Failsafe Controls Chooses Kepware to Collect Flow Data for Oil and Gas Well Sites

The Customer

In the highly competitive Oil & Gas Industry, timely and accurate field data is critical. Optimizing production, planning future drilling, and managing well reserves and spot gas supplies are more important than ever. Failsafe Controls is making the best-informed business decisions and saving their customers money in the process by using cutting-edge process control and automation technology.

Failsafe Controls’ customer, an Oil & Gas exploration and production company, embarked on a huge automation initiative in moving their outsourced process control and data acquisition management operations in-house. They turned to the experts in the field—Louisiana-based Failsafe Controls—to help them develop a fully integrated, web-enabled production automation system that allows real-time and accumulated data from each well to be accessed by key personnel like field operators, engineering, gas/data gathering teams, and regional and executive management. The idea was to empower all teams and departments with the ability to recognize trends and identify problematic areas, ensuring that optimal production levels are achieved.

Prior to Failsafe’s application implementation, the Oil & Gas company was managing operations using an outsourced, fee-based service. Through their own internal analysis, they determined that it would be more cost effective and efficient if they could manage these process control and monitoring operations themselves. Failsafe guided and helped them develop a fully web-enabled application to monitor 1,800 wellsites and about 120,000 I/O points across their principal reserves and producing properties in Arkansas, Louisiana, New Mexico, Oklahoma, Texas, Utah, Wyoming, and Canada.

The Challenge

Failsafe Controls’ customer generated an RFP with very specific requirements for the envisioned system. They wanted an integrated SCADA system that would continuously collect data from each well, create timely and accurate electronic reports, and store current and historical data that could be accessed from the field or anywhere via a standard web browser. The system would monitor flow for all 1,800 wellsites and
seamlessly integrate into the existing communications infrastructure. With Failsafe’s help, the company estimated that even if they purchased the devices and equipment that was originally supplied by the outsourced service company, they would still realize significant savings and a relatively quick ROI. The customer calculated that their field supervisors and engineers would be able to more efficiently coordinate field activities and determine where manpower would be best allocated. Additionally, management would gain better and faster information to manage oil and gas fields. They would also be able to track aggregate production over time and be better guided when making major investment decisions.

Failsafe developed the web-based application in which data within the customer’s Ignition SCADA system from Inductive Automation could be bi-directionally accessed and shared via OPC Unified Architecture (UA), the OPC Foundation’s newest protocol.

OPC UA is cross-platform service-oriented architecture for process control that enhances security and interoperability. Failsafe also integrated Kepware’s OPC Connectivity Suite as an OPC UA wrapper for the OPC Data Access (DA) based polling servers. Failsafe uses the Kepware ODBC server to communicate to the OPC DA client to manage and report alarms.

Ignition SCADA’s unlimited tags, screens, and no-install clients deployed using web technology made it easy for Failsafe to manage the project. Ignition can connect to any number of databases and has the ability to open multiple web-launched design clients with its cross-platform commercial OPC UA server.

According to Albert Lambert, Web Automation Architect at Failsafe Controls, “The ease of collecting the data through Kepware, as well as their excellent support and pricing, was a key factor in our ability to win this bid. In fact, Kepware provided us with temporary licenses to get the project going and has gone way beyond expectations in terms of support and working with us.”

Organization Impact & Benefits

- Transfer data securely, reliably, and with higher performance
- Consolidate data from various sources
- Reduce network traffic, device and system resource usage, and data inconsistencies
- Provide personnel access to about 120,000 I/O points from various data sources on any computer, mobile smartphone, or tablet

![Diagram of the system integration process](image-url)
The Solution

The customer also utilizes ABB Totalflow and Bristol Babcock flow computers to monitor gas/liquid flow rates, pressures, and temperatures. The OPC server accesses all of the Oil & Gas company’s devices in order to integrate and communicate with historians, Ignition, and other OPC-enabled applications and devices.

The flow computers monitor changes that have been made to any of the parameters required to turn the raw flow meter data into volumes. They record events and alarms related to the flow meter (such as loss of flow, loss of required electrical signals from measurement transducers, or transition of these electrical signals near their upper or lower range). It keeps a running tally of the volume for each flow meter it monitors and perform a gauge off of this volume on an hourly, daily, or monthly basis.

In addition, the company has PLCs of various brands at 30 compressor stations and some Remote Terminal Units (RTUs) that interface to Ignition SCADA. The RTUs monitor the status of the wells at these control stations. Control is done locally at the stations where reports can be generated.

The main servers, which poll and collect data, are at corporate headquarters where IT can easily manage them. Management can access the data from any computer or via their mobile smartphones and tablets (such as iPhones, iPads, or Androids) by accessing HMI/SCADA client screens created via the Ignition Mobile Module. In addition, the customer has set up redundant servers.

“The ability for management to view this data in so many different ways has made a big difference for the customer,” Lambert continued. “OPC UA makes this possible. It’s easy to set up and you don’t have to worry about the DCOM settings in the computers making the data more secure. This is the first time we’ve used OPC UA and we’re extremely happy with the results—up and running faster, more security, and the seamless way Ignition and OPC UA work together.”

Results

The OPC DA Client driver and the free OPC UA server interface for KEPServerEX to provide the ideal OPC Tunneling solution when used along with an OPC UA client. The OPC DA Client driver can connect to any third-party OPC DA server and make the data available as OPC UA. KEPServerEX's OPC UA server and Ignition's OPC UA client provide a communications tunnel between the customers' computers to transfer data securely and reliably. It also provides higher performance and deterministic failure modes—eliminating any reliance on Microsoft COM and DCOM technology.

KEPServerEX's ODBC Client driver was used for polling from and writing alarm data to an ODBC-compliant database that is also integrated with Ignition (OPC UA client). With KEPServerEX's OPC DA and ODBC Client drivers, the customer is able to manage operations through a single OPC server. KEPServerEX provides the ability to consolidate data and information from various sources. This not only ensures consistency and reliability, but also reduces the number of third-party communication servers from which the end application must gather data. Furthermore, having a single source gather data for client applications reduces network traffic, device and system resource usage, and data inconsistencies.

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—Albert Lambert
Web Automation Architect, Failsafe Controls
Kepware’s OPC DA Client driver and OPC UA server interface provide access to all of the tags from the various data sources and makes them available to Ignition. In addition, by modifying the configuration and exchange certificates, Ignition and KEPServerEX are able to ‘talk’ to each other via OPC UA. “You would say look at this port and here’s the username and password to connect with, and here is the encryption and simply pass the Kepware certificate to enable it,” added Lambert. “It takes maybe 10 minutes to enable and set up. Just insert a few settings and instruct it to connect. The customer couldn’t be more pleased with having taken everything in-house and now has all the knowledge and automation needed to handle any given situation. The plan is to continue to expand operations.”

About Kepware Technologies

Kepware Technologies is a private software development company headquartered in Portland, Maine. Kepware provides a portfolio of software solutions to help businesses connect diverse automation devices and software applications. From plant floor to wellsite to windfarm, Kepware serves a wide range of customers in a variety of international vertical markets including Manufacturing, Oil & Gas, Building Automation, Power & Utilities, and more. Established in 1995 and now distributed in more than 100 countries, Kepware’s software solutions help thousands of businesses improve operations and decision making.

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