



Russian power company rolls out IBM Maximo Asset Management software to reduce cost per kilowatt-hour of energy produced

Overview

- **Challenge**

Improve competitiveness by decreasing asset downtime and increasing total output of energy.

- **Solution**

A comprehensive asset management solution that could help improve equipment reliability, availability and life span.

- **Key Benefits**

20% reduction in average preventative maintenance workorder; increased asset visibility; improved knowledge management to reduce risks associated with an aging workforce.



JSC RusHydro: Russia's largest hydropower generator

JSC RusHydro (<http://eng.gidroogk.ru>) is the only hydro generation company in Russia and one of the largest in the world, with the installed capacity of subsidiary and dependent companies reaching nearly 23 gigawatts.

The organization's mission is to make efficient use of Russia's hydropower resources, maintain the reliability of the country's unified energy system and expand the utilization of new renewable energy sources for the benefit of the company's shareholders and society.

"It became apparent that Maximo Asset Management software best suited the needs of the Russian power generation industry as well as the strategic goals of reforming the country's energy system."

Gerald Bandurin, Director, Information Technologies, JSC RusHydro



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“ Maximo ’ s functional completeness, flexibility and technological leadership, acclaimed by Gartner Group and other leading analysts, should allow us to fully meet the strategic asset management demands of our organization for years to come. ”

Garald Bandurin

The company was formed in 2005 through the grouping of many of Russia’s hydropower stations, including Volga Hydropower Cascade which managed nine large hydropower stations on the Volga and Kama rivers.

Improving competitiveness through asset management

JSC RusHydro needed to improve the competitiveness of its nine power stations on the Volga and Kama rivers, which are located in three different time zones and maintained by a staff of 2,000 technicians. In the power generation business, improving competitiveness means decreasing downtime while increasing total output. Company executives firmly believed that the key to enhancing overall asset efficiency and productivity was to improve equipment reliability, availability and life span.

JSC RusHydro had good reasons to doubt the efficiency of existing work and asset operations in these nine hydropower stations. Before implementing IBM Maximo® Asset Management software (formerly MRO Software’s Maximo), these power stations relied on a number of disparate systems based on spreadsheets to track asset and maintenance management. Each of these siloed systems covered only a subset of key business processes.

Lacking the appropriate computer-based systems, these power stations faced a vast and ever-increasing volume of paper records to manage critical assets. With no unified and automated repository system in place, staff could not collect all relevant asset data or compile data into a comprehensive asset and maintenance history. Consequently, the organization couldn’t identify costs and resources against assets. Moreover, the organization was not in a position to measure the performance of its critical assets.

JSC RusHydro also had never classified all equipment, parts and materials into one unified hierarchy, making the simple task of locating a component very time consuming. This, in turn, resulted in the lack of a centralized equipment documentation database. To locate the needed documents, staff had to search through equipment drawings and bills of materials in a cumbersome and time-consuming process.

The lack of visibility affected not only the maintenance department, but also purchasing and inventory. Each of the nine power stations maintained its own inventory, and company planners and technicians could not view stock in other storerooms. As a result, nearly 25 percent of inventory items were reordered, even though they were in stock at other plants.

Additionally, all work planning was laboriously captured using spreadsheets. Due to the manual nature of planning tasks, a high level of expertise was required to produce work plans, which were more than two meters in width when printed. And because work orders were distributed using telephone and printed documents, up to 25 percent of the time spent on maintenance tasks was spent



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waiting on information, materials or tagouts (a safety procedure by which machines must be shut down before maintenance work can begin).

Staff also had to manually input into the financial system all papers (waybills, list of materials, orders, etc.), which was a time-consuming process. And JSC RusHydro had to rely on paper logs to monitor breakdowns and defects. As a result, it was nearly impossible to deal with all workorders since this would require day-by-day monitoring across several similar logs in different locations and time zones.

Holding the asset management data in spreadsheet silos also impacted knowledge management. JSC RusHydro had no means of retaining and disseminating asset knowledge or maintenance best practices; sharing information was subject to personal interpretation; and the organization's hydro sites were dispersed throughout three time zones. The company's management team identified knowledge transfer as a key risk due to its aging workforce.

A winning combination: IBM Maximo Asset Management software and EAM Systems

JSC RusHydro invited six global and local suppliers of Enterprise Asset Management (EAM) systems to demonstrate how their systems would help improve operations. The company had laid down ambitious business requirements for its nine hydropower stations on the Volga and Kama rivers and established the following key criteria in the selection process:

- *Functional breadth and depth.*
- *Agility and predictability of the implementation process.*
- *Experience and track record in the power generation industry.*
- *Support of common and power generation-specific best practices for enterprise asset management processes.*
- *Compatibility and ease of integration with the company's incumbent enterprise systems, such as 1C, a popular local ERP package, and Oracle E-Business Suite.*
- *Efficient support of remote access and distributed multi-site configuration.*

After careful consideration and evaluation of several leading and local EAM systems, JSC RusHydro selected Maximo Asset Management software and EAM Systems (the company was created by spinning-off the EAM line of business from Bellwood Systems into a separate company in 2008 year). The Moscow-based systems integrator EAM Systems provides Russian localization for Maximo software. EAM Systems is an IBM Premier Business Partner.



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With Maximo Asset Management software, JSC RusHydro expects to improve its ability to develop, implement and maintain optimal asset management strategies and tactics, resulting in improved equipment reliability, availability and life span.

“It became apparent that Maximo Asset Management software best suited the needs of the Russian power generation industry as well as the strategic goals of reforming the country’s energy system set by RAO UESR,” comments Garald Bandurin, director, Information Technologies, JSC RusHydro. “Maximo’s functional completeness, flexibility and technological leadership, acclaimed by Gartner Group and other leading analysts, should allow us to fully meet the strategic asset management demands at our organization for years to come. Other important factors in making our decision were the vendor’s robust 24x7 ‘follow the sun’ support policy and an experienced local partner and authorized reseller, EAM Systems, to provide support for the Maximo solution.”

Improving uptime, reducing the cost per kilowatt-hour of electricity produced With Maximo Asset Management software, JSC RusHydro expects to improve its ability to develop, implement and maintain optimal asset management strategies and tactics, resulting in improved equipment reliability, availability and life span.

JSC RusHydro can now easily plan all preventative work on an annual basis. All preventative maintenance, including all workorders, is specified in Maximo software for a year in advance so a maintenance plan can be produced at any time with just a few mouse clicks. This will help the company increase uptime between scheduled outages to further decrease total repair time.

Comprehensive data capture, Key Performance Indicators (KPIs) and reporting offer improved visibility into key business processes and associated costs for management and investors. Now the chief engineer can receive daily, automated reports with all open reactive workorders displaying problem codes and status information. This improves the reaction time to the failure and enables restoration of critical assets to working order more quickly. JSC RusHydro is confident Maximo software will help reduce the workorder backlog by as much as 30 percent. Overall equipment downtime is expected to fall significantly, which will positively impact the organization’s ability to produce megawatts of electric power and generate revenue.

Additionally, with more than 95 percent of all maintenance and repair performed by contractors, Maximo software helps JSC RusHydro address governance requirements and maintain adherence with contractual arrangements including system access conditions. Maximo software has been configured to reflect JSC RusHydro’s unique maintenance business processes so that as contractors use Maximo software to plan, execute and document maintenance activities at JSC RusHydro, they automatically adhere to JSC RusHydro’s maintenance business processes.

As a next step, JSC RusHydro will integrate Maximo software with its plant process control system (PCS) to increase the level of maintenance automation and help create a more accurate asset history. The Maximo asset module can interpret parameters from the PCS to automatically initiate workorders, if necessary, while the Maximo workflow module will ensure that the right personnel are involved at the right time.



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Automated and documented work procedures will lead to improved work efficiency and knowledge management. Prior to implementing Maximo software, JSC RusHydro streamlined and optimized all business processes related to the management of the stations' key assets. These processes included equipment maintenance, inspections, condition monitoring, inventory, purchasing and work planning. JSC RusHydro was able to mirror these business processes in Maximo software using the technology's workflow capabilities. All workorders now follow the standard approved workflow and are fully automated and documented. This has dramatically shortened the cycle time of assigned work, as involved personnel, be it storeroom, purchasing or maintenance staff, receive tasks in their inboxes the moment they are assigned.

The software's overall system flexibility was beneficial and impressive to JSC RusHydro. On several occasions when JSC RusHydro feared it would require weeks of extra work to implement process changes, the organization found that EAM Systems needed only a few days to complete the same tasks. Maximo Asset Management software has allowed JSC RusHydro to link work management with material resource planning, reducing the workorder time substantially. A purchase requisition is now triggered automatically when Maximo software generates a preventative maintenance work order.

According to estimates by JSC RusHydro, Maximo software has the potential to reduce the average preventative maintenance workorder by up to 20 percent due to more efficient work planning and centralized dissemination of asset and work information.

The Maximo standards-based Internet architecture allows for access from any Internet browser while reflecting different user profiles. Consequently, whenever a third party is contracted, the asset data remains with JSC RusHydro and contractor personnel are sure to comply with JSC RusHydro best practices.

JSC RusHydro expects Maximo software will help it achieve substantial business improvements through a better alignment of business-critical assets. Having the ability to track and optimize all asset-related costs is expected to reduce the cost per kilowatt-hour of electricity produced and improve worker productivity. As a result of these significant benefits, JSC RusHydro plans to use Maximo software at all its generation sites within the next two years. This includes 22 divisions with a total of 49 hydropower stations.

For more information

Please contact your IBM sales representative or IBM Business Partner.

Visit Web sites: ibm.com/tivoli or eamsystems.ru

For more information about JSC RusHydro, visit: <http://eng.gidroogk.ru>