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PART OF BURNS McDONNELL

CASE STUDY

Digital Transformation Project for Northeast Utility Yields Significant Operational Efficiencies

A computerized maintenance management solution (CMMS) implementation for a large Northeastern utility has enabled operational staff to view digital twins of physical components and equipment running a network of pump stations. The result has been significant efficiencies as well as much-improved ability to monitor, predict and respond to operational issues. Asset and analytics templates can drive efficiencies via Asset Framework.

Challenge

Operational data on a wide range of assets needed for daily operations by a major Northeastern utility had accumulated over multiple years in an inconsistent, cryptic repository of hundreds of thousands of data points, or tags. This included data on every asset in the utility's system, from pump stations and stop joints to circulation units or any other asset needed for ongoing operations.

Naming conventions and displays created in a legacy OSIsoft PI application called ProcessBook were directly tied to these tags. Though the data was retrievable via

Project Stats

Client
Confidential electric and gas utility

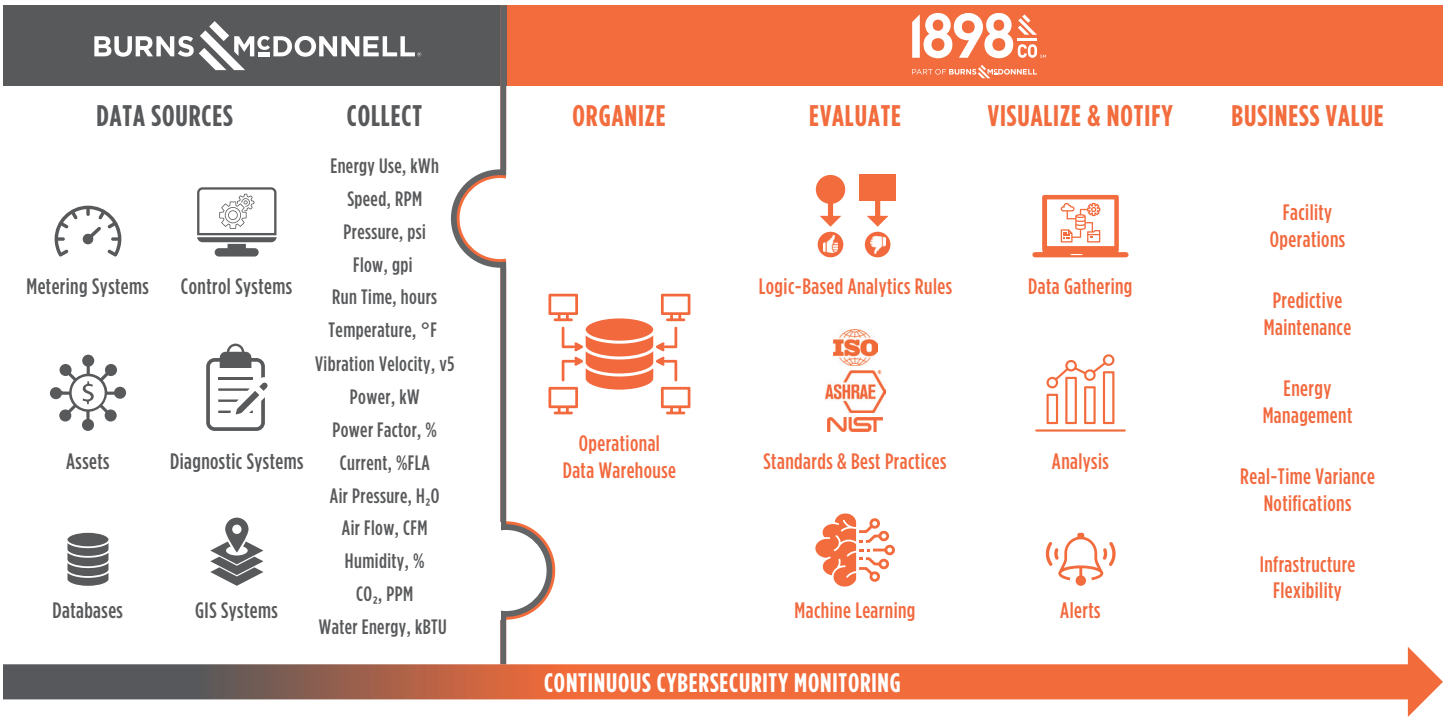
Location
Northeastern United States

Completion Date
2019

40+
PUMPING STATIONS

5K+
TIME SERIES AND ANALYTIC TAGS

25%
REDUCTION OF LEGACY END-USER SCREENS



ProcessBook, it was not displayed at a level of sophistication needed for easy user interface and had become very difficult to manage and maintain.

In addition, because these displays were not web-based, any upgrade or modification required installation on each computer. These were previously installed by individuals within the information technology (IT) organization — an inefficient approach resulting in an enormous expenditure of time and resources.

Solution

We were engaged to develop and implement a modernized computer maintenance management solution focused primarily on the utility's pumping stations as a means to improve reliability of the pumping station circuits. The overall goal was to streamline existing data tags and modernize existing ProcessBook displays to the latest PI Vision platform while leveraging the modeling tool, Asset Framework.

We followed a phased approach of identifying, recommending and implementing tag naming using Asset Framework to provide the flexibility required by the client. Asset Framework was used to create asset and analysis templates that served as the basis for creating element relative displays (ERDs) in PI Vision, a web-based application from OSIsoft.

Initial phases of the effort involved collecting a large volume of historical data from the OSIsoft PI Data Archive. The first priority was to develop a process to collect the data, followed closely by the second priority of modeling the data with logical and easily understood naming conventions.

During this critical step, we created the Asset Framework layer, allowing us to organize this data in a manner retrieval tools on the database to provide the necessary insight that the right data was being collected.

The third and largest step of this project was to begin organizing the data into a framework where we could identify assets such as pumps, stop joints, valves and circulation units with the attached data on related components. The goal was to convert the data into an easily readable and understandable format that allowed us to create displays that could easily be shared across multiple users.

This step involved creating templates that pulled data into a logical, hierarchical format based on the standardized naming conventions. These templates are the underlying logic for the ERDs and are at the heart of this efficiency improvement. They not only eliminate the need to create separate displays for each of the hundreds of assets on the utility's system, but also allow users to easily navigate and query the data and see

operating performance of each component within the pump station using a web browser.

Results

By leveraging Asset Framework templates, we are not only creating modern PI Vision displays in a fraction of the time it would have taken previously, but also have consolidated the need for hundreds of displays that show asset operating performance in real time. The company is now able to migrate the legacy displays off the ProcessBook application and on to PI Vision, which is accessible to all users simply by forwarding a link. This migration also enhanced overall security of the system.

This more robust version is a significant upgrade in that instead of directly connecting to the PI point itself, it navigates via the Asset Framework to create a user-friendly dashboard that provides clear visual representations of how an asset is actually performing. With respect to pump stations that were the focus of this project, we could create one unified visual display with all the operational data relevant to that asset.

A critical factor in this new data management program is the ability to develop templates for ERDs. The value of templatizing is realized when it becomes a consistent representation of all things relative to operation of assets. Creating these templates leads to significant efficiency gains.

With a much more accessible dashboard visualization tool, blending reporting on modules or components through a variety of new functions, we have achieved a significant advance in operational data management. Beyond creating efficiencies in the actual data conversion, we are enabling a robust data analytics engine as well as the ability to set up notifications.

By building out a modeled, hierarchical representation of assets and processes within Asset Framework, a foundation was created to sort, analyze, predict and visualize actionable insights and inform better decision-making.

Benefits

- Ease of maintenance
- Enhanced security management
- Mobile friendly
- Multiple Asset Framework hierarchies
- Reduced number of displays
- Reduced field commissioning time
- Serves wide range of stakeholders

About 1898 & Co.

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