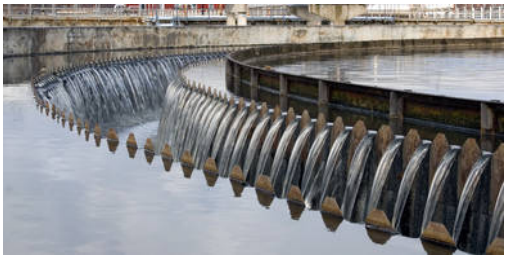
Customer Profile

Des Moines WRA cuts energy consumption 30% with Infor EAM Enterprise



Facts at a glance

Product: Infor EAM Enterprise
Industry: Public sector
Sub-vertical Industry: Metropolitan utility
Country: US

"Infor EAM Enterprise tunes our processes and adjusts maintenance strategies to optimize energy performance. Its capabilities are absolutely critical to achieve perfect energy management optimization."

—Bill Miller, risk and reliability manager, Des Moines Metropolitan Wastewater Reclamation Authority

About the organization

Situated in the capital city of Iowa, the Des Moines Metropolitan Wastewater Reclamation Authority recycles wastewater from a growing population of over 500,000 people located across the greater Des Moines geography. The Authority connects to participating communities using a network of 125 miles of piping, ranging up to 144-in. in diameter. In 2011, the primary facility treated almost 25 billion gallons of hauled liquid waste and wastewater. The main treatment facility first came online in 1987 at a cost of $250 million and has an additional $300 million of improvements scheduled to occur over the next decade. To learn more about Des Moines MWRA, visit http://www.dmmwra.org/

Setting the strategy

Nearly 50% of the city's monthly power costs involved energy consumption by the Des Moines Metropolitan Wastewater Reclamation Authority (WRA). With a monthly electricity bill of over $100,000, managing this expense represented a significant challenge.

Bill Miller, risk and reliability manager at the WRA, describes the situation when he was first asked to reduce energy consumption across WRA's multiple facilities: "We knew we had a massive challenge on our hands; the energy we were consuming created a significant negative economic and environmental impact. It's imperative that we operate more efficiently and maintain all our assets in a way that supports peak performance.

"We adopted the saying that 'You can't manage what you can't measure,' and began identifying what we needed to quantify in order to provide an accurate picture of how each component in the environment was performing."

Getting business specific

To give him the necessary visibility and control, Miller created a three-tier architecture:

- A top-tier functionality to provide intelligent analytics, visualization, and management capabilities
- A middle-tier data repository to store all the information gathered from assets
- A base layer to collect real-time data from individual assets

Solutions from the vendors Rockwell and Hach Wims executed the lower two tiers.

"After doing my due diligence, I had absolutely no hesitation in selecting solutions from Infor® to provide all of the top-tier components," recalls Miller.

Implementing Infor EAM Enterprise around a set of maintenance best-practice policies provides a solid foundation for running each facility. Infor EAM Asset Sustainability and Infor EAM Advanced Reporting modules provide an enhanced set of tightly integrated capabilities.

Seeing results

The WRA uses Infor EAM Enterprise to assist in optimizing the efficiency of each asset through a suite of advanced analytic reports. Grouping similar devices together and noting any discrepancies in their efficiencies or deviations from manufacturers' stated performance parameters helps achieve this level of efficiency. Using the comprehensive maintenance history from Infor EAM Enterprise for each unit creates a detailed analysis of the root cause of sub-optimal performance.

Miller observes, "Infor EAM Enterprise's asset sustainability features provide us with a phenomenal energy management analytic capability. It allows us to easily identify lesser performers and to formulate the best strategy to correct the situation.

"As an example, Infor EAM Enterprise discovered a $17 an hour cost difference between running our best and worst performing air blowers, even though they were all identical models. By immediately switching over to the more efficient units and working out what to do with the sub-par units, we realized significant savings."

Miller and his team took the concept of optimizing individual asset performance a step further. "Each device's efficiency depends on a large number of dynamic parameters," he states. "Infor EAM Enterprise allows us to capture power consumption across a broad range of operating conditions—ncluding varying flow rates, well levels, head pressures, etc.—so that we can build up a detailed profile for each asset. If we have a high-demand day, we already know the pumps that give us the best efficiencies for a specific flow rate, so we can deploy the optimal combination of assets with the highest combined energy efficiency to meet the need.

"The asset sustainability features of Infor EAM Enterprise give us the ability to take a multi-dimensional approach to monitoring and managing our assets. We can view the performance of every unit to see that it's running at peak efficiency. We also can use a plant-level perspective to make sure that, at any given point in time, the combination of individual assets we have online help the whole facility run optimally."

While device efficiency is important, Miller knows it's only one piece of the puzzle. He notes, "Understanding how our local utility company charges us is another key component of our energy efficiency strategy. The rates are quite volatile and knowing the factors that trigger higher charges can provide very significant additional savings."

Utility rates vary across each day and even a single spike in consumption can lead to a higher pricing tier for the whole month since rates at peak demand times can be almost double normal tariffs. Miller observes, "Infor EAM Enterprise gives us the ability to identify peak consumption points and demand trends, offering the opportunity to make any required operational changes. Managing demand is the key to controlling electrical cost, so we drive consumption to the lowest rate through minimizing our peak demands. We use the information to control flow rates to avoid spikes in demand that would otherwise expose us to higher electricity rates for the full month.

"Also, by using data from Infor EAM Enterprise, we can accurately determine the best time to carry out maintenance on equipment. As many of our units power up as part of the service procedure, it's really valuable to identify the optimal time of day to do this. This is especially true when it's one of our high power assets, like a 2,000 horsepower process air blower. Unknowingly, we once fired these up during peak demand and flow times: In one month alone, we've been able to save an extra $30,000 using Infor EAM Enterprise."

Another core component of the energy efficiency initiative is the move to a Reliability-Centered Maintenance (RCM) methodology. Miller explains, "Effectively maintaining each asset helps it operate at peak efficiency. We've used Infor EAM Enterprise to tune our processes so that the maintenance team maximizes their available time and works on the right tasks to ensure that the whole plant operates smoothly."

Infor EAM Enterprise captures the problem, cause, and resolution of all issues at the work-order level. This allows the construction of a highly detailed profile for each asset and asset class, which is then used to proactively manage each component in the facility. Miller describes, "The results have been spectacular. Infor EAM Enterprise helps us implement a wide range of maintenance best practices that quadrupled the productivity of our maintenance operations."

He adds, “We’ve configured Infor EAM Enterprise to support condition-based monitoring to give us the earliest possible notice that detects a potential symptom of impending failure. Infor EAM Enterprise automatically generates alerts for any abnormal or out of tolerance conditions that occur. Using the asset history data, we can quickly remedy problems that could potentially impact plant operations and overall energy consumption.”

By using Infor EAM Enterprise to maintain equipment operations at maximum efficiency, we can extend life expectancy by up to 20%, creating a substantial reduction in ongoing energy consumption and capital expenditures.

By understanding the specific operating characteristics of each asset, the WRA can also take an aggressive stance with its inventory management practices. Miller states, “We used Infor EAM Enterprise’s bar coding module to identify every asset across the mile-long plant and in storerooms. The information we get from Infor EAM Enterprise enables us to drop our inventory levels from $1M to around $200,000. Not only do I not need to buy a part ‘just in case’, I now don’t have to store or count it either. Infor EAM Enterprise provides the necessary usage and turnover reports to allow me to take $800,000 of parts off the shelves and return them to suppliers.”

In addition to the obvious financial benefits, the WRA’s continual focus on reducing energy consumption yields significant improvements in its overall carbon footprint, with an estimated annual CO^2 emissions reduction totaling 553,924 kilograms.

The methodical approach taken by the Des Moines Metropolitan WRA has helped the organization become one of the first in the country to achieve PAS 55 Certification. PAS 55 is an international standard that focuses on the optimal management of physical assets, and includes aspects of continuous improvement, strategy, and risk management. Miller confides, “We’re very proud to be PAS 55 certified. We use Infor EAM Enterprise as the foundation for our efforts and it is a major factor in attaining this certification.”

In addition, the Authority has won the prestigious Environmental Excellence Award from the governor of Iowa for the use of Infor Enterprise Asset Sustainability. “Infor EAM Enterprise’s custom reports track hourly running costs and enable us to easily demonstrate the positive results of everything we’re doing,” notes Miller. “The graphical output is very intuitive and extremely compelling.”

The Wastewater Reclamation Authority’s energy conservation efforts also offer additional benefits. Miller describes, “Last year alone we brought in four grants that totaled well over $1M, and a lot of this was directly attributable to the implementation of Infor Enterprise Asset Sustainability.

“Iowa is not unique in providing energy-related grants and incentives. I believe that the majority of states are trying to encourage this type of project. Sometimes it's the state department of energy, other times it's the economic development authority, but once you’ve identified the right agency, there are some really substantial opportunities for additional funding to be had,” Miller says.

Despite growing communities and escalating energy costs, the Des Moines Metropolitan WRA continues to dramatically reduce its utility charges. Miller concludes, “Just on energy costs alone, we’ve been able to reduce our original payment by over $250,000 a year and we’re seeing monthly bills now drop to as low as $65,000 versus the previous average of over $100,000.

“Studies have shown that the energy costs for running a motor are often five times the initial purchase price, and can be responsible for 95% of an asset’s lifetime operating cost. When you couple these facts with the environmental impact of wasting energy, it’s just imperative to manage resources responsibly.

“Infor is a very forward looking organization; the company is a visionary in the field of asset sustainability. It definitely leads the pack and continues to come out with some of the greatest add-on features imaginable. I’ve seen just about every so-called competitor in the business over the last few years but it’s always Infor that continues to impress me.”

Doing business better

The Wastewater Reclamation Authority benefits from additional Infor solutions, including Infor EAM Mobile, Infor EAM GIS, Infor Ming.le™ and Infor ION®. “The strength of the Infor solutions portfolio is incredible and having each component already integrated is fantastic. If we can imagine it, Infor usually finds a way for us to make it a reality,” states Miller.

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