MAGNETEK
MATERIAL HANDLING

MONDEL BRAKES HELP WIN THE GAME!

Miller Park, home to the Milwaukee Brewers Major League baseball team, was in need of some "relief "— and Magnetek Material Handling assisted with the "save."

Milwaukee's one-of-a-kind ballpark features traditional architecture with a unique fan-shaped retractable roof. The 25-million pound, 7-panel design opens and closes in about 10 minutes. Each moveable panel is supported at its pivot end (behind home plate) and at its running end (beyond the outfield). Ten bogies (referred to as end-trucks in the crane industry because they consist of the truck frame, wheels, bearings and axles which support the bridge girders) open and close the roof. These bogies run on a curved rail system. Although Miller Park's retractable roof is unique and provides protection from the elements, it has required design changes to improve performance.

Miller Park's Operational Issues

In 2003 the retractable roof at Miller Park required improvements at the running end of each of the movable panels. The Southeast Wisconsin Professional Baseball Park District, part owners of Miller Park, hired the engineering firm Hardesty & Hanover, LLP of New York to analyze the situation and provide a recommendation.

H&H Bogie Recommendations

After extensive evaluation, Hardesty & Hanover (H & H) recommended the bogie system be redesigned to improve performance. All 10 existing two-wheel bogies would be replaced with four-wheel bogies containing the drive train assembly. The drive train consisted of a new motor, brakes, and gear box assembly. The new bogie would now allow the weight of the load (roof panels) to be equally distributed over four wheels versus the original two wheels—all within the height, width, and length restrictions defined by the existing structure.

Brakes are Critical Component of Drive Train System

Brakes are an integral component of the bogie drive train systems. They assist with the stopping and holding of the stadium roof panels. It was essential that the brakes used in this project feature a rugged design that could consistently perform in harsh environments. Hardesty & Hanover selected Magnetek's Mondel 10" AIST Mill Duty AC Thruster Brakes because of our proven reliability on previous H & H moveable bridge projects. Our high quality and cost-competitive brakes offered easy initial installation, adjustment, and start-up, as well as three limit switches that provided feedback to the control system. Our nitrided steel components were also viewed as critical to future performance.

According to Mike Astemborski, Business Development Manager for Magnetek's Mondel Brakes, "Because of our extensive application expertise, quality and service, we were chosen over other brake companies." Astemborski also added, "It was a great win that a Milwaukee-based company was selected to be a part of such an important project. We are now associated with a major Milwaukee landmark!"

The initial testing of the new bogie system was successful. Miller Park's new roof and the Milwaukee Brewers were ready for a fantastic 2007 season. Play ball!

Capabilities

Whether you're specifying new equipment or modifying your existing mechanical drive system, Magnetek offers a Mondel Braking System to meet the requirements of your specific application. Our product range includes:

- General-purpose industrial shoe brakes (200S) offering flexibility for a variety of industrial and mining applications and environments
- AIST-NEMA mill duty shoe brakes (300M) for use in harsh environments
- Heavy-duty disc brakes (400D) for the most demanding high-speed, high-performance applications
- "Drop-in" brakes designed to match the footprint of the brake to be replaced
- Custom engineered brakes created to meet specific application requirements
- The "Brake by Wire" Braketronic™ System, which provides variable torque control of Mondel Hy-Thrust™ operated shoe or disc brakes

Whatever your needs, Magnetek can provide the solution. Contact your local Magnetek Material Handling Sales Representative or Magnetek's Inside Sales Department at 800.288.8178 for more information.

What is a Bogie?
A Bogie is a type of short end truck that is attached to the end of one girder or to a connecting member if more than one truck is utilized per girder. Bogies are used when the design of the runway necessitates more than four wheels on the crane.

Miller Park's Bogie System
A bogie system moves each roof panel at Miller Park back and forth and is comprised of three basic systems:
(1) the guide system
(2) the 4-wheel bogie containing the drive train assembly
(3) the rail support system

The guide system guides the bogies as they travel along their circular path, as well as provides restraint against tipping over. In turn, the bogies transfer the weight from the moveable panels to the fixed structure through the rail support system. Thruster brakes stop and hold this movement. The bogie's frame supports subsystems such as: wheel assemblies, an expansion assembly, drive machinery, upper guide rollers, and lower guide rollers. The rail support system transfers the weight of the roof from the bogie wheels to the fixed structure.

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