



SUMMARY

The Kellogg Company

Industry

Pharmaceuticals, Food, and Life
Science, Critical Facilities

Business Value

- Business Intelligence
- Operational Insight
- Performance Optimization
- Process Controls
- Energy Efficiency

PI System™ Components

- PI Server™
 - Data Archive
 - Totalizers

Kellogg Harvests \$3.3 Million in Energy Savings with the OSIsoft PI System

The Kellogg Company's food products are a staple in kitchens in over 180 countries. With over \$14 billion in annual sales, Kellogg's produces many household names, such as Keebler, Pop Tarts, and Eggo Waffles. In 2005, Kellogg's embarked on a project to reduce its energy footprint while improving their bottom line. By leveraging their previously installed PI System, Kellogg used operational data to reduce energy consumption in its Battle Creek plant.

Using the PI System to Achieve Energy Consumption Targets

In 1999-2000, Kellogg installed the PI System as part of the Operational Asset Effectiveness Group, and it became the system of choice when setting the 10-year energy targets. "When we set the 10-year energy targets, PI was the natural go-to for us," said John Gothberg, Engineering & Facilities Manager, during the 2016 OSIsoft Users Conference™ in San Francisco. "We had a lot of success with the OAE project in measuring real-time data to feed decisions on the floor."

Kellogg proactively installed gas and air metering, primary voltage metering, and created hundreds of PI Server tags and Totalizers to set benchmarks ahead of the 10-year energy targets. "I can't tell you how much value that's brought to our plant," said Gothberg. "It's hard to prove something after the fact, and that project set the stage for a lot of success."

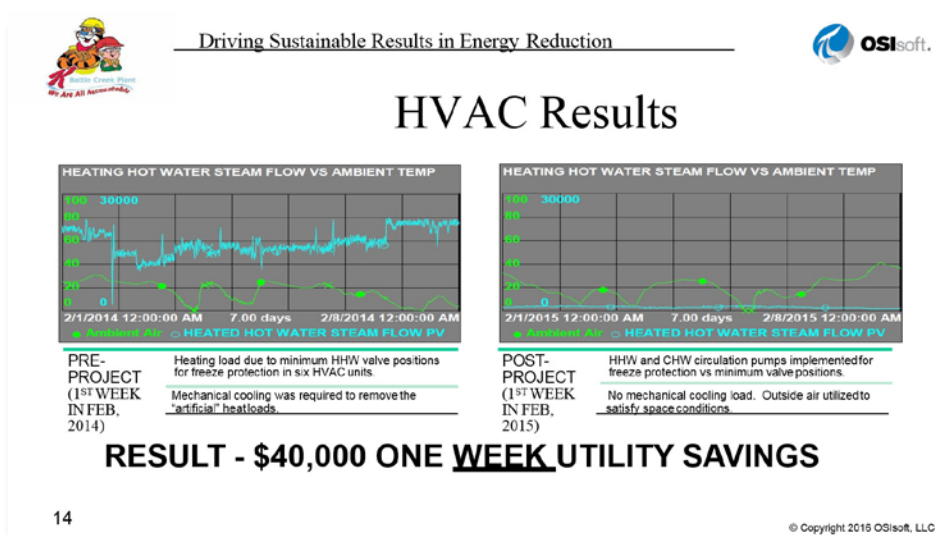
HVAC Unit Air Quality Improvement and Cost Savings

Part of the project focus was to reduce energy consumption in the 44 HVAC units located in the plant. These HVAC units are controlled by a building management system and, in an effort to prevent chill water coils from freezing, air is heated to 80-100 degrees and then cooled to 50 degrees at discharge. Process air brought into the building from the outside was not linked to the building management and process control systems, which created near non-existent building pressure and resulted in food safety risks.

Kellogg found that they were using a lot of energy steam heating hot water only to cool it down, so they retrofitted the controls around the units, installed building pressure monitors, and tied this all into process air intake in order to balance the building pressure. They also designed a freeze protection system for the coils and installed air flow sensors to measure fresh air intake in each unit. This not only prevented

them from drawing poor quality air in from the outside, for the first time, they were able to monitor control building pressure to keep it within the right range. Overall, this project saved them over \$350,000 dollars per year on the six HVAC units alone.

In addition, data showed an additional opportunity with the pumps that had been installed to push recycled water through the coils to keep them from freezing. Rather than bringing fresh air into one HVAC unit at a time, they discovered that if they did this for six of the HVAC units simultaneously, they were able to mix the return air from the building and bring in enough makeup air to nullify the need for water heating. That February, they used no hot water heating for the entire month and, in just one week alone, they calculated that they had saved over \$40,000 dollars.



“Since 2005 our plant is saving \$3.3 million annually and we’ve claimed \$1.8 million dollars in rebates – and those rebate unlocks don’t come without data.”

– John Gothberg
Engineering & Facilities
Manager

Kellogg’s Hot Water Steam Flow and Ambient Air Charts: Using the PI System, Kellogg’s identified areas of improvement in its HVAC units that not only improved air quality, they saved over \$40,000 in just one week.

Setting Additional Energy Consumption Goals

To say that the program has been a success is an understatement: Kellogg continually looks at data to gain insights and adjust processes for better results. They’ve now set energy targets for the year 2020, general and natural gas usage is trending down, and they’re continually identifying ways to reduce water usage. “Of the 35 projects that we’ve done, only five didn’t use PI System data,” said Gothberg. “We used that data to execute and validate because hope is not a business strategy – and that’s the thing we love about data.”