards, Key Performance Indicators



➤ PRODUCTION & PERFORMANCE APPLICATIONS

ASSET MANAGEMENT

Improving your plant's asset performance & effectiveness is no longer an option for most industrial operations today. If you can't operate your assets in the most efficient manner possible, you increase operating costs and ultimately run the risk of falling behind your competitors.

Asset performance management solutions from Invensys deliver focused, real-time equipment performance, reliability, maintenance and decision support information for all asset types. We empower operations and maintenance teams with decision support information, providing the right information to the right people at the right time and in the right context, thus improving operational performance, increasing asset availability/ utilisation and ultimately driving business value and real financial returns.

Asset Performance

- Enterprise Asset Management
- Plant Asset Management
- Condition Management
- Rotating Equipment Health
- Reliability Centred Maintenance



INTEGRATION & COLLABORATION

Invensys offers software solutions for Manufacturing Execution Systems (MES) that feature a complete set of functional capabilities for consistent and effective execution of operational activities, including enterprise integration.

We also offer enterprise-wide Business Process Management (BPM) workflow software solutions. ArchestrA Workflow Software can enhance and extend the collaboration capabilities of MES by delivering a comprehensive Manufacturing Business Process Management (mBPM) framework that will enable organisations to transform their operations execution landscape into a high performance, harmonised operation that coordinates people, applications (enterprise and production applications) and processes to accomplish specific business objectives.

MES, Batch and Quality

- Manufacturing operations (MES)
- Performance and efficiency (OEE)
- Scheduling, execution and tracking



Enterprise Integration

- Between plant applications
- Between plant and business applications



Collaboration

- Business Process Management
- Workflow Design and Execution



ENERGY MANAGEMENT

Because energy usage and productivity tend to have an inverse relationship, effectively managing energy consumption requires a holistic approach. Invensys offers a wide range of technologies and services to help balance the conflicting nature of energy and production while improving operational performance.

Energy Performance

- Production Energy Management
- Carbon & Energy Monitoring
- Consumption Reporting
- Utilities Optimisation
- Corporate Energy Management
- Equipment power management
- Predictive Load Management
- Dynamic Performance Measures



7 PROJECT EXECUTION

Invensys has a lot of experience in serving as a Main Automation Contractor (MAC). Our approach to major projects is to become involved early in the life cycle, as this enables us to deliver the greatest benefits to our clients. Experience has shown how our breadth of knowledge across a wide range of disciplines can be focused on key business issues to bring major financial benefits to a project. Our broad portfolio of services and systems meets project requirements across the entire life cycle, from Plan and Design, through Build and Install and throughout the Operate and Support phases.

Main Automation Contractor

- Control & Safety Platform
- Implementation
- Control & Safety Optimisation
- Project Management
- Project Engineering
- Intelligent Engineering Tools



Our “Intelligent Engineering” approach to project execution is an innovative advantage for large system implementations, upgrades and migrations.

Intelligent Engineering captures the knowledge and experience of our own engineers plus the knowledge of our clients in the form of rules that allow the basic controls and device logic to be generated automatically from the client supplied data. The result is a control and safety system that is delivered more quickly and accurately, with reduced risk, leading to the plant being online and producing at capacity sooner than ever before.

Additionally, Invensys’ UK operation achieved TÜV certification for our Functional Safety Management (FSM) system in accordance with international standard IEC61508/IEC61511. The standard covers the delivery and implementation of safety instrumented system (SIS) projects.

7 SERVICES

The key to delivering true value lies in the ability to effectively define the necessary solutions and then implement and support the products within our own portfolio as well as integrating the offerings with your current investments to provide the framework for your Enterprise Control System.

Invensys’ Customer FIRST Support and Services Program helps our clients protect and extend the value of Invensys products and solutions. The program provides access to a wide range of additional, optional services such as application support, onsite resources and value-added consulting. Clients can further extend the value of the program with Flexible Credits for specialised services, hardware materials and training.

Support

- Technical Support
- Life Cycle Support
- Remote and Managed Services



Business Value Consulting

- Opportunity Assessment and Gap Analysis
- Strategy and Planning
- Change Management



Solution Consulting

- Asset Performance
- Production Performance
- Energy Performance



Our Learning Services provide all the components to efficiently construct the bridge between where you are today in technical performance and where you want to be in the future. Invensys; learning services offers a curriculum of more than 200 courses and learning solutions to maximise the effectiveness of your workforce.

We also offer consulting services ranging from high-level opportunity assessments to product implementations. Our team of experienced Consultants work with you – every step of the way. From planning for a new installation, to upgrading old technology, to shutting down obsolete facilities. We promise to deliver, and deliver what we promise.

➤ INDUSTRY SOLUTIONS

To maximise the performance and bottom-line contribution of operational assets, it's time to move beyond traditional operating approaches and embrace new methods and technologies that enable the highest possible production yield at the lowest possible cost, while operating in a safe and environmentally conscious manner.

Invensys provides oil and gas production optimisation solutions aimed at addressing this challenge, combining our extensive global expertise and experience with state of the art modeling and simulation software. The results are immediate and significant, including improved yield, reduced energy consumption, reduced emissions and higher availability.

We also offer a Well Field Application solution that manages wells by providing on demand reports which can be sorted by asset, route, operator or foreman, and show at a glance whether wells are underperforming or meeting production targets. Assets in need of intervention can be quickly identified, allowing for problem wells to be prioritized, saving time and money.

Our new multi-phase Net Oil and Gas measurement solution, based on patented coriolis technology, measures gas, oil and water directly from the wellhead without first having to separate them. It allows the whole stream – liquid and vapor – to be taken right off the well and the oil, gas and water measured to allocation standards. This significantly reduces the capital costs of new wells by eliminating the need for an expensive test separator – and can be applied to existing wells.

Production Optimisation

- Accurate modeling improves understanding
- Data Reconciliation identifies mass imbalances
- Trending offsets shows problems w/ measures



Well Field Management

- Single point to manage operation of well field
- Identify wells producing at lower than normal rates



Net Oil & Gas Onshore Applications

- Cost effective replacement for aging separators
- Multiphase metering measures mix of oil, gas, water



➤ PROTECTING YOUR INVESTMENT

CONTINUOUSLY CURRENT PHILOSOPHY

Invensys operates a 'continuously current' philosophy for all of our products ensuring that the technology that is purchased today will remain Continuously Current by adding new capability to systems, while preserving infrastructure and intellectual property investments.

This Continuously Current philosophy enables earlier versions and releases to work in conjunction with new products and applications, extending the lifecycle of the entire system. Our proven long-term strategy significantly reduces your Total Cost of Ownership (TCO) by eliminating the need to completely replace the system as it gets older. Instead, this approach provides easy and cost effective ways to improve control and safety, reduce downtime and increase maintainability during upgrades, expansions or revamps, while preserving software, hardware and engineering intellectual property investments.



7 EXPERIENCE

Invensys has an installed base in the upstream oil and gas industry of more than \$20 million:

- 44+% of total LNG production capacity worldwide uses the Foxboro I/A Series DCS
- 54+% of total LNG production capacity protected by Triconex safety systems
- Invensys is #4 in pipelines, especially large installations
- The largest gas plants in the world use the Foxboro I/A Series DCS
- The largest offshore platforms in SE Asia and US Gulf use the Foxboro I/A Series DCS



Invensys offerings are delivered under several prominent industry brands.

Avantis[®] Foxboro Eckardt[™]

Foxboro[®] SimSci[™] Skelta[®]

Triconex[®] Wonderware[®]

➤ THE VALUE OF WORKING WITH INVENSYS

Extensive, worldwide experience delivering services and systems to oil and gas projects

Complete, demonstrated delivery capability for the entire automation environment

Fully integrated Enterprise Control System

Knowledge from Invensys' extensive expertise in oil and gas plant and operations is deeply embedded in the best practices, Key Performance Indicators (KPIs) and performance metrics that are built in to all our services and systems, which means clients benefit automatically from the cumulative skills and experience of Invensys consultants and engineers

Early engagement means Invensys can apply its oil and gas expertise, services and systems during the Plan and Design and Build and Install phases of the project, to help deliver the fastest, most effective integration, commissioning and test programs

Because our expertise and process knowledge are captured within our products, clients can run processes effectively with fewer and less-skilled operations and maintenance staff

Our Continuously Current systems policy and Customer FIRST service packages ensure that Invensys solutions will continue to perform well into the future, long after other vendors' systems have had to be changed out through obsolescence

All our systems are designed to be fault tolerant, scaleable and upgradeable on-line, so you can be sure of continuous, highly available production processes

Firmly committed to and established in the North Sea, employing local staff to support existing and new clients

➤ CONTACT US

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