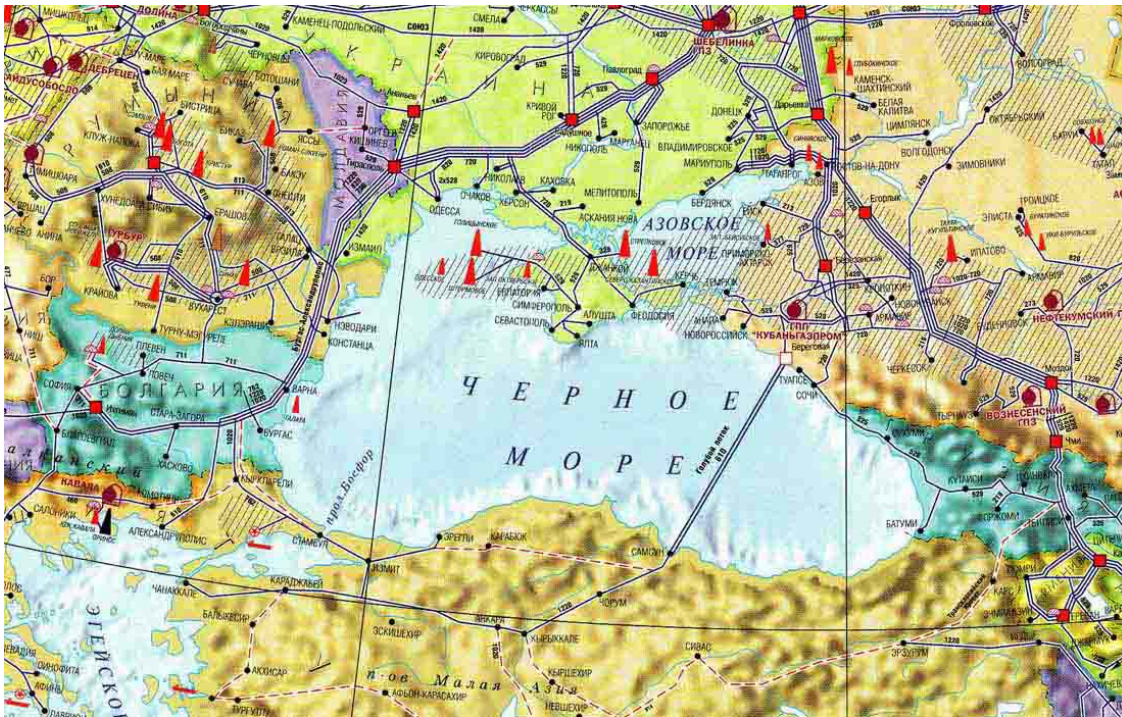


# OAO Gazprom - „Blue Stream“ Process Control System“



OAO Gazprom, one of the world's leading gas suppliers, transports gas from Western Siberia to Turkey through the „Blue stream“ pipeline. The specially built pipeline, which began operations at the end of 2002, has a total length of 1226 km, 370km of which runs over the Russian continent. The underwater portion, which runs through the Black Sea, has a length of 392 km. The land portion on the Turkish side is approx. 464 km long.

The 3 compressor stations in Stavropol, Krasnodar and on the bank of the Black Sea generate the necessary operating pressure required for transport (between 74-98 bar).

The gas is compressed to 250 bar on the Russian side and arrives on the Turkish side with a pressure of 55 bar.

The pipeline is currently capable of transporting 3 billion m<sup>3</sup> of gas per year. The volume will slowly increase to eventually reach a maximum of 16 billion m<sup>3</sup> per year.

Special features include: The pipeline was laid in depths up to 2150 metres below sea level and that the sea floor is mountainous and seismically active.

The pipeline was built to withstand an earthquake with a magnitude of 9 to 10 on the Richter scale. The water in the Black Sea is highly corrosive and the pipeline route is extremely steep in some areas.

### Task Definition

The Blue Stream pipeline was built on the Russian side by the Gazprom-Eni consortium.

PSI, in a consortium with Siemens, delivered the automation for two compressor stations (scope of supply of Siemens) and a total of 5 process control systems responsible for different control levels for Gazprom.

### Realisation

The complete PSI system uses the standard control system GAMOS as its basis. For the real-time transfer of process data, the PSI system utilises a OPC coupling to the Siemens CS7 control system.

The control room supplied by PSI was conceptualised so that process monitoring and control from different control levels and the switch-over between GAMOS and CS7 would be possible.

Integral parts of the PSI solution include network balancing, planning and prognosis of gas sales as well as online and planning simulation functions.

Integrating the sub-systems of the Russian suppliers proved to be a special challenge, as well as the ecological monitoring telemetry system, data safety monitoring and the transfer of data to Gazprom's central dispatching centre in Moscow.

The various applications were completely customised for the Russian market with the support of Russian partners inside and outside of Gazprom.

Briefings and training for the end-users and system operators were conducted in Russian at PSI's office in Germany.

### Scope of Service of PSI

PSI, as leader of the debis-Siemens consortium, delivered the first control rooms for the Krasnodar location as specified by OAO Gazprom and their subsidiary OOO Kubangazprom in 2003.

Alpha DS20 Family  
Operating System VMS, NT  
Oracle Databank  
Multiple Redundancy  
11 Workstations  
Coupling to Siemens-PLS  
and Telemetry System

### PSI Aktiengesellschaft für Produkte und Systeme der Informationstechnologie

Dircksenstrasse 42-44

10 178 Berlin

Germany

Tel: +49 30 2801 - 0

Fax: +49 30 2801 - 1000

<http://www.psi.de>

### Contact

PSI Energy Oil & Gas

Dr. Martin Bürgel

Tel: +49 30 2801 - 1504

Fax +49 30 2801 - 1011

E-mail [mbuergel@psi.de](mailto:mbuergel@psi.de)

<http://www.psioilandgas.com>

