

Overview

Country or Region: India

Industry: Oil & Gas

Customer Profile

GAIL (India) Limited, the gas major, ranks among the top ten companies in the country and is one of the seven Maharatna Public sector undertaking company. It owns and operates over 11,000 km of natural gas pipeline and has more than 80% share of gas business in India.

GAIL adopts L&T-C&A Pipeline SCADA Solution to enhance its Regional Gas pipeline operation



The Challenge

As the gas usage increases, there is a growing need to have an establishment to monitor and manage operations across the entire country. To fulfil this need, GAIL has set up "National Gas Management Centre" (NGMC) which encompasses management of entire GAIL's gas trading, transportation and LPG transmission business through out India. NGMC is linked to Regional Gas Management Centres (RGMCs) set up at different parts of the country i.e. in NCR region, Gujarat & Rajasthan region, K G Basin Region in Andhra Pradesh, Cauvery Basin region in Pondicherry and in Tripura region. All these RGMCs continuously monitor and control the gas supply quantities, quality and operational & safety aspects of the pipeline of their respective regions.

Their present system at RGMCs wasn't meeting the new requirements. It was obsolete, proprietary and with no path for upgrades. GAIL also had unique requirements for its field devices, wanting the ability to communicate individually

with each RTU/IED on variety of communication media and protocol.

In order to ensure continued operational efficiency and to improve consumer visibility of their pipeline, GAIL required a robust, state of the art SCADA system at RGMCs and NGMC that would facilitate the availability of live data at NGMC for monitoring pipeline, delivery conditions at all major customer terminals, gas reconciliation and accounting for their entire gas business and take necessary corrective & preventive actions.

The Solution

Following a competitive bidding process, GAIL selected Larsen & Toubro - Control & Automation (L&T-C&A) as their solution provider, not only based on L&T's expertise in delivering a full scope, turnkey solution over its competitors, but also on the ability of the proposed solution to adapt to various pipeline business models and integrate new customers, as GAIL evolves, thereby optimizing the value of their real-time data and helping GAIL to manage their contracts, nominations, gas scheduling, allocations and billing.

About Us

L&T Control & Automation (C&A) is a Strategic Business Unit of L&T Electrical & Automation. It is a part of Larsen & Toubro – the multi-billion India-based conglomerate. L&T's C&A business is market leader in delivering integrated electrical & automation solutions in India and overseas. With over three decades of experience in diverse industry segments, C&A delivers value through comprehensive solutions based on varied technology platforms and incorporates the benefits of its wide-ranging experience. L&T's state-of-the-art Electrical & Automation Campus at Navi Mumbai in India has the latest testing and manufacturing equipment. It incorporates a modular manufacturing unit, an application software laboratory and a fully networked office for engineering and project management.

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Our Integrated Electrical & Automation Solutions:

Minerals & Metals

Cement, Mining, Ferrous & Non-Ferrous

- Cement Plant E&I
- Iron & Steel making E&I
- E&I for Bulk Material Handling
- E&I for Ports

Oil & Gas

Upstream, Midstream and Downstream

- Integrated Process Control
- Pipeline SCADA
- Emergency Shutdown and Fire & Gas
- Terminal Automation & Tank Farm

Power

Generation, Transmission and Distribution

- Integrated controls for Boilers and Turbines
- Station C&I
- E, C&I for CHP, AHP, WTP
- E&I for Solar Plants
- Smart Grid

Infrastructure

Highways, Ports and Metro Railways

- Highway Traffic Management
- Metro Rail BMS & AFC
- Airport Baggage Handling
- Power Management
- Smart City & ITS

Buildings

Hotels, Hospitals, Factories, Malls, Data Centres

- Substation
- MV / LV Power Distribution System
- ELV / CCTV / Fire Detection & Alarm Systems (FDAS) with suppression solution
- Access Control
- Lighting Control

L&T-C&A was responsible for design, engineering, supply, installation and commissioning of the integrated SCADA system, RTUs, IT hardware and Networking equipment for gas distribution network. L&T-C&A implemented an open architecture based distributed SCADA system combined with a Real Time model, which monitors and controls remote field devices, using communication protocols such as Modbus Serial, Modbus TCP/IP, DNP3.0, AB DF1, BSAP, OPC DA over various communication media like Dial up, GSM/GPRS, OFC, leased line and VSAT.

The SCADA system implemented by L&T-C&A at all the RGMCs (except Agartala) comprises of dual redundant SCADA server cum operator workstations in hot-standby configuration, networking equipments, Terminal servers and associated accessories. In Gujarat and Rajahmundry region, Remote Workstations (RWS) are extended to various locations within the respective regions. All the remote field installations (i.e. RTUs, FCs, GCs etc) in each region are polled from respective RGMCM SCADA servers.

At NGMC, the SCADA system implemented by L&T-C&A for the regional pipelines includes dual redundant SCADA servers in hot-standby configuration, HMI workstations, Web Server, Engineering workstation, networking equipments and associated accessories. These SCADA servers at NGMC acquire data of all the regional pipelines from the SCADA servers located at all RGMCMs through dedicated links.

The SCADA system implemented by L&T-C&A for integrated SCADA data located at NGMC collects the real time data from regional SCADA system installed at NGMC. The system also provides common HMIs at NGMC and common facilities for sending alarms /messages/reports through SMSs / email. The SCADA system for integrated data has dual redundant SCADA servers in Hot-standby configuration, HMI workstations, e-mail & SMS server and Web Server.

The SCADA system does asking rate calculation for the receiving / dispatch terminals with alarm indication (when asking rate is higher/lower than the % of allowed flow rate) and comparison of contractual and actual pressure / temperatures.

The SCADA system for integrated SCADA data is interfaced with the 3rd party supplied Centralized SCADA system of GAIL, through which the regional data is sent to web enabled Gas Management System (GMS) for gas nomination and reconciliation.

Benefits:

The system architecture best suits GAIL's pipeline infrastructure, meets expansion requirements and ensures the availability of live data at centralized location for control & monitoring of gas pipeline operations such as nominations, delivery, allocations and reconciliation, etc. The cutting edge Technology Solution provided by L&T-C&A helps GAIL's endeavour & being one of the best service providers.

