One Business Energy Conservation Program







Magnetation

Spring 2015

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> Larry Lehtinen, CEO Magnetation

Magnetation Attracted to Energy Efficiency

A brand new industrial plant roared into operation near Grand Rapids, Minn., just in time to toast the New Year. On December 31, 2014, Magnetation, LLC, (Magnetation) announced that its new Plant Four was up and running, producing iron ore concentrate a full quarter ahead of schedule. For those who watch the company, the early completion was just another example of how Magnetation is growing stronger through improved efficiency in energy lead use and operations.

Magnetation was built on extracting maximum value from available resources. A joint venture between Magnetation, Inc., and AK Steel Corporation, the company recovers high quality iron ore concentrate from previously abandoned iron ore waste stockpiles and tailings basins. Its proprietary process requires robust, reliable electricity, but company officials are also committed to energy-efficient technologies that help Magnetation manage costs and get the most for its energy dollars.

Minnesota Power's Power of One[®] Business program has been a valuable resource from early in the growth-oriented company's history—convincing decision makers that energy conservation was good business.

"Our team met with Magnetation when its first plant was under construction," said Tanuj Gulati, of Energy Insight,

"Once we received the first rebate check and understood the scale of what energy savings could mean, it changed the way we purchase things."

Bernard Knapp, Electrical Engineer Magnetation Inc., a consultant to the Power of One[®] Business program. "Even though that plant was not served by Minnesota Power, we heard they were planning to build more facilities in northeast Minnesota and wanted to make sure they incorporated energy efficiency."

Today, Magnetation operates iron ore concentrate plants in Keewatin, Bovey and Grand Rapids, Minn., plus an iron ore pellet plant in Reynolds, Ind. "Magnetation has been in a major expansion mode for the past five years, but energy efficiency and incentives were important to them back in the beginning, as well as today," said Craig Kedrowski, lead energy efficiency analyst, Minnesota Power.

"As the company has grown, our plants have gotten bigger, we are using more power and markets have tightened. We need to operate very efficiently," said Dave Chappie, vice president of engineering. "Energy is a direct part of our cost per ton—it is a big deal."

Since 2010, Minnesota Power's Power of One[®] Business team has helped Magnetation identify and install many energy-saving technologies that fit the industry, reduce energy costs, lower operation and maintenance costs, qualify for incentives and have fast paybacks. They range



from energy-efficient fluorescent and light emitting diode (LED) lighting to variable frequency drive (VFD) motors, high performance pumps and ENERGY STAR® transformers.

Bernard "B.J." Knapp, electrical engineer in Magnetation's process automation group, works directly with Minnesota Power representatives to identify energy-saving opportunities that make business sense. At first he feared researching and securing rebates for energy conservation projects would take away from commissioning the plant, but Minnesota Power quickly won him over with its knowledge, support and customer service.

"They do all of the legwork," Knapp said. "I use our reporting tools and provide data on energy usage. We also provide them with information about projects we are planning, and they do the rest. Once we received the first rebate check and understood the scale of what energy savings could mean, it changed the way we purchase things."

In 2014, Minnesota Power was part of the team when Magnetation expanded its Plant Two in Bovey. The company installed VFD motors on pumps throughout the facility.

"Minnesota Power helps us evaluate return on investment ... if the payback is around three years or less, we go for it. We have to preserve capital and manage resources as we build."

> Mike Hight, Plant Electrical Engineer, Magnetation

"We mine waste material and move dirt through a process that screens, slurrifies and concentrates the ore," Chappie said. "Our whole operation requires pumps, motors and conveyors that use electricity. With VFD motors, pumps can be run slower or faster to maintain the proper flow instead of having to run at full power, pedal to the metal." Upgrading to VFD motors is expected to save more than 7 million kWh per year, reduce annual energy costs by nearly \$262,400, and lower annual operating and maintenance costs by nearly \$72,000. These choices qualified for more than \$108,000 in rebates from Minnesota Power and will pay for themselves in just over three years.

"Minnesota Power helps us evaluate return on investment," said Mike Hight, plant electrical engineer, Magnetation. "The upfront capital investment for energy-efficient equipment is higher, but, if the payback is around three years or less, we go for it. We have to preserve capital and manage resources as we build."

During Plant Four construction, company officials installed transformer systems that are well above standard efficiency, qualifying for nearly \$23,500 in rebates, saving more than 670,000 kWh and avoiding over 76 kW in demand. Applications are still being processed for VFD motors and new controls on magnetic separators in the newly constructed plant—projects that could save Magnetation millions of additional kWh of electricity and thousands of dollars per year.

Saving energy also is an environmental win for Magnetation, which values bringing its plants on line in a way that sustains the environment. Every kilowatt hour saved translates into avoided units of non-baseload carbon dioxide emissions.

"Plant Four will be our largest concentrate production plant, and we expect it will also be our lowest cost concentrate operation," said Larry Lehtinen, CEO, Magnetation, in announcing production at the new plant in December 2014. "We anticipate it being a flagship operation providing highpaying jobs on the Iron Range for many decades to come."

"Working with Magnetation really fits the Power of One[®] Business energy conservation model involving an ongoing relationship and developing multiple projects rather than the 'one and done' approach," said Craig Kedrowski. "They have been and continue to be an excellent partner with us."

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Learn more about Power of One[®] Business, Minnesota Power's commercial, agricultural and industrial energy conservation program by calling **218-355-2909** or visiting **www.mnpower.com/OneBusiness**