

New Integrated Gas Transport Management System for Gasunie Deutschland



Schneiderkrug control centre

Dispatchers at the control centre of Gasunie Deutschland in Schneiderkrug ensure North-German natural gas suppliers provide their customers with gas at competitive prices, on-time and at the right locations. Natural gas can be fed into the transport network at over 30 points (five cross-border stations). Transfer takes place at 180 delivery stations. In order to ensure the constant and reliable flow of gas through the pipeline network of eight compressor stations and 23 compressor units in the contractually agreed amount and direction, the pipeline network and storage facilities are monitored and controlled round the clock – 24 hours a day, seven days a week.

Within the scope of the new INGa project (integrated gas transport management system), PSI AG was contracted in 2008 to replace the existing network control system GAMOS with *PSI-control V7*. The new network control system was implemented by PSI as a turnkey project and includes supplying hardware and new telecontrol interfaces, providing maintenance, developing and supplying software as well as assembling and installing all components. A detailed migration and implementation concept drawn up in cooperation with Gasunie regulated the highly automated adaption of the data model, all systems and network diagrams, all calculation specifications and simulation topology. The new network control system went into operation alongside the old system in a new control room at a separate Gasunie location.

The new network control system *PSI-control V7* is integrated into the company wide infrastructure in line with Gasunie's security requirements and divided into different security groups.

These are connected to each other and to the Gasunie Group network, with firewalls in each location. This enables secure access from all INGa system workstations to office servers in the Gasunie in-house network. A connection to the telecontrol network is established via multiple redundant OPC protocol interfaces. The INGa system servers run on the operating systems Linux and Windows.

Gasunie places high demands on the user and system functions of the new network control system. PSI implemented the system using standard products and taking into account the necessary project-specific requirements. Gasunie clearly specified the need for maximum security with regard to operations management, high ergonomic standards and compliance with binding Gasunie IT security guidelines.

Detailed test specifications were used to put the thoroughly test the system before putting it into operation. Project highlights include completely taking over the old system by migrating and automatically converting all master data as well as the smooth transition from the old to the new system. Special attention was paid to the continuous supply of data for reconstructing relevant gas properties approved by the German Department of Weights and Measures for invoicing in *PSIganproda*. An extended site concept enables the controlled transfer of key control functions between the two locations for the control centre and thus fulfils all requirements of a highly available system.

The main challenges included simultaneously supplying data to both redundant locations and synchronising user actions and controlling commands which included updates and manual archive corrections. The integrated simulation tool *PSIganesi* calculates current network statuses and presents the results in the form of a process or topological diagram. The forecast simulation versions – cyclic, cyclic-automatic or manual – provide an insight into the future states of the network.

The standard functions of *PSItransport* cover all business dispatching processes, including handling nominations, using virtual storages and handling exit zones. Connection to in-house customer systems and external partner systems is carried out with *PSIconnect*, a standardised, robust and extremely high-performance system solution. Technical aspects such as integrity beyond systems and various data models are equally important as the technical security requirements of transparent data communication in line with IT security guidelines. Much to the satisfaction of the customer, the INGa system has been operating productively since late 2011 at 100% availability.

Gasunie proudly announced on its website: “Our control centre is one of the most modern natural gas monitoring and control facilities in the world”.