



case study

Multi-Plant Compressed-Air Upgrade for Zero Out-of-Pocket Cost

CHALLENGE

To shrink its carbon footprint, a major US carmaker tasked its energy management team with reducing operations energy use by 25 percent. An obvious place to start was improving the efficiency of the compressed air systems at all of the plants in North America through a combination of controls retrofits and compressed air network optimization. To keep upfront project costs to a minimum, the customer asked its industrial controls integration partner, Bay Controls, to deliver the project as an energy services agreement. This approach — often called an Energy Savings Performance Contract (ESPC) — uses energy cost savings to “finance” the project over the term of the agreement.

BayWatch, Bay Controls’ cloud-based energy monitoring platform, was already installed in the carmaker’s North American plants. Also, it already centrally monitored and managed utility (gas and electric) data using Niagara Framework® from Tridium. Thus, the ESPC approach would require that Bay Control’s development team build a Niagara driver. The driver would enable Bay Controllers to communicate with JACE hardware, thus integrating the compressed air monitoring and data capture abilities of BayWatch into Niagara Framework®. Two additional energy saving measures (ESMs) were planned to complete a controls retrofit for each of 10 manufacturing plants: a new compressor controller User Interface module would need to be installed and there would need to be surge testing and tuning of the compressed-air system network.

SOLUTION

As an initial phase of the project, Bay Controls conducted a thorough assessment of the compressed air systems to capture baseline performance, energy consumption, and energy costs. Leveraging the BayWatch cloud monitoring platform, Bay Controls was able to do this multi-plant comprehensive analysis remotely at almost no cost and in very little time. Once the Niagara driver was complete, the Bay Control hardware at each plant was updated with the new software. From there, Bay Controls Tridium-certified system integrators began the process of connecting the compressed air networks (and controllers) that served each plant. Once this work was complete, Bay engineers could do the user interface retrofits and compressed air network surge tuning at the 10 plants. Over the course of the project, they brought about 10 assets per plant - compressors, dryers and cooling towers, into the carmakers’ Niagara network. Overall, it took about 24 months to complete the upgrade.



Realizing almost \$1M in energy savings annually, this Bay Controls project demonstrates that it is possible to integrate two existing networks to deliver a new standard in control and monitoring of plant systems.

RESULTS

At the close of the Upgrade Phase, all of the air compressor controllers had been retrofit, all of the plant compressed air networks had been surge tuned, and all 10 plant compressed air systems were fully integrated into the Niagara network, all with zero out-of-pocket costs to the carmaker. Based on the savings analysis completed by Bay Controls and the improved energy performance of project plants to-date, Bay Controls estimates that the company has reduced their compressed air energy costs by almost \$1M annually on average across all 10 project plants.

In addition to realizing significant energy savings, the enterprise also gained the ability to centrally (and remotely) monitor and control the compressed air systems in all 10 plants via the Niagara/Bay Controls integration. With the integrated Tridium/Bay controllers, the carmaker can capture all compressed air operating data and also schedule compressed air system operation to match the air demand for each plant.