

Digital technology *manufactures a new future* at Baker Hughes

Baker Hughes and Capgemini implement an Industrial Internet of Things (IIoT) solution that transforms shop floor processes and the manufacturing execution system.

Client: Baker Hughes

Region: Italy

Industry: Oil and gas

Client challenge:

Baker Hughes wanted greater visibility into its manufacturing processes and the ability to manage production in real-time.

Solution:

Baker Hughes and Capgemini implemented an IIoT solution that aggregates information across manufacturing devices and provides operations and engineers with the insights needed to adjust production at a moment's notice.

Benefits:

- Enhances visibility and insight
- Real-time manufacturing process management
- 26,000 hours of downtime prevented across Italian plants
- 12 percent increase in machine utilization five months after deployment

The future of smart manufacturing

Baker Hughes provides products and services that help further innovation in the oil and gas industry. As a technology leader, the company values improving operations and enhancing its services to help its customers acquire, transport, and refine hydrocarbons more efficiently.

Baker Hughes wanted to improve productivity and visibility into its manufacturing processes, with the ability to make decisions and manage production in real-time based on data aggregated from relevant machinery. With this additional level of insight, the organization could improve its existing processes while reducing downtime. Baker Hughes needed a partner with a thorough understanding of digital manufacturing and manufacturing execution systems (MES) to create and implement a powerful solution.

Combining IT and OT for a shop floor solution

Baker Hughes selected Capgemini as its partner for this project, based on its extensive understanding of shop floor technology and a history of implementing successful digital manufacturing solutions.

Baker Hughes and Capgemini performed an in-depth analysis of existing manufacturing processes and determined that an Industrial Internet of Things (IIoT) solution would help connect the various devices and machines that made up the company's manufacturing processes. It would also help the company identify opportunities for enhancement. The solution used Capgemini's agile methodology to connect information technology (IT) and operational technology (OT), and was built within Baker Hughes' existing infrastructure to minimize disruption.



Real-time manufacturing management

With IIoT, connected machines compile data to generate a comprehensive report on the state of the production process. This tapped into data sources like machine tools, ovens, cranes, and Baker Hughes' computerized management system to create its overall view of the shop floor and machine performance, which could then be shared with external systems.

In addition, the data is compiled and reported in real-time, allowing operators and engineers to view data-based shop floor insights, act quickly, and make informed decisions to ensure plants run at optimal levels.

The processes are standardized across Baker Hughes' shop floors, so operators can respond to challenges and make adjustments more quickly. The combination of greater insight, enhanced data, and standardized processes meant operators could also take a proactive approach to maintenance. This led to a decrease in machine downtime and a 12 percent increase in machine

utilization across different sites within five months of deployment. It also generated millions in savings.

"A numerical control machine usually has 4,500 hours scheduled per year and the cost to buy a machine is roughly \$1 million," said Davide Marrani, Vice President, Global Supply Chain, Baker Hughes. "The industrial internet solution implemented therefore increased the shop's capacity by as much as six new numerical control machines, so it would have cost us \$6 million to achieve the same result."

The collaborative approach

Following the success of this delivery, Capgemini and Baker Hughes agreed to transfer ownership of the intellectual property to Capgemini. Baker Hughes and Capgemini are continuing to partner on developing innovative solutions to further innovation in the oil and gas industry.



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