GREENER COMMERCE:
FLIPPING THE SCRIPT ON DATA CENTERS

Data centers are energy-intensive facilities that collectively account for approximately 2% of U.S. electricity consumption. Driven by its strong commitment to sustainability, this global e-commerce leader aims to flip the script on how data centers are designed, operated and powered.

Every day, millions of people around the world buy and sell goods on the digital marketplace. Data centers are the nerve center that process every transaction. For this U.S.-based e-commerce provider, demonstrating that sustainability and profitability go hand in hand is a core philosophy and a fundamental business strategy.

After opening a new state-of-the-art data center on its campus in the Western U.S. in 2017, the company realized a need to update two existing facilities on the same campus with a unified control architecture, a common software platform and new hardware in some areas. To help bring this project to fruition, the company needed a partner with a unique mix of experience, resources and qualifications.

THE PROBLEM

In 2020, this e-commerce provider invested capital to expand into a new phase of a recently constructed data center on their campus, equipped with the latest building-management and energy-monitoring technology from Rockwell Automation.

The other two data centers in the complex opened in 2010 and 2013, respectively, and feature green innovations such as waste-heat recovery, rainwater collection, best-in-class power density and fuel-cell electricity generation. However, the two older facilities ran on a mix of mechanical and electrical control systems from multiple vendors, with separate software platforms for EPMS and BMS. The complex architecture and disparate control systems presented challenges for the in-house engineering and maintenance personnel, who often needed to get

service providers involved when problems arose. The control-system vendors' go-to-market strategy limited the data-center owner with rigid and regionalized branch-office models that offered few options for other choices.

The existing architecture wasn't supportive of the company's plan to consolidate the footprint of the facility-management system – considered the combination of BMS and EPMS platforms into a single software stack. The company knew it needed a simplified controls infrastructure that provided personnel with more oversight and ownership of control systems, enabling them to access and act upon shared real-time information while they collaborate on solutions. With its existing mixture of software stacks, this was nearly impossible.

Additionally, the company was motivated to forge long-term partnerships with independent and open-integration service providers, while maintaining robust in-house control capabilities.

THE SOLUTION

In the assessment phase, a team of RoviSys engineers travelled to the customer location to perform a thorough site assessment of existing systems, equipment and control strategy. From there, the RBT team developed a migration plan that included a new controls architecture for the two legacy data centers. Challenges included determining non-critical unitary controls that would be integrated rather than migrated, designing the campus-wide converged HMI architecture and balancing the resulting implementation cost. Furthermore, RoviSys was able to deliver an early-release control design package to intercept an ongoing capital project (upgrading facility equipment) to accommodate the controls retrofit into the capital project.

The new controls architecture developed by RoviSys will serve as the singular facility-management system for controlling and monitoring all equipment throughout the campus. Thanks to its strong

ROVISYS

RoviSys Building Technologies (RBT) prides itself on being a vendor-independent systems integrator and a preferred partner for over a dozen hardware and software providers. As a Rockwell Automation Gold System Integrator, RBT is one of few partners certified in controls, process control and information services. With decades of collective experience and deep expertise implementing a wide range of Rockwell Automation solutions, RoviSys Building Technologies (RBT) was in an ideal position to migrate legacy building systems onto the FactoryTalk software platform.

This customer was in a unique situation: The company was redesigning its control architecture with the goal of combining it with an ongoing capital investment for upgrading equipment throughout its buildings. Basically, applying technology and methodology from the most recently constructed data center to older facilities. For this project, the customer valued RoviSys as a logical choice to design the control package and migration strategy due to its industry-specific experience, depth of resources and proven experience in migrating legacy systems onto Rockwell Automation software platforms. RoviSys had a leg up on other bidders because of a previous partnership with this customer. Based on successful results of a previous data center project, the customer had a high level of trust and confidence in RBT.

One key challenge: The RBT team needed to implement the migration plan while the data centers – which process millions of transactions a day – maintained a steady operational state. As part of a detailed project schedule, the RoviSys team established multiple, concurrent steady-state milestones to drive the project in the most efficient manner, while ensuring that critical systems were operational. With a keen understanding of the customer's future-state goals and the realities of executing a costly and complex project, the team built flexibility into each phase, allowing this customer to make modifications to the project plan as it progressed.

partnerships and rapport with general contractors, RoviSys is an invaluable resource not only for its clients but also for construction firms as they install complex controls hardware.

THE RESULT

The RoviSys Building Technologies group has created a simplified controls infrastructure that will maximize efficiency in the two legacy data centers and provide a design blueprint for future systems upgrades.

The new controls architecture integrates building management and energy monitoring into a unified platform, dramatically improving user experience for operators and engineers. The new design has simplified network requirements and has reduced software costs and contact points while using fewer resources.

By simplifying the controls footprint, and standardizing on the FactoryTalk software platform, internal personnel now have clearer oversight of the facilities' vast infrastructure, enabling them to make data-driven decisions to minimize power consumption and maximize equipment uptime. And with the freedom from branch-managed controls, the data centers benefit from being able to manage and maintain their software on an open marketplace.

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