
Conductix-Wampfler Helps CN Extend the Life of Their Equipment and Achieve Operational Efficiencies

The operation of every bulk terminal is ruled by the simple principle “time is money”. To stay competitive, terminals must find ways to minimize revenue losses due to equipment failure. One trend that is gaining momentum is that bulk material handling operators are dedicating more resources towards extending the life of their capital equipment in an effort to reduce disruptions from unscheduled downtime.

The Duluth Ore Dock, part of CN which trans-loads billions of dollars’ worth of taconite and limestone to steel mills throughout the Great Lakes region, is a prime example. At their Duluth and Two Harbor facilities, CN operates some of the largest conveying systems, moving iron ore pellets at a rate of 3,000 and 6,000 tons per hour. CN operates a combination of Stackers, Trippers, and Iron Ore Bridges, all of which are electrically powered. As they work to move Minnesota’s iron ore resource before the cold season hits, equipment issues and maintenance can severely impact the success of the season.

The problem

In the spring of 2014, CN Duluth was experiencing issues with a 51-year old cable reel that supplied the power to the tripper. The old cable reel was unreliable and required supervision during each move to keep it functioning properly. Failures in the cable reel’s operation were known to result in up to 5-hour downtimes while the cable was manually readjusted. This was not only extremely inefficient but a potential safety hazard as well.

Recognizing the need to upgrade their equipment, CN consulted with Conductix-Wampfler, a global leader in electrification, and a

trusted partner in several prior CN Duluth projects. CN successfully operated a Conductix-Wampfler monospiral cable reel for 20 years and was very familiar with the high performance and low maintenance design of the Magnetic Coupler drive. According to Mark Zuroske, Market Development Manager for Mining and Bulk Material Handling in the Americas, “during difficult economic times and limited CAPEX budgets, Conductix-Wampfler is working closely with customers to help them extend the life of their equipment.”

Factors increasing the complexity of the job were the increase in the size and length of the cable required, and a tight timeline for installation given the need to have the new cable reel operational prior to the onset of winter.

The Solution

Placing their confidence in Conductix-Wampfler’s ability to meet their deadline and needs for performance, Conductix-Wampfler and CN’s engineering teams worked together on the technical specifications of the project. The new cable reel would have to accommodate an active travel distance of 1,600 feet (490 m) and manage a 4/0 AWG 3 Conductor SHD-GC 5kV All-Temp Industrite cable manufactured by Draka (Prysmian Group). They settled on Conductix-Wampfler’s new Level Wind Reel (LWR). The LWR design, originally developed by Conductix-Wampfler France, incorporates a unique skeleton spool with an internal support design that strengthens the spool, while maintaining maximum rigidity and an overall lighter reel-weight package.

With a total weight of 11,000 pounds (5 t), the LWR offers easy accessibility for technicians to access the inside of the unit. The reel design also helps with the ventilation of the cable, thus lowering the operating temperature, the de-rating factor, and ultimately the size of the cable. The Level Wind Reel is powered by Conductix-Wampfler’s Permanent Magnetic Coupler drive

(MAG Drive) which offers numerous advantages such as smooth constant torque, no friction, no loss of cable tension, and low inertia even when cable tension is high. Flexibility in this type of heavy-duty application is key to minimizing downtime and achieving long equipment life.

The new LWR cable reel, adapted from the French design, was manufactured by Conductix-Wampfler USA in Omaha, Nebraska. It was ordered in July of 2014 and delivered to CN's Duluth facility in mid-September. This enabled CN to have the new reel installed and operational before the 2014-2015 winter season. "This application is a testament to Conductix-Wampfler's ability to respond quickly to the need for a customized, highly engineered solution to meet our customer's requirements" says Mark Schechinger, Engineered Product Specialist at Conductix-Wampfler USA.

Nearly one year after installing the LWR cable reel, CN is already well on its way to achieving higher degrees of operational safety, increased productivity and cost savings.

CN

In business for nearly 100 years, CN is a world-class transportation leader. CN offers the only North American Railroad service that extends to three coasts. The company has regional assets in Duluth, Proctor, and Two Harbors. With strategically located Intermodal Terminals, CN has access to 75 percent of the U.S. population and all major Canadian markets. Well known as an indispensable link in the supply chain for natural resources like grain, coal and forest products, CN is also a prime mover of consumer goods and industrial products.

The Duluth Ore Docks

The Duluth Ore Docks (Formerly part of the Duluth Missabe Iron Range Railroad - DM&IR) is one of the longest iron ore

dock in the world at over a half mile long. At the Duluth intermodal facility, taconite and limestone are loaded from the railcar to the vessel and vice versa. DMIR Dock 6 first started in 1918 as a gravity-feed dock. In 1965, an adjacent pellet storage area was built that now covers nearly 45 acres. A 1981 renovation added a conveyor loading system, and a receiving hopper was added in the early '90s to handle inbound bulk material vessel cargoes.

Pictures



Caption: The new Level Wind Cable Reel accommodates an active travel distance of 1,600 feet (490m) and manages a 4/0 AWG 3 Conductor SHD-GC 5kV All-Temp Industrite cable by Draka (Prysmian Group)



Caption: The Duluth Ore Dock – one of the longest iron ore dock in the world

Conductix-Wampfler

Conductix-Wampfler is the largest global producer of systems and equipment for transferring energy and data for applications such as cranes and other material handling equipment, people movers, light rail systems, amusement rides, and many types of automated machines. The company has one critical mission: To provide energy and data transmission systems that keep vital operations running 24/7/365. Their rugged, low-maintenance products have been proven over time in the most demanding industrial environments and are backed by a combined worldwide sales and service network unmatched in the industry.

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