



## FORD Motor Company Implements Schneider Electric's Enterprise Energy Management System

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#### Installation drives energy conservation and results in significant overall energy consumption cost savings

Less than a year after global power and automation leader Schneider Electric launched a new Enterprise Energy Management (EEM) solution designed to facilitate smart monitoring of energy usage to drive conservation initiatives leading to cost savings, one end user, U.S. auto-maker Ford Motor Company, has reported positive results.

Historically, a six-week time delay existed between month-end and utility data reporting at Ford, resulting in missed opportunities for energy reduction and savings in procurement. Ford turned to Schneider Electric's Power Management Operation to customize its EEM software interface to integrate data from all Ford manufacturing sites in North America, while also communicating in near real time with utility meters to obtain electricity and natural gas consumption data.

Several primary objectives were identified for the new system: increase availability of utility usage and cost data to expedite keen decision-making; increase ease of benchmarking production vs. non-production periods; standardize formatting of benchmark reporting; and reduce purchasing cost of natural gas via access to accurate/timely consumption data to maintain tolerance within daily and monthly injection and withdrawal limits.

From a design and implementation standpoint, the new system needed to efficiently obtain and collate data within individual plants/facilities, and then transmit that data succinctly and quickly to a primary off-site server managed by Schneider Electric. Software on the server then processed the data collected from multiple sites, along with other information from the utilities companies, and generated real-time reports and/or access to single or merged data, while also collecting. Therefore, unobtrusive technologies like wireless cellular communications over a secure VPN connection, were instrumental to a successful system implementation.



This screen capture is not from the Ford system. It is an example of a PowerLogic ION EEM dashboard screen that depicts similar information to that which is in use at Ford. PowerLogic ION EEM provides access to demand analysis reports that can be viewed hourly, weekly, monthly or customized to best serve energy conservation needs.

## Background: Schneider Electric's EEM Solution

Schneider Electric's EEM solution for industrial organizations is designed to help achieve higher energy efficiency while reducing energy-related emissions, costs and downtime. The solution combines Square D® PowerLogic® ION® EEM software with expert engineering services to deliver a customized set of energy modeling, dimensional analysis and visualization tools.

Integrating electricity and piped utilities consumption, weather and real-time pricing feeds, along with other relevant data inputs, the software reveals inefficiencies, tracks performance metrics and supports accurate budgeting exercises. When implemented, it delivers the actionable intelligence needed to support a complete energy and emissions management program, from the boardroom to the factory floor and all points in between.

The EEM system performs quality assurance on all data inputs. It then accurately displays energy usage patterns – benchmarking and comparing the performance of multiple facilities or processes to reveal savings opportunities and help managers set clear and achievable goals. A web-enabled dashboard presents key performance indicators (KPIs) to help programs stay on track and validate the resulting return on investment of efficiency projects. A built-in rate engine supports accurate utility bill analysis, cost allocation, forecasting and rate comparisons to optimize energy procurement. The software also offers advanced power quality event classification, filtering and correlation to quickly isolate those conditions that may be causing production disruptions or equipment damage.

## Technology Allows for Data Collection, Integration, Access

Monitoring equipment was installed at Ford manufacturing sites to read, tabulate and report a location's consumption data to a central off-site server. Usage data was transmitted within the facility utilizing state-of-the-art wireless technology to relay consumption data to a common point at the facility. Then, via cell phone and DSL technology, that data was transmitted from the plant to the externally-hosted software application.

When the off-site server received the data, the software application provided a common monitoring, analysis and reporting mechanism for the Ford manufacturing sites in North America. To provide additional flexibility and the ability to customize reports, a direct VPN connection to the database was also established.

## Project Management Snapshot

The project began with a site assessment. A Schneider Electric application engineer traveled to each site to gather relevant data and documents, created a basic design and gained tentative approval from Ford plant and corporate project stakeholders (leaders from electric and gas utilities were included along with ISP/infrastructure suppliers and





This screen capture is not from the Ford system. It is an example of a PowerLogic ION EEM dashboard screen that depicts similar information to that which is in use at Ford. The browser based PowerLogic ION EEM dashboard provides access to historical utility consumption data for benchmarking production vs. non-production periods to compare similar facilities.

other key decision-makers). Then, after Schneider Electric coordinated server and software acquisition and installation at its offsite Victoria, British Columbia Data Center, site-specific drawings were developed and installation began at each location.

Once installation was complete, the application engineer visited each site to inspect and verify operations, and coordinated with the remote data center while on-site to confirm 100 percent functionality. Finally, to make the system fully operational for operating personnel at each site and for the corporate client team, Schneider Electric coordinated extensive training with all necessary client groups via interactive on-site and web-enabled training programs.

### System Benefits, Measurements of Success

In the first year of this system's operation, Ford has reported several success measures. Schneider Electric's EEM solution succeeded in significantly reducing time and dollars, eliminating risk, creating benchmarks which continue to aid conservation efforts, and establishing real-time access to data.

- Energy cost savings. Accurate and timely consumption data has led to an overall reduction in the purchasing cost of natural gas. In fact, Ford anticipates savings in electricity and natural gas cost via peak demand reduction, improved weekend and non-production shutdowns and savings in natural gas purchasing through elimination of unauthorized usage and excess storage charges. The system also tracks equipment operations and system conditions to extend equipment life and reduce maintenance costs.
- Proactive decision-making. Schneider Electric's system has significantly reduced the time it takes for Ford to collect and report energy data. As previously stated, prior to the EEM solution, Ford faced a six-week time delay between month-end and utility data reporting. Now, a powerful analytical toolset delivers timely, real-time and historical information through customized web access and other methods to facility staff, departments and tenants to help them make better decisions about energy use. Also, at any time, key personnel can view personalized quick summaries of important statistics such as demand per month by time of use, and energy time of use by day of week and production unit.
- Eliminate risk. The new system can reduce financial risk through the use of key performance indicators, accurate forecasting, load aggregation, "what if" rate analysis and stronger energy contract negotiation. It also provides a means to identify, notify on, isolate and avoid reliability risks that can cause downtime, damage and data or service loss by responding quickly and optimizing backup systems.





- Benchmarks drive conservation efforts. Ford's ability to create meaningful benchmark data across all plants has helped them to focus energy conservation efforts via monitoring and analyzing 1) production vs. non-production periods, and 2) similar facilities using energy dollars/square foot and energy/unit. Ford can now profile and correlate energy usage with specific drivers to help identify opportunities to improve energy and building performance, benchmark efficiency against industry statistics, and formulate best practices. Also important, they're able to maximize the use of existing infrastructure capacity, accurately characterize the load impact of equipment additions, and avoid over-building new facilities.
- Faster access to data. The easy-to-use, web-based software dashboard has provided one-step access to real time and historical utility consumption data online in a common system for all plants/facilities. It seamlessly integrates energy information with other business and automation systems to provide any type of information, displayed in virtually any form. Load monitoring has improved as a result, as has the ability to manage processes, loads and onsite generation to eliminate utility penalties, support participation in demand response or curtailment programs, or respond to real-time pricing signals. In addition, Ford gained the ability to verify utility billing and accurately allocate energy costs to buildings, departments or processes.

Within one year, Ford has already seen very positive comprehensive energy conservation and cost reduction indicators. Schneider Electric's EEM system has produced a reduction in electricity consumption, and Ford anticipates a cost savings as a result.

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