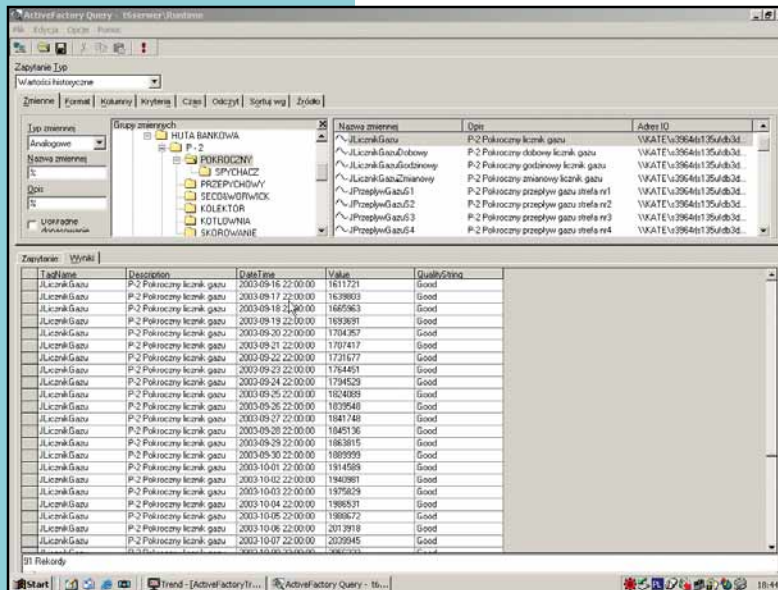


**“Gas consumption monitoring system in Bankowa Steelworks Ltd enables efficient management of this medium inside the company, and provides optimal utilization of Steelworks-assigned gas flow limit, avoiding it’s overflow.”**

**Robert Harazinski, Chief Automation Engineer, Bankowa Steelworks**

## Power industry media monitoring system at Bankowa Steelworks Ltd

by ASTOR Sp. z o.o.



Modern systems used in industry include not only monitoring and controlling of production processes, but first of all analysis of these processes as they last. Different kinds of balance-sheets, reports or tendency graphs enable to draw conclusions concerning parameters and quality of production, which allow proper business decisions to be made. It is necessary to have suitable computer tools to carry through such detailed and quite often complicated analysis.

In case of Bankowa Steelworks Ltd such tools appeared to be: Wonderware IndustrialSQL Server and ActiveFactory client software for versatile analysis of gathered data.

### Company Overview

Bankowa Steelworks – Dabrowa Górnicza, Poland  
 Bankowa Steelworks is a manufacturer of steel products with over 170 years history.  
 The company is one of the oldest iron and steel making companies in Poland. The offer divides onto two areas: Rolling Mill Products and Wheel Tyres&Rings. Company invested in newest technologies and is proud of having Forged-Rolled Ring Wheel Tyre Department. The most modern installation of the kind in Poland.

Database system is assigned for power industry media monitoring, such as gas and electric energy, and chosen technological parameters of heat furnaces. Data gathered and processed in the system is the source of knowledge about power states and variations in entire plant.

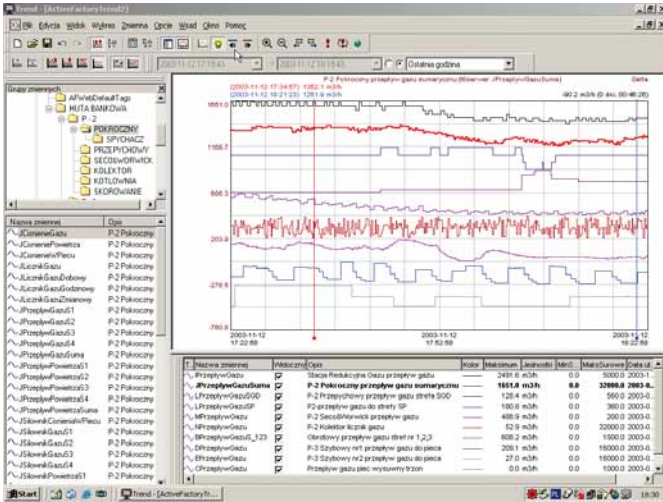
The system will aid the costs management, and upgrading quality and reliability of power grid in our company. IndustrialSQL Server database allows to evaluate grid capacity, excessive load of the devices and symmetrical load of the outputs and other electrical devices. This enables power grid optimization, which extends electrical devices lifetime.

Gas consumption monitoring system has enclosed only high-consumption devices, which is sufficient to estimate overall steelworks consumption without any hazard of overflow the assigned limit.

PLC controllers trace individual objects functioning, providing such gas parameters as: counter state, temperature, pressure and flow. The data is read directly from controllers or, if possible, from individual object’s visualization software.

**Metal Products**

**ActiveFactory, IndustrialSQL Server, InTouch**



ActiveFactory screen showing trends of gas flow

Visualization of furnaces' run is implemented with Wonderware InTouch software, which provides good communication and coherence with Wonderware IndustrialSQL Server database. Server communicates with the visualization software through Ethernet, created especially for the system.

Database system allows presentation of electronic gas resolvers data, both current and historical. A report for any period of time can be generated on the basis of recorded data. Monitoring of individual objects' current gas consumption and possibility of generating alert conditions is a significant function.

User interface to the database is ActiveFactory - process data analyzing software package. It is a convenient tool, allowing versatile data analysis in the forms of graphs, tables, statistical statements, and creating reports in MS Word and MS Excel.

Database client users' software is the tool for archival data review and analysis. One of the best ways to present recorded data is using diagrams (tendency graphs). User adds to the

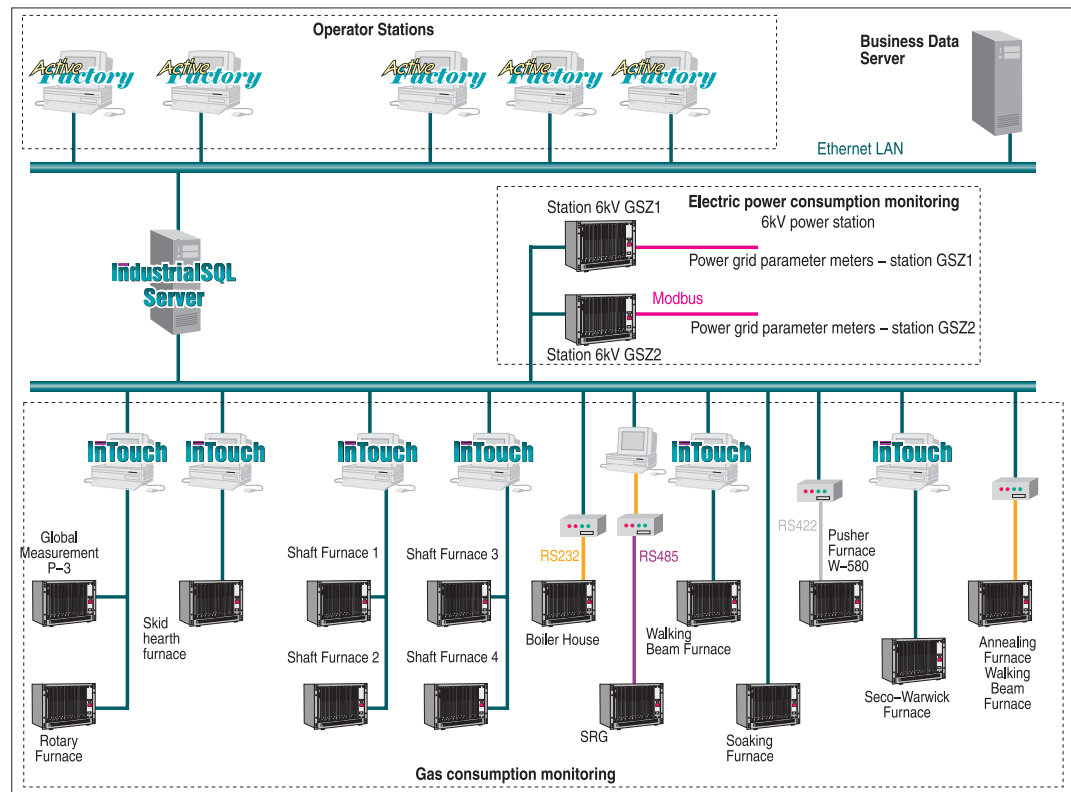
graph optional variable, defined in the database, choosing its name or comment.

Variable presets were defined, for example individual object's gas consumption charts. It is possible for user to prepare individual chart and save it.

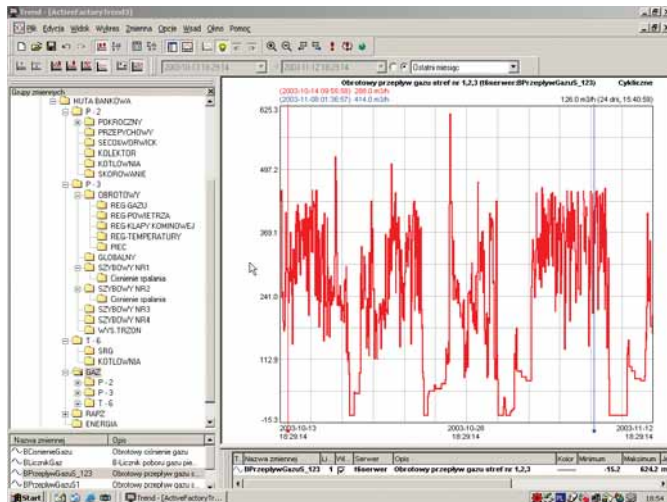
Later on it helps to quickly reconstruct the desired tendency configuration.

Charts are scaled in accordance with the graduation parameter variable saved in the IndustrialSQL Server database. Reports are another example of using data recorded on the database server's hard disk. It is possible to create hour, shift, 24-hour or on-demand (enclosing any period of time) report, depending on needs. Majority of the reports, for example flow averaging or balance-sheet generating, is made automatically and displayed as reports, which can be send to the printer.

Gas consumption monitoring system in Bankowa Steelworks Ltd enables efficient management of this medium inside the company, and provides optimal utilization of Steelworks-assigned gas flow limit, avoiding it's overflow. Hourly gas flow limit is assigned by the gas-works on the basis of the purchased upper load limit (which can be changed only once a year), and it's overflow is connected with severe financial penalties, charging the company. Having the tool allowing monitoring current gas consumption of every larger object in the



System diagram



Active Factory trend showing gas flow in a rotary furnace

steelworks, it is possible to react quickly in case of any changes, and optimally readjust to the assigned gas limit, assuming little safety margin. Data recording allows generating graphs, reports, balance-sheets and any calculations concerning parameters of this valuable medium.

Taking advantage of database system architecture, the installation was extended with the function of monitoring chosen heat furnace technological parameters. It is possible to record and analyze chosen production parameters, like temperature, pressure, flows, combustion factors, track and orientation measurements, regulators gain, analog and digital I/O values. Having access to such amount of data it's possible to quickly diagnose and eliminate failure causes. Another great advantage of this system is possibility of analyzing the data from a dozen or so sources simultaneously in any time interval, using one operator station.

It is impossible to describe here all positive economical effects of implementing discussed system. Integrating computers and production environment with specialized software enables new technological solutions, limited rather with the human imagination, than technical considerations.

*This document was realized thanks to the support of:  
Bankowa Steelworks Ltd.*