

Financial implications of Real-Time solutions

PipelineManager helps operators cut costs, deliver value across pipeline networks

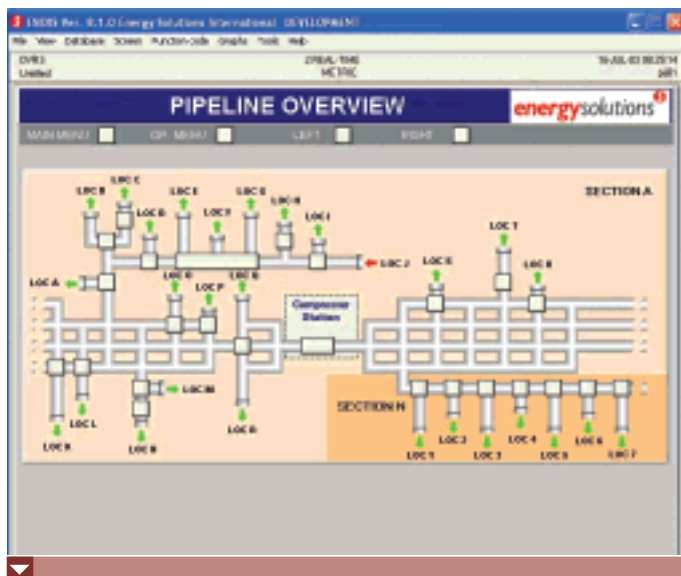
HOUSTON-BASED ENERGY SOLUTIONS PIPELINEMANAGER PROVIDES INTEGRATED WEB-ENABLED TECHNOLOGY TO INCREASE EFFICIENCY AND REDUCE COSTS ACROSS OIL AND GAS PIPELINE NETWORKS. PIPELINEMANAGER IS AN EVOLUTION OF ENERGY SOLUTIONS' FIELD-PROVEN SIMULATION TECHNOLOGY INTEGRATED WITH PIPELINESTUDIO TO PROVIDE SIMPLE POINT AND CLICK GRAPHICAL CONFIGURATION. THE HEART OF THE PRODUCT IS ITS REAL-TIME MODEL WHICH SUPPORTS ADVANCED CONTROL ROOM APPLICATIONS. MORE THAN 500 PIPELINE OPERATORS AROUND THE WORLD USE PIPELINEMANAGER TO MAKE DECISIONS TO IMPROVE SAFETY, EFFICIENCY AND RELIABILITY WHILE REDUCING COSTS AND IMPROVING PROFITABILITY

Environment

PipelineManager is simple to configure and intuitive to use. It can be integrated using standard protocols with other software packages supplied by Energy Solutions, or external packages supplied by others to create highly powerful integrated management systems. The improved management and efficiency that PipelineManager installations bring to clients, provide pay back periods for the software in a matter of months.

Applications

Traditional applications include leak detection, tracking and predictive functions, but PipelineManager can support a lot more than this. For instance, UK firm CSE Servelec selected the application software for modelling Dolphin Energy's Al Ain to Fujairah gas pipeline while the product is currently being installed for Oman Gas Company's gas pipeline network.



ESIPAS and the ESILDS products are now known as Pipelinemanager

Other prominent customers who have chosen PipelineManager in the ME region include Saudi Aramco (liquid and gas pipelines), PDO (gas pipeline), Adnoc Distribution (liquid) and Gasco (gas).

PipelineManager provides the necessary platform to support advanced optimisation functions, facilities planning, training simulators and business support systems. The software can run under Unix and Windows. Using multiple techniques, PipelineManager produces accurate leak detection and location by using the most advanced methods, thus saving a company millions of dollars in damages from legal and environmental lawsuits resulting from pipeline leakage of liquid and gas.

Tracking Functions

PipelineManager tracks any travelling physical and non-physical attributes and estimates times of arrival at pre-defined locations to within minutes. Pipeline operators can track the product by type, composition, batch or sub-batch, can analyse drag reducing additive effectiveness or monitor the progress of scrapers or product ownership even when streams mix. These attributes afford the operator adequate plant preparation time, support product and batch management and minimise wastage of product and money.

Predictive Functions

Predictive models include simulation of pipeline equipment and provide what-if analyses for any operation, normal or hazardous. Specification of non-varying supplies, deliveries and operating equipment provide automated look-ahead analyses that advise operators of expected future pipeline states. Survival-time analyses consider the effects of a sudden unscheduled event and determine if a product can be delivered without violating pressure and inventory limits.

ADVANCED FEATURES

Real-Time Optimisation

PipelineManager optimises the pipeline for operational or business purposes, including throughput, line pack, product mixing and fuel usage optimisation, to increase efficiency and reduce operating costs.

Training Simulators

The product provides a comprehensive training environment with several levels of sophistication ranging from simple what-if models to flight simulator type systems that integrate with the SCADA system. Operators can be trained on the system before they ever work with an actual pipeline, minimising the time needed to build up experience and reducing the risk of undesirable events.

Lars Larsson, Energy Solutions' MENA regional manager, says 2002 was a good year for the company's Middle East operations and 2003 is expected to be a repeat performance. "Energy Solutions provides products and solutions to pipeline operating companies the worldover. Aside from

products and solutions, Energy Solutions performs pipeline-related training and consultant services which have been a success in the Middle East region in the current year," Larsson said.

"As part of Energy Solutions commitment to excellence and customer satisfaction, the company holds annual User Conferences and User Group Meetings. During May 2003 we held our regional ME User Group Meeting and training in Dubai and we hope to continue building upon the success of this meeting in the first-half of 2004. Energy Solutions also held its Simulation User Conference in Berne, Switzerland early in October 2003 and 42 customers from around the world, among them a couple from the Middle East region, participated." ■

THE FLORIDA GAS TRANSMISSION (FGT) PROJECT WAS PART OF A NETWORK CAPACITY EXPANSION PROGRAMME DESIGNED TO ASSURE DELIVERIES OF AROUND 1.5 BCF PER DAY.

The Energy Solutions International software model was built to include most of the functionality in each compressor station, and four aspects of complex compressor station modelling were addressed:

1. Simulation of almost all operational scenarios within each compressor station — at some stations this results in 50+ operational modes.
2. All reciprocating and centrifugal compressors within stations are individually modelled (this includes horsepower curves, fuel curves, and loading/unloading sequences).
3. Compressor station control includes the abilities to set individual unit swing priority to try and meet multiple setpoints, and for units to automatically switch between on-line and off-line.
4. The model uses automatic line pack tuning instead of automatic pipeline roughness tuning.

With approximately 5,000 miles of pipe and 300,000 horsepower on the system, the latter is characterised by dynamic swings in linepack caused by delivering the majority

of the gas to electric generation power plants. Unlike most other North American pipelines, peak deliveries are during summer to meet cooling loads.

ACHIEVEMENTS

Using the model has enabled the achievement of a better overall system fuel efficiency during the three months of the year (approximately) that the system is not at maximum capacity. The fuel usage percentage during this time is reduced by around 16.

FGT has gained a greater understanding of the maximum capacities for deliveries into Florida's different market zones, and through better handling of these market zones, FGT delivers approximately 1.7 per cent more gas than during previous maximum capacity delivery days.

Several times each week pipeline segment or compressor unit outages are studied with the model to determine how to optimise scheduling.

RESULTING IMPROVEMENTS

- Determined where to make physical improvements to our pipeline
- More effective handling of scheduled and unscheduled outages
- Reduced fuel usage during winter months
- Minimising the time needed to determine when regulators or valves fail

- Determined total line pack levels necessary for different levels of total system deliveries
- Minimising low and high pressure problems
- Maximising the usage of our pipeline capacity

The model is helping FGT to optimise pipeline operation for the benefit of both customers and the company. It has enabled FGT Gas Control to implement many improvements, but these would not have been possible without the co-operation of FGT's Facilities Planning and Scheduling Departments, and the compressor station operators.

Michael Bryant, Manager of Gas Control and Scheduling, FGT said, "As a result of using the Energy Solutions modelling software, Florida Gas has achieved fuel savings of approximately \$3.5 million in 1998 and \$5.5 million in 1999. Also — and perhaps more significantly — the sustained throughput has increased by 3.4 per cent from 1996 to 1998. Energy Solutions International modelling software and their professional staff has helped Florida Gas greatly exceed every goal that we initially set out to achieve with our real-time modelling project."

