Industrial water resource management

ABB helps a global iron and steel major to unlock a 30% increase in production capacity.

The client operates a European steel manufacturing plant. They were planning to increase production in their UK plant by up to 50% over the next few years. Although the plant uses water efficiently, compared with their competitors, there was insufficient water supply available to support this.

They looked to ABB to provide an assessment of their water abstraction and distribution systems, process use and operating practices to maximise availability and effective use of this critical resource.

“Your team has certainly earned our respect not only for the technical capabilities they’ve demonstrated, but also their overall professional conduct. A professional team that has provided solid value as we partnered through the assessment process and water systems review”

Client’s Strategic Utilities Manager

Solution
ABB was commissioned to carry out a strategic study to address three major questions:

- How much water is required to achieve a sustainable production rate increase of 15% while maximising electricity generation on the site?
- What is the best way to achieve this, taking into account cost, timing, reliability and likelihood of success?
- How much production would these measures support and what would need to be done to achieve up to 30% higher production rates?

Constraints of the project included:

- Physical limitations in abstraction and transport to site
- Distribution network constraints within the site
- Unmanaged water usage by user plants
- Limitations on future abstraction licences

ABB reviewed the current water supply arrangements at the site, including distribution, demand, recycle and discharge. Using this information, ABB developed a predictive water usage model to estimate the water demand for different production rates and identify ways in which demand could be reduced.
The ABB approach identified a number of low cost opportunities to achieve the primary production target of a 15% increase, including projects to improve control and remove bottlenecks in the supply and distribution systems.

In addition, ABB also delivered a strategy to support a 30% increase in future production by developing the river water pumping and distribution system, as well as identifying new supply options. Higher production rates will increase the impact of seasonal variations placing greater demands on measures taken to increase water supply. Demand management measures were restricted by deteriorating water quality. Shortcomings in the manageability of the supply and distribution system were already causing problems at present production rates and would severely limit future production unless they were addressed, so therefore needed to be rectified urgently.

The assessment drew on ABB’s global experience in water resource management and its methodology for industrial energy and water efficiency, as well as its subject matter expertise in the following areas:

- Water technology
- Network modelling
- Process engineering
- Process and production systems
- Maintenance and reliability
- Organisational development

**Benefits**
ABB identified a program of improvements to maintain current production by improving control of water use and removing bottlenecks in the water supply systems.

In addition, ABB helped the customer support a 30% increase in future production by developing a strategy for improving the river water pumping and distribution system and identifying a major new supply for the site.