



Gas Pipeline's SCADA features

These pipelines usually containing some intermediate valve stations, some Receiver and Launcher stations and also including the first and last terminals. For managing continuous operation of gas pipeline and making stable flow, a telecom and SCADA package should be installed along the pipeline to make it possible continuous control and monitoring of process flow.

Pipelines are monitored and operated using sophisticated SCADA systems. SCADA systems regulate pressure and flow by monitoring and controlling pump operation and the positions of valves. SCADA systems also perform a variety of additional functions including alarm processing, leak detection, hydraulic analysis, pump station monitoring, throughput analysis, and other functions deemed critical to the safe operation of the pipeline.

SCADA systems, regardless of their degree of sophistication, are only as good as the communication system that transmits data and commands throughout the pipeline system. A communication system includes equipment, such as telecommunication towers, and cabling to provide voice and/or data communications to the various facilities along the pipeline as well



as to the SCADA system components. Real-time data communications are necessary between the control center, the various pump stations, storage/distribution terminals, delivery facilities, and mainline block valve sites.

Real-time operational data communications can be supported through a combination of the following approaches: telephone company circuits, satellite terminals, microwave, point-to-point radio pairs, and fiber optic cable. Often, pipeline systems employ redundant communication links to ensure that critical data are communicated in the event of a failure in one of the systems. Most applicable communication backbone now used in these projects is fiber optic networks.

SCADA systems at remote control centers provide operators with complete operational information about the pipeline system in one location. Typical information includes:

- Pipeline mimic/displays. The complete pipeline can be mimicked to provide the operator with instantaneous visual feedback on the status of any portion of the pipeline, including pumps, valves, tanks, etc. These visual schematics include overviews of the entire pipeline system or systems and drill-down screens that take the viewer to an individual location or piece of equipment.



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- Pump, compressor, and other equipment status. Equipment operation can be displayed with status (on/off) and other critical parameters associated with a piece of equipment such as flow, discharge pressure, vibration, case temperature, etc.
- Valve status. Valve information can be displayed with valve positions (open/throttle/closed) depicted.
- Alarms and alerts. Alarms and other operational indications are immediately available for operator response where complete system status is known and, in many cases, can be displayed. These can alert the controller to an unusual or abnormal operating situation or remind the controller about upcoming operating changes that need to be initiated. Often, system configurations allow the operator to intervene to validate the alarm or to take the necessary corrective actions. When operator intervention does not occur with a prescribed time frame, the system will automatically initiate actions that have been predetermined as being appropriate, given the circumstances.
- Analytical tools. Trending history and other analytical tools and graphical aids are available to assist personnel in their decision making under routine, abnormal, and emergency conditions.



What we propose for you:

1- A SCADA System

We propose which have one RTU installed in each station to gather process data and implement the control philosophy to make reliable control and monitoring system and a control center with SCADA servers, time server, backup facilities, Operator/Engineering stations to make you capable to



- Process data monitor and operation
- Alarm handling
- Historical data storage and retrieval
- Report generation – time-based, event-based, on-demand
- RTU/PLC-system monitor and operation
- Communication with the other systems
- Protection of people, equipment and environment
- Graphical displays showing RTU process conditions of the field
- Trends of selected RTU process variables
- Alarm management for RTU including alarm acknowledgement
- Commands to control the RTU to change the operating state of valves such as opening or closing

2- A Telecom Network

To make it possible to transport critical process data on reliable backbone in 24-hour-a-day, 7-day-a-week system operation. Different scenarios can be used based on project specification and available facilities.

While the main user for telecom network is SCADA system but usually there are some other users that maybe installed on this backbone like Radio systems, Telephony services, CCTV and etc.

For gas pipeline, now most applicable backbone are those uses fiber optic in their physical layer like SDH and Ethernet while the others can be used in some cases like radio links.

3- Some software and services which is our benefit for you

Added value services we propose for this project can be divided in two main parts:

The first is our SCADA software which has been developed completely with FASBA's innovative and expert software and automation engineers.



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- FaSCADA, a windows-based process control data visualization system which is Now the leader in the substation automation and process automation software markets, developed and improving continuously by our engineering team.

- Containing standard tools like graphic design interfaces and tools, predefined libraries, Alarm, Trends and reporting facilities

- Power systems special tools like load shedding and load sharing
- High secured architecture and configuration for high secure platforms
- Built-in especial tools for power grid and substation control and monitoring

The second is analytical platforms to analyze process network parameters to make operation and maintenance so easier.

- **DOIS** (Dispatching Online Interface for SCADA) to be connected to both SCADA system software and also analytical software to get the data, analyze, study and generate the results.

- **DPAT** (DIgSILENT Protection Analysis Tools) to simulate relays and protection analysis; whereas in similar software there is no tool for the automatic calculation of the relay settings and now only it could be calculated manually and evaluates the settings coordination. DPAT-Grid, DPAT-Industrial, DPAT-Power Plant and DPAT-Distribution are different software each suitable for one platforms

- **CCSR** (Calculator of Compatible Settings for Relays) to calculate settings for a wide range of different relay types, prepared and used for power transformation/sub-transmission substations, power plants, Industrial networks and distribution networks

Above platforms are those implemented and by our team while the other applicable software like leak detection software also can be proposed in required



While:

- Developing main SCADA software by local engineers make it possible for covering Passive Defence requirements like make special security system and cyber security issues, to make more secure SCADA applications.
- FASBA's experience in this field and special tools developed by FASBA can make an important added value facility in conjunction with other SCADA applications.
- Using FASBA's special platforms, it is possible to integrate usual process control facilities with control and analytical method and tools for power distribution and grids used in Oil and Gas industry.

We make you capable you to:

- Monitor the pipeline's gas flow
- Control the whole pipeline
- Analyse the network
- Predict the process status
- Make decision for best operation
- Make best solution for maintenance

