

# Case Study

## Roadheading equipment monitoring

### Industry

Mining

### Customer

Ilma Machine-building company

### Hardware

Integrated with KP21 roadheaders, specific data collection units are there to provide magnetic station equipment management as well as sensor state polling and current circuit fuse continuity control.



### Customer Profile

Ilma machine-building company founded in 2001 is dedicated to design, manufacturing and maintenance of mining equipment control systems.

Control systems and production equipment under Ilma's brand are well-known among professionals in Russia, Ukraine, Kazakhstan, Belarus, Germany, Poland and China.

All designed control systems protected by intrinsically-safe circuit and explosion proof enclosure, are intended for use in gas-hazardous mines with coal dust and have appropriate governmental permissions as well as patent protection.

After being exhibited at international fairs, the Ilma products have been awarded 19 diplomas, 5 bronze, 2 silver and 8 gold medals, plus 6 Grand Prix.

Contemporary Ilma is a dynamically developing scientific and production company boasting great potential and prospects.

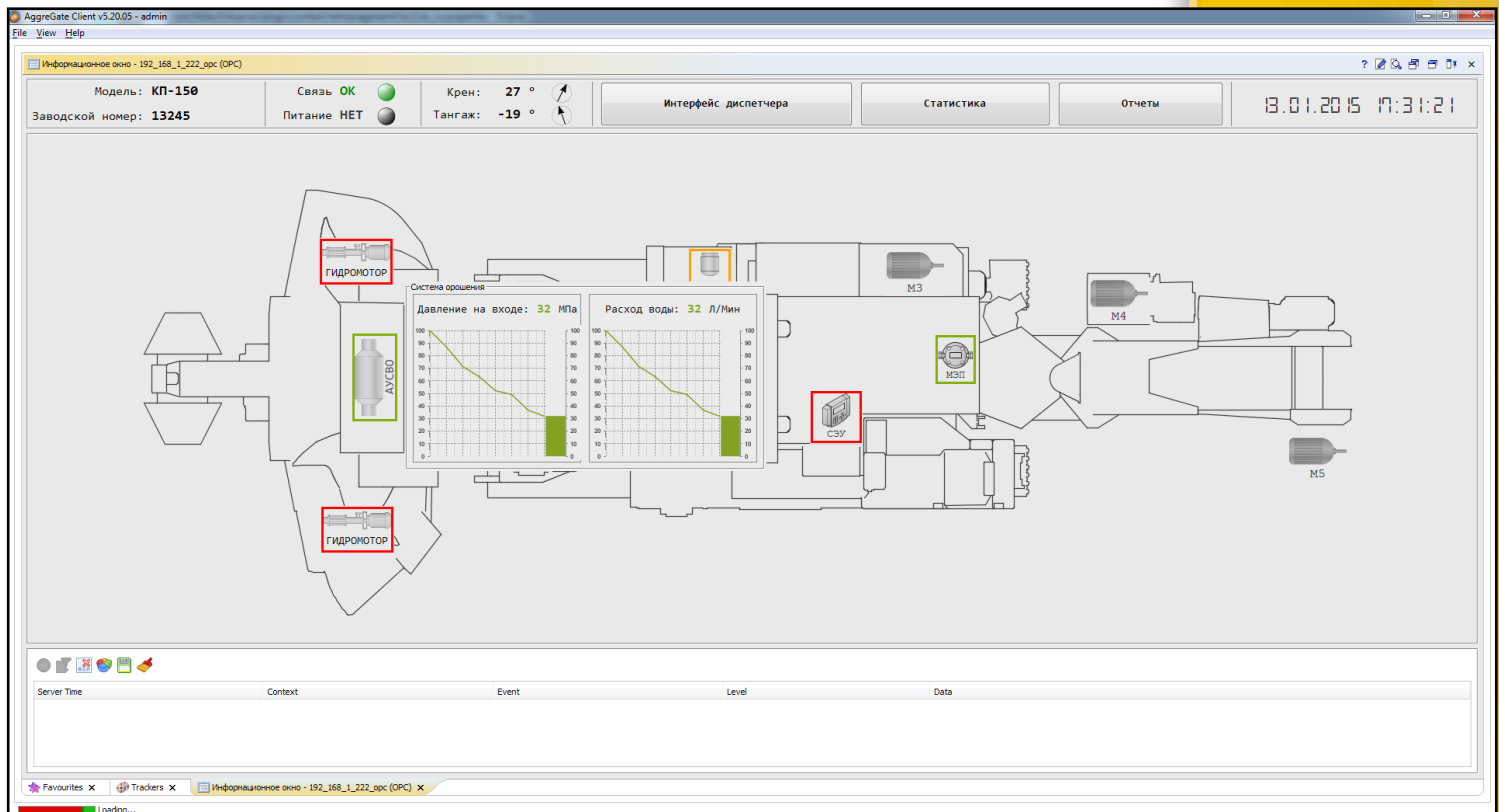


# Challenges

Mining is a dynamically developing industry setting high standards for ensuring staff safety, equipment serviceability and continuous improvement of process efficiency. This can be achieved by extending process automation and improving monitoring, data collection, and subsequent process analysis methods.

The key Ilma project task involved real-time monitoring of roadheading telemetry data. Therefore, a set of reliable and user-friendly tools for collecting, storing, processing as well as visualizing statistical and historical values were strongly needed.

Operators and maintenance staff expected to get reports containing not only raw data but also insights on equipment operating conditions. The major reporting requirement was generating reports in popular electronic formats, such as PDF, as well as sending them by email to the assigned staff on-demand or on schedule. Furthermore, a sought-for monitoring system was required to send SMS alerts upon critical events.



The Ilma management looked for a solution with multi-user access and scalable architecture to cover potentially large installations. Moreover, a desirable high-quality monitoring system must have been delivered with a web interface as its integral part.

In summary, the primary system tasks included:

- Real-time monitoring of roadheading telemetry data
- Collecting, storing and displaying statistical data on process parameters
- Generating insights on roadheader operating conditions
- Creating custom PDF reports and sending them by e-mail
- SMS notifications in case of emergencies
- Web interface development

## Solution

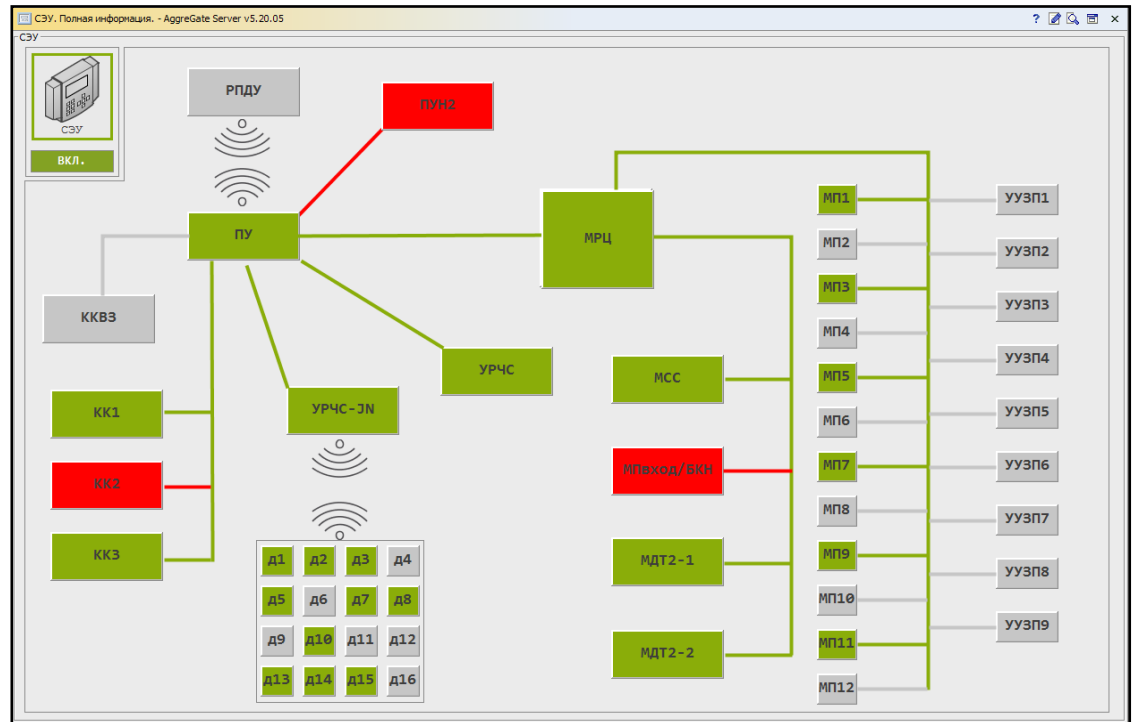
Centralized supervisory control and data acquisition for roadheading equipment is currently one of the most relevant automation tasks in mining industry. For solving this task, Ilma has chosen AggreGate SCADA/HMI.

Deployed in a dispatch center on a Windows server, AggreGate SCADA/HMI uses MySQL database for historical data storage. AggreGate visualizes telemetry data received from the Ilma control system via Genesis OPC DA server.

Over 30 custom-designed HMIs for different staff groups cover all-level process and system supervision. The HMIs are targeted to increasing staff information awareness. For instance, their information color coding meet world expert recommendations for designing effective operator interfaces.

All critical parameters can be viewed as raw data and in a chart form. When a parameter exceeds the set limits, AggreGate notifies operators and save the information in the event log. The custom reports generated in PDF and sent by email if scheduled or on demand. Moreover, the system sends SMS notifications to warn about critical failures.

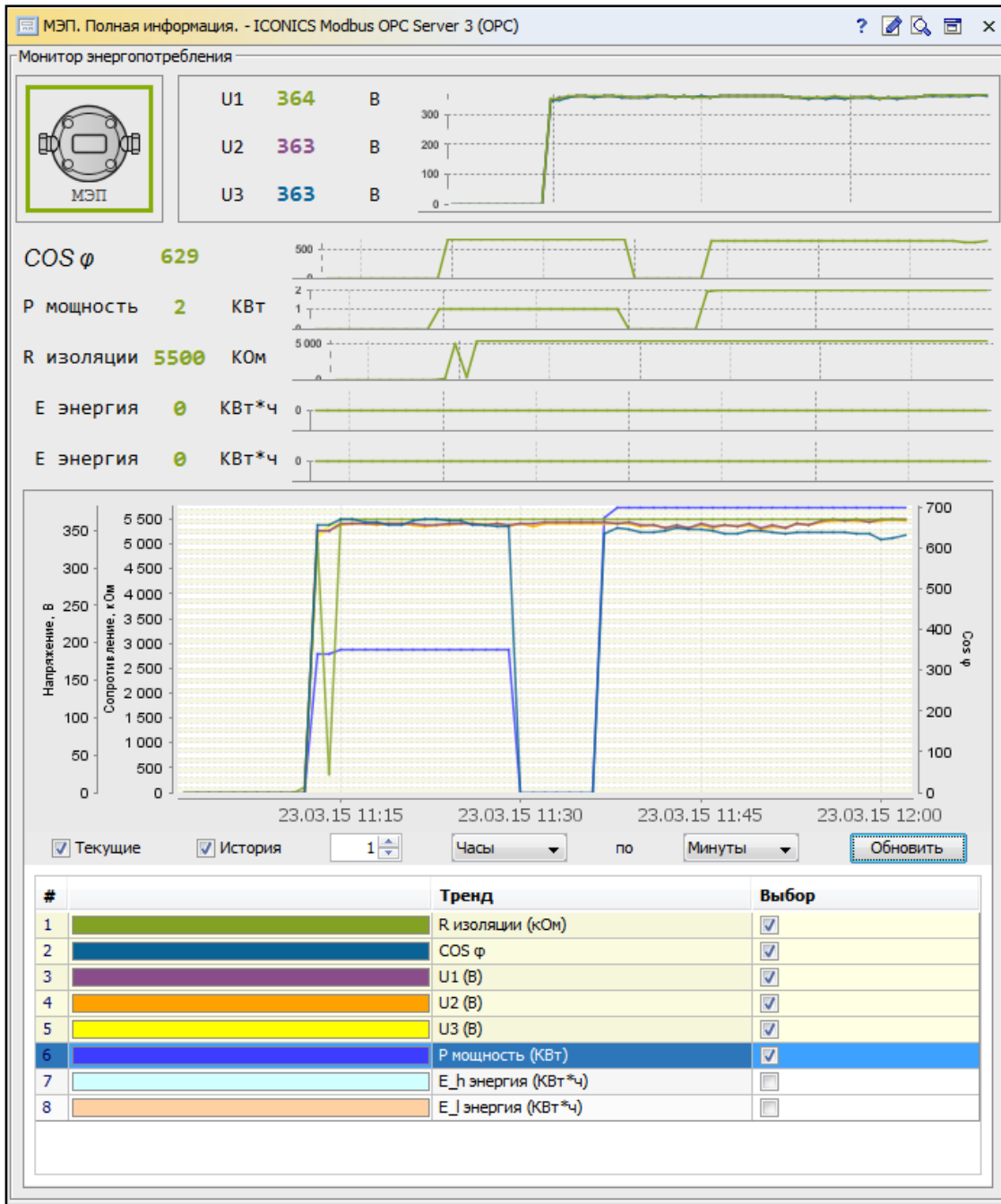
The overall deployment allows analyzing failures and equipment faults, scheduling maintenance, indirectly measuring the staff performance, and much more.



## Benefits

AggreGate commissioning made it possible to achieve the following benefits:

- Staff awareness of technology processes
- Efficient analysis of equipment failures
- Personnel performance tracking
- Evaluation of cost-effectiveness and process optimization
- Web access to the monitoring system
- Integration with MES and ERP systems
- System scalability based on distributed architecture



*I would like to commend the Tibbo's work. The platform updates are released regularly, while issues related to implementation, operation, development and compliance with comments are resolved promptly.*

*- Semeshov V., First Deputy General Director, NPF Automatic LLC.*

## Conclusion

The introduced system is one of the first centralized monitoring and data acquisition systems for roadheading equipment. Thanks to advanced AggreGate SCADA/HMI tools, this system can be used by control room operators for process monitoring, by technicians for machine state analysis as well as by financial officers and managers for business process and personnel performance analysis.

## About Tibbo

Located in Taipei, Taiwan, Tibbo Technology Inc. brings simplicity to the automation world defined by enormous complexity of operating systems, programming languages, and design tools. Tibbo's programmable hardware and the AggreGate Platform offer a complete solution for delivering robust, distributed automation and monitoring systems.