

FIAT CHRYSLER AUTOMOBILES - BRAZIL

**AUTOMATED LOGIC DELIVERS ENERGY SAVINGS
WITH CHILLED WATER SYSTEM OPTIMIZER**



THE PLAYERS

In 2015, Fiat Chrysler Automobiles (FCA), a division of FCA Group, constructed their Jeep plant in Goiana, in the State of Pernambuco in Brazil. Their goal was to create the most technologically-advanced and sustainable automobile plant in the world. This manufacturing plant is the center of a highly-integrated complex that also consists of an R&D center, training center, proving ground, and on-site supplier park.

To achieve the goal of being one of the most energy efficient plants in the world, FCA had originally turned to CCN Automação — a local Automated Logic dealer and a recognized leader in implementing advanced building automation solutions — to carry out the project aimed at delivering the highest energy efficiency for FCA’s chilled water plant. They achieved this by installing Automated Logic’s WebCTRL® building automation system and MEx chiller plant controllers to efficiently manage the nine large centrifugal chillers (with 18,000 tons of total cooling capacity), that serve the complex.

Recently, FCA determined that further energy savings were needed and once again, turned to CCN Automação to successfully achieve this objective. FCA needed to reduce the total plant’s kW/Ton index (a measurement of the amount of electricity needed to produce one ton of cooling capacity), which is compared globally with other peers within the FCA Group. And, CCN Automação was asked to deploy the solution without disrupting the plant’s 24 hours/day production schedule.

THE SOLUTION

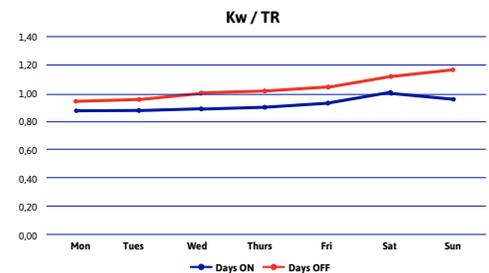
To further reduce the plant’s nominal consumption of electricity, the CCN Automação application engineering team installed Automated Logic’s Chilled Water System Optimizer (CWSO). This native BACnet® control solution provides supervisory level control over the chilled water production of the chiller plant, managing the plant chilled water supply temperature and the condenser water supply temperature to provide optimal energy usage while maintaining occupant comfort throughout the manufacturing plant.

In addition, CCN Automação installed integration modules (LGR1000s), to communicate with third party plant components such as kW energy meters and VFDs, maximizing the performance of the CWSO’s control algorithms and creating a finely tuned, cohesive system.

The solution was implemented in phases, including physical installation, commissioning, adjustments, and start-up monitoring, where chiller plant performance was carefully monitored - with and without the optimization system - to verify an energy savings of **10.6%** with CWSO in place.

THE CHALLENGE

- Optimize and extract additional energy savings in an efficient chiller plant
- Maintain FCA’s 24 hours/day production schedule without disruption during the upgrade
- Integrate third party devices to ensure precise environmental control of all areas in the manufacturing plant



The above graph represents the KWh of FCA’s system without optimization (red) vs. CCN Automação’s optimized system (blue). The difference between the two translates into 10.6% savings generated, or –2.57 GWh/year.

FIAT CHRYSLER AUTOMOBILES - FCA

GOIANA, BRAZIL

THE RESULTS

Fiat Chrysler Automobiles' (FCA) latest corporate directive called for a further reduction in energy usage in their world-class Jeep manufacturing plant located in Goiana, Brazil — and they accomplished this by working with CCN Automação to add additional chiller plant controllers. This solution reduced energy consumption by **10.6%**.

“To meet FCA’s requirements in 2020, we installed a new control panel with Automated Logic’s Chilled Water System Optimizer and LGR1000 modules. With these new controllers, we were able to increase FCA’s chiller plant efficiency by integrating third party plant components like kW meters and variable frequency drives,” commented Luciano Ribeiro, owner of CCN Automação. “This seamless integration allowed us to extract all the information necessary to run the optimization routines for the entire manufacturing plant,” Ribeiro continued.

In 2021, CCN Automação implemented additional calibrations to Automated Logic’s CWSO to further improve energy usage and migrated the front end of the WebCTRL system into Amazon® Cloud.

“We’re very pleased with the energy-saving results, the added chiller plant performance and the professionalism that CCN Automação has delivered to FCA,” said Tiago Melo, Goiana Plant Energy Specialist. “The recent savings that we’ve seen have certainly contributed to helping FCA meet our corporate objectives,” he concluded.



“We’re very pleased with both the energy-saving results, and the added chiller plant performance...”

Tiago Melo
Goiana Plant
Energy Specialist

PROJECT SUMMARY	
Savings	10.6% savings generated, or 2.57 GWh/year
Location	Goiana, Brazil
Project Type	Controls addition
Building Size	Multiple facilities - 260,000 m ²
Building Usage	Manufacturing / Automotive / Fiat Chrysler Automotive (FCA)
Objectives	Extract additional energy savings within a relatively new and efficient automotive manufacturing facility.
Design Considerations	Execute controls upgrade without disruption to the manufacturing plant’s 24 hours/day schedule.
Major Decision Drivers	Automated Logic had been the controls provider of choice due to innovative products and CCN Automação’s level of systems expertise.
Dealer	CCN Automação - Sao Paulo / Rio de Janeiro
Installation Date	2021



Since 2015, Fiat Chrysler Automobiles (FCA) - Brazil has relied on CCN Automação and Automated Logic controls solutions to improve energy efficiency in their world-class manufacturing facility.