

OUT OF THE DARKNESS

Energy Insights for McWane Ductile // **Case Study**

SITUATION

McWane is a 100-year-old company that has survived and thrived for generations because it thinks, acts and innovates with the needs of future generations in mind.

The McWane Family of Companies cover a breadth of products that are essential to the infrastructure and daily life of people around the world. One of those companies, McWane Ductile, manufactures ductile iron pipe which brings safe, clean water to our homes and businesses.

Within the foundries that produce ductile iron pipe, iron is melted and poured into casting machines. The equipment used in foundries is more heavy-duty than high tech.

As a member of the Department of Energy's Better Plants Program, McWane has a target of reducing energy intensity by 20% over a 10-year period across all of their U.S. operations. Given the amount of energy required to melt iron and create ductile iron pipe, how would they identify meaningful energy savings that could help McWane meet their sustainability targets? Furthermore, could the facility management team implement an energy-savings project that would have an acceptable ROI? While saving energy and becoming more sustainable is a good thing, any project needs to be done in a way that is profitable, otherwise it could jeopardize the health of the entire organization.

There were a number of reasons to not start an energy-savings project with a foundry. But, for McWane and Synapse, foundries are no place for excuses, but rather hotbeds for innovation.

"We are constantly learning new things. But one thing we've always known - beyond any doubt - is that significant advancement does not occur without an aggressive vision."

Our vision: Recast the expectations of iron production. Make it a safer environment for our people at the plant. And make it cleaner, more efficient, for every person on the planet."

Keith Mallett
General Manager, McWane Ductile



THE BRIEF

“We asked Synapse to help pinpoint the equipment that was wasting energy and help quantify those energy costs.”

Keith Mallett // General Manager, McWane Ductile - New Jersey

INSIGHT

Solving for the McWane challenge started with a simple, but pivotal shift in mindset. While most IoT companies break “things” down into one of two categories: “smart things” or “dumb things”, we see it differently.

When we looked at McWane’s foundries, we saw processes that had stood the test of time for a hundred years, and a company that had continuously refined those processes, adding advancement on top of advancement, during that period.

However, the team at McWane Ductile had pushed the limits of getting insights out of their existing equipment – but to think of it as “dumb” was far too simplistic. That conventional way of thinking would lead one down a path of replacing “dumb” equipment with “smart” equipment. In fact, that is exactly the path most IoT companies propose to manufacturers.

Not us.

What we saw, instead, was an opportunity to take their existing equipment, attach a modern monitoring system, and reveal the information that had always been hiding there.

To eliminate waste, we needed to reveal it first.

“With the Synapse products and insights, they were able to reveal data that allowed us to better monitor our electricity expenditures.

They were able to show us how our equipment was performing, so that we could better manage our costs.”

Norman Rankis

IT Manager, McWane Ductile - New Jersey



THE FOCUS

With so many opportunities hiding in the shadows, our first solution was an obvious one: embed the SimplySnap Energy Insights solution into the factory. More than simply delivering a few tech-enabled incremental improvements, we sought enduring innovation by deploying SimplySnap.

Energy Insights enables facility managers to implement energy saving processes now and drive continuous improvement for years to come. **We understood the fundamental truth facility managers face every day:**

They can't manage what they can't measure.

At the start of our engagement, the only meaningful measure of energy consumption the facility team had to manage against was the monthly utility bill. This presented a daunting opportunity, but very little in terms of meaningful help.

We did not know exactly what we would find, but we did know this:

Hidden in the pitch-black recesses of their utility bill were vast amounts of data that could explain when, where and how energy was being used.

Our focus was to illuminate that data, so that the McWane team could eliminate waste.

ILLUMINATE & ELIMINATE

"Many people confuse technology with innovation. Technology is not innovation. Technology is only a means to implement innovation."

Innovation is observing what is, imagining what could be, and then working with, through and around existing policies, practices, regulations, and protocols to find a way forward to the future state you believe can become real."

Rod Reisner
AVP, Director of Innovation & IoT Programs

THE SOLUTION

The energy required to change iron feed stock into liquid and cast it into solid ductile pipe is significant. But, within that task, there are other processes, departments, and supporting equipment where energy is being consumed, and perhaps, wasted. Hidden within the utility bill were thousands of opportunities for improvement. The facility managers at McWane Ductile just didn't have the right tools to discover them.

While this might sound like a daunting task that would require extraordinarily expensive technology, Synapse found a way to deliver the insights required for a cost that was immediately returned after the first insight was discovered and acted on. In fact, the central piece of technology that allowed us to turn decades old equipment into data-producing smart-tech was an off-the-shelf, current transducer (CT) and the insights gained from implementing the Synapse energy management system, SimplySnap.

We clamped the CTs onto the facility's individual power feeds to specific equipment we wanted to monitor. No expensive equipment replacements or complex retro fits.

With the Sense 4-20s and the CTs on the circuits, SimplySnap was able to monitor and wirelessly transmit the data to the site-based SS450 gateway. The gateway sent that data to the cloud – no wires. Which meant very low installation cost compared to typical, hardwired deployments.

With the advanced energy-cost algorithm built into SimplySnap Energy Insights, the data that was once hidden away within the power bill was now visible.

Providing the visualization of that data was the next step that proved to be the key factor in identifying areas for improvement. In this case, there were two key pieces of data that could enlighten the team's decision-making abilities:

First, the average rate of their energy cost from the utility company was determined and then applied across the facility. Rather than just seeing the rolled-up monthly charge and total

energy consumption for the period, with SimplySnap managers could see that data more granularly – costs by time of day, by equipment, and groups of equipment.

Secondly, the team at McWane Ductile was then able to look at the consumption and cost data from SimplySnap and compare it to their production schedule and known down times to identify energy-savings opportunities.

Waste was left with no place to hide. Plus, we were able to reveal what that waste was costing the plant each hour, day, week, month and year.

With these data points our Energy Insights platform was able to:

1. Establish visualizations and thresholds for energy use by equipment group and specific pieces of equipment.
2. Alert managers when the energy consumption for specific equipment exceeds established thresholds. This allowed operators to identify potential issues, including waste, as they were happening so they could react accordingly in a timely manner.

"To solve any problem, you need three things: First, you have to be able to see it. Second, you have to be able to measure it. And third, you have to be able to act on it before it's too late.

And for the record, by the time it shows up on a power bill it is too late."

Keith Mallett
General Manager, McWane Ductile

THE IMPACT

The impact of Energy Insights was profound in its simplicity. Under the spotlight of actionable data, costly waste was literally shut down with a flip of a switch. In fact, the entire install, paid for itself in a single insight: Unnecessary air compressor system use.

Facility personnel paired data Synapse provided from the individual air compressors with the times for the scheduled production times. The discovery: The compressors were left on, even when they were not scheduled for use. In fact, management discovered that several compressors were running all the time, even on weekends when the plant was closed. Previously, the cost of running those systems outside of production hours was unknown, but with SimplySnap Energy Insights, the energy costs for operating that equipment were quantified.

Synapse uncovered, quantified, and put a cost on a problem McWane Ductile didn't even know it had. The facility team immediately solved it by implementing two key changes:

Behavioral change: The team scheduled shutdown of portions of the air compressor system during non-production hours on nights and weekends.

Process change: Rather than running the entire system during periods of reduced operations, the team shifted the weekend load to a smaller, less expensive air compressors.

Those changes save McWane Ductile \$84,000 each year in direct energy cost. Plus, the payback period for implementing Energy Insights for this project was a short 5 months.

PAYBACK:

5 MONTHS

ANNUAL SAVINGS:

\$84,000

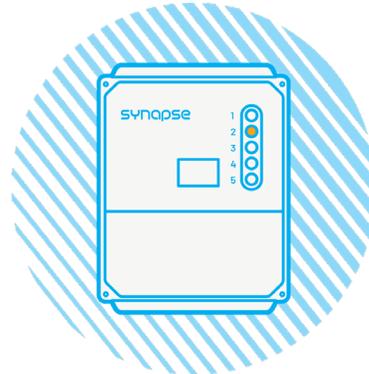


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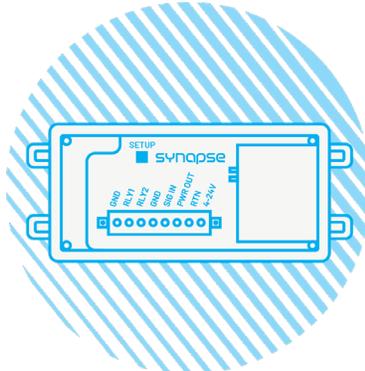
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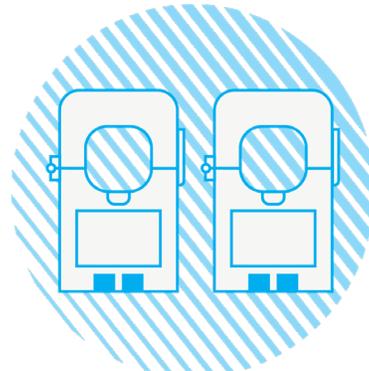
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1. SimplySnap Cloud
2. Central Base Station
3. Sense 4-20
4. Current Transducers (CTs)

Visit www.synapsewireless.com to learn more or speak with one of our sales representatives.

THE FINAL WORD

“ It has been great to work with McWane Ductile to uncover these opportunities to reduce energy waste.

As we implement our energy solutions in other departments and equipment groups, we are confident that we will help them meet their long term sustainability goals to reduce their overall energy consumption.”

Paul Woods // Chief Solutions Officer, Synapse Wireless