Altra® Motion

Articles & Application Profiles

Custom Engineered and Manufactured Solutions for the Metals Industry

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Ameridrives
Bauer Gear Motor
Delroyd Worm Gear
Nuttall Gear
Twiflex
Witchita Clutch

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Ameridrives
Altra Industrial Motion

Application Profile

Products

SM38 Mill Spindles

Application

Rolling Mill Roughing Stand Drives

Highlights

- Spindles are 38” dia. by 13 ft. long
- Each unit has a torque capacity of 80,000,000 in. lb.
- Ameridrives Advanced Gear Design with fully-crowned teeth increases torque capacity by 300%
- Mill rotation speed: 65 RPM (870 ft./min.)
- 10 total spindles delivered (8 installed; 2 spares)

A large Midwestern steel mill was experiencing excessive downtime due to frequent spindle repair and replacement on their hot strip mill roughing stand drives. The roughing mill work rolls require extremely high torque to compress/reduce 10” thick automotive quality heated steel slabs down to 1”- 2” thick. The mill contacted Ameridrives Couplings based on superior Ameridrives spindle performance at another of the company’s sister mills.

Five (over/under) pairs of Ameridrives Model SM Mill Spindles were supplied for five continuous pinion roll stands. The spindles are 38” diameter by 13 ft. long and provide 80,000,000 in. lb. peak torque. The spindles’ roll-end adaptor features a “flatted” bore, commonly used in mills for extreme torque capacity. The drive-end adaptor was shipped separately for off-site pinion mounting.

Model SM Mill Spindles feature Ameridrives Advanced Gear Design. The hub gear teeth are fully-crowned to provide maximum torque capacity and misalignment with minimum backlash. One-piece, high eccentricity molded lip-type seals, designed for operation under full misalignment conditions, provide the most effective closure available to keep lubricant in and contaminants out.

The customer is very pleased as mill efficiency has increased significantly since the Ameridrives spindles were installed. The units are expected to run for years (vs. months using original spindles) with little more than routine greasing.

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P-1935-AC 4/18

Ameridrives
Altra Industrial Motion

Application Profile

Products

Modified Americardan 3285 Universal Joints

Application

Steel Mill Slab Caster

Highlights

- Integral tapered key or face pad developed for roller ends of U-joints
- U-joints compensate for approximately 10-degree angular misalignment and shock loads of up to 800,000 in. lb. torque
- Tapered key allows for easier, more reliable connection of U-joints to segment roll spools
- Mill rotation speed: 8 RPM (5ft./min.)
- 11 pairs of U-joints were modified

The original U-joints installed in this demanding application featured split-flanged yokes. The driven (segment) ends of the U-joints pass through the sidewall of the segment frame and position within 12” of a heat/water wall. The tight space constraints did not allow full access to the roller end of the U-joints. This resulted in mounting bolts that could not be tightened to the torque specifications.

Over time, the loose bolt connections between the spool and split-flange yoke (driven end) allowed the key to shift, causing the keyway and holes to become elongated in the mated flanges. This caused premature wear on the segment rollers, segment bearings, and flange yokes, resulting in uneven torque loads being transferred to other drives which over-torqued the next immediate segment, eventually causing the cross to fail within the flange yoke assembly. In some cases, slabs would have to be stopped inside the caster which required them to be cut out.

Ameridrive engineers’ extensive U-joint experience with steel mill applications allowed them to develop a creative new facing connection that solved the customer’s dilemma. The solution was an integral tapered key or face pad design for the roller end of the U-joints to replace the straight face key flange yokes. The new face pad configuration featured four raised, wedge-shaped integral keys and required only four mounting bolts versus the typical eight-bolt design. With the enhanced reliability of the new U-joint modification, the customer’s up-time increased and slab quality was improved.

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P-1990-AC 4/18

Ameridrives
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Application Profile

Product

Americardan Model U3440 Universal Joints

Application

Cold Strip Steel Mill

Highlights

- U3440 units feature 553,000 Nm torque capacity
- Special carburized steels and custom bearing steel rollers
- Lightest weight
- Closed eye one piece yokes
- Replaceable inner race bearing package
- Zero radial clearance bearing package
- Built-in, 4-spring packs on the roll end knuckle for roll change when required
- Interchangeable with any gear spindle in any stand in any top or bottom position

In response to more challenging emission standards and consumer demand for more efficient autos, steel producers have begun to develop thinner, lighter weight auto gage steels that perform as well and look better than previous materials. These thinner steels are much more sensitive to surface damage from vibrations of rotating mill work rolls.

A major steel producer was experiencing excessive wear and vibration of the gear spindles on their 5-stand tandem cold mill with various spindle brands lasting only 6 months. Over time the surface damage to the steel from the spindle vibration (chatter) caused the operator to either slow the mill down, reducing production by 20% to reduce the vibration, or replace the spindles completely. Two spindles on each mill stand connect the pinion gearboxes to the primary upper and lower work rolls that compress the steel in a cold condition.

Ultimately, Ameridrives was called to provide a more reliable spindle. The Ameridrives advanced gear design spindles lasted twice as long as the competitor units. Soon after, Ameridrives application engineers approached the mill with an even better solution. They recommended that all the gear spindles be converted to universal joints which would reduce surface damaging vibration almost completely, while allowing the mill to run at faster speeds.

After testing competitive models, the mill selected and installed Americardan Model U3440 universal joints which allowed the mill to run at record-setting production levels with reduced vibration and minimal related surface damage. The new U-joints reduced lubrication manpower, lube and clean up costs by approximately $120k annually compared to a grease lubricated gear spindle on a 5-stand mill.

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P-7766-AC 4/18

Ameridrives
Altra Industrial Motion

Application Profile

Product

Custom Americardan Universal Joints

Application

Seamless Tube Piercing Steel Mill

Highlights

- Special U3575, U3675 and U3750 universal joints supplied
- Rebuilt existing OEM knuckle assembly
- Custom cross and bearing package to fit existing customer components
- Drop-in knuckle spare replacements
- Replaceable inner race bearing package to reduce future repair costs
- U.S. engineering and manufacturing

A leading Midwest seamless tube piercing steel mill was experiencing repetitive OEM universal joint knuckle failures on their mandrel and piercing mills. The original OEM universal joint knuckles would catastrophically fail without warning, turning rollers and other component fragments into projectiles which created a major safety concern. Failures were unpredictable, with some breaking down in days, weeks, or months, creating substantial delays and often shutting down production.

Realizing the gravity of the situation, the local steel mill distributor, Motion Industries, approached Ameridrives to review, inspect, and analyze the current designs in an effort to improve overall knuckle performance. Engineering studies were conducted along with Root Cause Failure Analysis (RCFA) and Finite Element Analysis of all key knuckle components, including the yoke, cross and bearing caps.

Ultimately, Ameridrives developed a new, custom-engineered knuckle solution that provided years of service compared to the premature failures of the original OEM universal joints. Ameridrives was also able to retrofit the existing yokes with new cross and bearing kits after verifying the strength of the existing material, saving the mill money. As the yokes began to wear beyond repair, Ameridrives had the ability to design and manufacture drop-in replacements.

In the six years since Motion and Ameridrives began the repair program, the steel mill has seen universal joint knuckle savings of approximately $6.7M. With most of the retrofits now completed, the mill expects an annual savings of over $2.7M. These estimates represent universal joint knuckle savings only and do not include the costs of lost production, associated maintenance, delays, or EHS issues.

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P-7824-AC 4/18

Ameridrives
Altra Industrial Motion

Application Profile

Product

Modified Amerigear Couplings

Application

European Steel Rod Mill

Highlights

- Modified gear couplings can be drilled to match existing installed flange BCDs from multiple European manufacturers
- Use of standard (in stock) Amerigear sleeve and barrel sizes allow for very short lead times
- Economical solution
- Fully-crowned gear teeth provide maximum load carrying capacity with minimum size

A steel mill in the Midwestern U.S. needed replacement gear couplings for its rod mill. The mill was built in Europe and utilizes more than 50 couplings that have non-standard bolt circle diameters (BCDs). The mill operators were having difficulty sourcing replacement and spare couplings in the U.S. since the European gear couplings do not meet AGMA standard exposed or shrouded bolting patterns. Ordering spares from the European OEM was costly and required long lead times.

In response to the problem, Ameridrives designed a version of its popular Amerigear coupling with a modified flange that can be drilled to match multiple European manufacturer's BCDs. Since the new couplings utilize a standard (in stock) Amerigear sleeve and barrel size, Ameridrives can hold the same short lead times as its standard AGMA couplings with only a modest upcharge.

The modified Amerigear couplings allow a customer to replace just a worn flex half as opposed to a complete coupling. The Amerigear design, proven in the metal mill industry for decades, offers higher misalignment, torque, and max bore ratings than European equivalent couplings.

Fully-crowned gear teeth provide operational benefits including maximum load carrying capacity with minimum size, maximum reliability and long life. Optimum separation of gear meshes permits high parallel offset capacity. Units feature accurately machined medium carbon steel hubs and sleeves. Positive-type O-ring seals keep lubricant in and contaminants out. Seals are enshrouded to prevent damage.

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P-8113-AC 7/17

Ameridrives
Altra Industrial Motion

Application Profile

Damage due to bolts coming loose on competitor U-Joint

Product

Custom Replacement U-Joints

Application

Steel Plate Mill Leveler

Highlights

- Custom, drop-in replacement U-joints
- Mill-proven cross and bearing design
- Cost-effective solution
- Longer service life in tough mill environments
- Forged steel construction
- Replaceable inner race bearing package
- Zero radial clearance bearing package
- Reduced lead times
- Made in USA

A large steel producer was experiencing failures of the U-joints on a plate mill leveler at their Indiana plant. The mill produces 160 in. wide plates that are then cut-to-length. The 350 mm U-Joints drive a series of 6 upper and 7 lower rollers that level 2 in. to 6 in. thick steel plates as they pass through.

The problem was that the original competitor U-Joint design utilized bolts to connect the bearing blocks to the shaft. Unfortunately, after three years of service, the bolts started to come loose under the leveler's high torque loads causing the U-joints to fail. The resulting downtime and costs associated with the U-joint replacement had become troublesome.

The mill contacted the overseas manufacturer of the original U-joints and discovered that replacement units would be very expensive and there was a 50-week lead time. The mill then contacted local sources, including Ameridrives, for a faster, more cost-effective solution.

The challenge was that the mill operators wanted a drop-in replacement for the existing U-joints so they would fit seamlessly with the other units on the leveler. After a careful examination of one of the failed competitor units, Ameridrives determined that they could easily manufacture completely new drop-in replacement U-joints to meet the customer's requirements. The new units would incorporate Ameridrives' mill-proven cross and bearing design vs. the competitor's bolt system. Ameridrives also suggested that they could manufacture new blocks, integrate Ameridrives cross and bearings and install the assemblies on the roll end of the customer's existing competitor U-Joints. The customer approved both design solutions and was back up and running at 100% in less than 6 weeks.

The mill operators were pleased to learn that the new replacement Ameridrives U-joints cost 40% less than the competitor units. The overall cost savings for the two new replacement U-joints and one block repair was close to $250K. Plus, the Ameridrives units are manufactured in Erie, Pennsylvania and only had a 20-week lead time while replacement bearing blocks could be manufactured in only 6-8 weeks.

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P-8127-AC 7/20

Ameridrives
Altra Industrial Motion

Application Profile

Product

High Torque Gear Coupling

Application

Steel Mill Roughing Stand

Highlights

- 80 in. diameter gear coupling
- Torque rating of 60,000,000 in.lbs.
- Advanced Gear Design with fully-crowned teeth increases torque capacity by 300%

A major steel manufacturer needed a large replacement gear coupling as part of an upgrade for a roughing stand drive at one of its U.S. mills. Positioned on the low-speed, high-torque shaft between the gearbox and pinion drive, the gear coupling rotates at approximately 10 RPM. The goal was to ensure that the new coupling was capable of transmitting the new, higher torques.

The mill contacted several coupling manufacturers, including the original coupling OEM. Ameridrives was the only coupling manufacturer that was willing and able to provide a reliable replacement coupling in the large size needed within the required delivery timeline.

The Ameridrives engineering team utilized the original drawing for the 20-year-old existing coupling to ensure that the new coupling was a size-for-size drop-in replacement. Ameridrives delivered a massive, torque-dense, size 230, 80 in. diameter gear coupling with a torque rating of 60,000,000 in.lbs.

Ameridrives incorporated fully-crowned tooth design which increases torque capacity by 300% and operates effectively with up to 3/4° of angular misalignment per gear mesh. The crowned gear tooth design also prevents end loading of the gear teeth when operated within the rated misalignment. The tooth design minimizes wear within the gear mesh.

Ameridrives has been and continues to be the “go-to” source for large-diameter/high-torque-capacity gear couplings.

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P-8697-AC 2/19

Bauer Gear Motor
Altra Industrial Motion

Application Profile

Product

BF Series Geared Motors

Application

Rail Rolling Mill

Highlights

- BF Series geared motors feature high-tensile cast housings
- Complies with NA and International standards, including NEMA, IEC, CSA, and CE
- Torque rating to 18500 Nm
- Low noise gearing
- IP65 Enclosure (Standard), IP66 (Optional)
- Completely enclosed, sealed against dust and moisture
- Corrosion protection COR01, COR02, COR03
- Connection Standard with CAGE CLAMP®

Bauer Gear Motor recently supplied geared motors destined for Russia. The geared motors will make their journey from Wadgassen to the Russian city of Novokuznetsk (around 563,000 inhabitants). There they will assist in the production of railway tracks for high speed trains. BF Series shaft-mounted gear units make up the bulk of the order. The geared motors will be used for transporting the formed steel to the straightening machine and cooling bed. Novokuznetsk, as one of the largest industrial centers in the coal mining region of Western Siberia and home to Russia's second largest rail rolling mill, is famous for these products.

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Bauer Gear Motor
Altra Industrial Motion

Application Profile

Product

BG and BF Series Geared Motors

Application

Steel Mill Assembly Line

Highlights

- BG and BF Series geared motors for high temperature applications
- Motors with ring-ribbed housings
- Torques up to 18500 Nm
- Stalling times > 5 min.
- Special roller table design
- Housings and gear wheels designed for heavy-duty shock loads

The ESSAR Group is one of the biggest companies in India, active within various business areas including energy, communications, transport, and building construction. ESSAR is especially strong in the steel industry with a cold rolling mill in Indonesia, a continuous casting plant in Vietnam, steelworks in Trinidad and Tobago, Minnesota, USA and recently, ALGOMA Steel in Canada.

With the help of Bauer partner, International Combustion (IC), located in India, ESSAR selected Bauer to provide geared motors for a new, five-meter long, assembly line at their Hazira, India mill.

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P-7078-BGM 10/18

Bauer Gear Motor
Altra Industrial Motion

Application Profile

Product

BG Series Gear Motors

Application

Annealing Furnace Conveyors

Highlights

- BG Series compact, economical gear motors feature high-tensile cast housings
- Complies with NA and International standards, including NEMA, IEC, CSA, and CE
- Torque rating to 18500 Nm
- Low noise gearing
- IP65 Enclosure (Standard), IP66 (Optional)
- Completely enclosed, sealed against dust and moisture
- Corrosion protection CORO1, CORO2, CORO3
- Connection Standard with CAGE CLAMP®

Georgsmarienhütte GmbH (GMH), a leading European steel supplier with over 1,400 employees, recently installed a new annealing furnace at their mill located just outside of Osanbrück, Germany. GMH had originally envisioned using servo geared motors to drive the new furnace's upstream and downstream conveyor systems. Dirk Faber, Bauer sales representative, immediately pointed out the considerably higher costs of the servo solution to GMH. Since each servo motor requires its own frequency inverter the notably lower-priced group drives are not applicable. He also assured GMH that Bauer could guarantee the necessary speed control range of 1:500 with asynchronous motors.

Prämab, the engineering firm that was awarded the conveyor systems contract, called their Bauer sales representative, Bernd Petrasch for technical assistance. In the course of several project meetings, Prämab mentioned that the annealing furnace contact was awarded to Mioba, a central German industrial furnace manufacturer.

Mioba had already started to plan and design the system using competitive motor drives. Together with Miroslav Slawik (global account manager at Basic Metal), Petrasch designed a new more cost-effective layout using Bauer BG Series gear motors. It turned out that, instead of the 2.2 kW power maintained by the competition, in fact, only 30 watts was necessary, which provided additional cost reductions. Another advantage was the BG Series' ability to perform in an ambient temperature of 80°C.

In the end, Mioba, who had now become a Bauer customer, decided on the design change utilizing the Bauer gear motors. In October 2012, the furnace was put into operation and runs to the satisfaction of all.

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P-7407-BGM 4/18

Bauer Gear Motor
Altra Industrial Motion

Application Profile

Product

BK Series Geared Motors

Application

Aluminum Anodizing Baths

Highlights

- BK Series right-angle, helical bevel geared motors
- Hardened wear sleeve and spray ring ensure leak-free performance
- Complies with NA and International standards, including NEMA, IEC, CSA and CE
- IP65 Enclosure (Standard), IP66 (Optional)
- Completely enclosed, sealed against dust and moisture
- Corrosion protection CORO1, CORO2, CORO3

A global producer of primary aluminum needed efficient replacement drives for the anodizing lines at one of its U.S. facilities. The drives raise and lower suspended aluminum pieces into acid electrolyte bath tanks during the anodizing process. Based on demanding production rates, the competitor geared motors typically reach the end of their useful life after one year of service and are replaced since rebuilds would be too costly.

The problem was that the existing competitor drives became obsolete and were discontinued. The original drive OEM provided a replacement in-line model, but it wouldn't fit in the limited space available. A new drive solution was needed because the current in-line drives were too long, causing the motor to hang unsupported, outside of the machine's protective drive enclosure.

After a careful analysis of the application requirements, Bauer Gear Motor, together with a distribution partner, began supplying BK Series right angle, bevel geared motors. The compact right-angle BK models provided more torque at the same HP rating within a smaller overall footprint. A special modified mounting bracket allowed the new right angle BK30 units to easily position, completely within the existing space available.

Compact Bauer BK Series models are fully enclosed and sealed against dust and moisture. A hardened wear sleeve and spray ring ensure leak-free performance.

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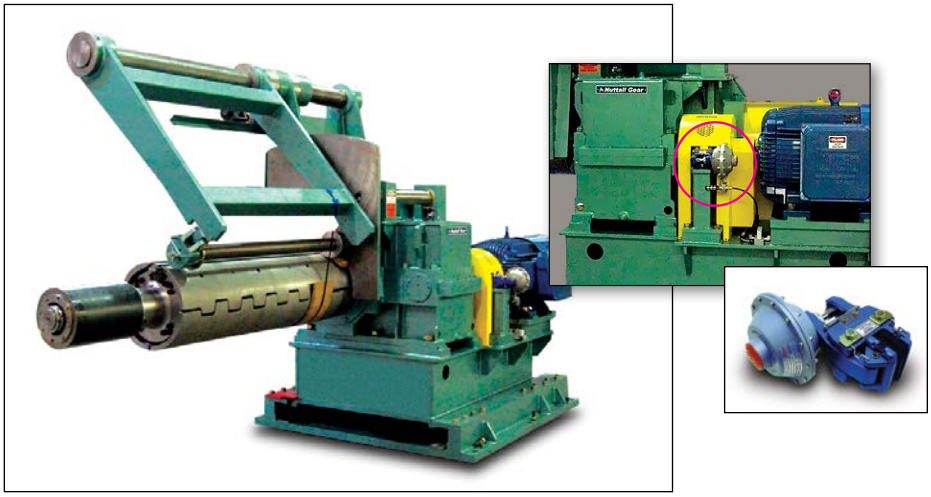
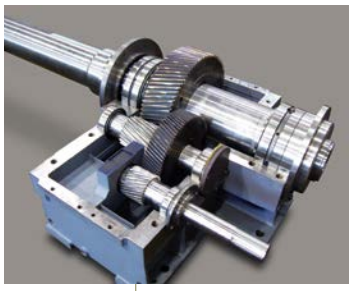
P-8773-BGM 6/19

Altra Industrial Motion

Application Profile





Product

Recoiler Gearbox and Caliper Brake

Application

Steel Pickling Line

Highlights

Nuttall Gear
Custom Gearbox
Through hardened gearing with custom fabricated steel housing

Twiflex Limited
MX Caliper Brake
Spring-applied, pneumatically-released parking and holding brake

A large steel recoiler OEM needed a custom gearbox for use on a new steel pickling line recoiler. The drive is direct coupled to a 125 HP electric motor which winds up a 52" wide, 60,000 lb. steel coil after it passes through the pickling treatment line.

The OEM contacted Nuttall Gear due to previous successful drive projects. Nuttall engineers designed a custom gearbox incorporating a customer-supplied low speed shaft that operates a mandrel which expands and contracts to grip and release the coil core.

The gearbox features a custom fabricated steel housing designed in an “L” shape to accommodate required over-sized bearings. The drive utilizes through hardened gearing with a reduction ratio of 15.5:1, a 1.2 service factor, 850/2500 RPM input and 55/160 RPM output.

A Twiflex MX13 spring-applied, pneumatically-released caliper brake was also utilized for parking and holding functionality. The brake is automatically engaged in the event of a power failure. The self-adjusting MX13 brake provides 6.8 kN braking force and features asbestos-free, high-friction pad material.

Contact Nuttall Gear

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P-7626-C 4/18

Altra Motion

Service Profile

Competitor drives "before" rebuild

Competitor drives "after" rebuild

Application

Aluminum Mill Roller Tables

Service

Gearbox Rebuilds

Highlights

- Cost-effective rebuilds of existing gearboxes from two different competitors
- Helical and worm gear drives
- New, improved gearing designed to accommodate increased torque loads
- New seals and bearings
- Refurbished and repainted existing gearbox housings
- Reduced production downtime

A global manufacturer of rolled aluminum sheet, plate and fabricated products needed to find a new gear drive rebuilding source for the original gear drives used on roller tables at its mill located in the Midwestern US.

Each of the large roller tables utilizes hundreds of helical and worm gear drives to transport the aluminum sheets and plates. Due to the extreme operating conditions, the gear drives are typically replaced every six months.

Unfortunately, the original drives from two different manufacturers had become obsolete and were no longer available. The mill started sending some of the drives to another Nuttall competitor for partial rebuilds, but soon realized that a new, more robust, cost-effective rebuild solution was required. The original roller table gear drives were built for 1970s era loads. However, the torque loads had increased significantly over time as newer technologies allowed the mill to manufacture larger, heavier aluminum sheets and plates.

The mill called its local distributor for assistance. The distributor quickly contacted Nuttall Gear to determine if Nuttall could provide the level of rebuild expertise required as well as meet the customer's delivery schedules with the large volume of units.

Technicians at Nuttall Gear, together with Delroyd Worm Gear, both brands of Altra Industrial Motion, quickly started rebuilding the first batch of the older competitor gear drives as they arrived at the shared Niagara Falls, NY facility. The rebuilds included all new improved gearing that was designed to handle the increased torque loads. All new seals and bearings were also installed in the existing refurbished and repainted gearbox housings.

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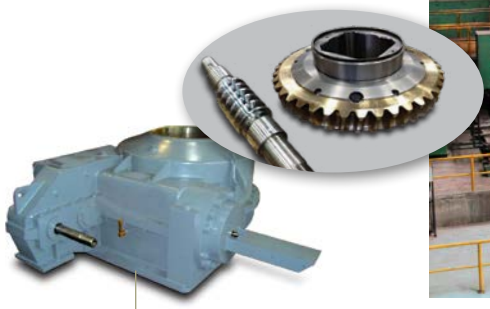
P-8772-C 10/19

Delroyd Worm Gear®
Altra Industrial Motion

Application Profile



Product — Worm Gear Drives

Application — **Screwdown Mill Stands**

Highlights

- Large radius added to worm thread
- Manganese gear material for enhanced yield and strength
- Through hardened, ground and polished alloy steel worm
- Worm thread root was shot peened to provide stress reduction at contact zone

A large steel mill in Pennsylvania was experiencing continuous problems with the gear drives in their screwdown mill stands. The existing manufacturer's gear material was breaking down which caused fatiguing, cracks and broken teeth due to inherent designed duty-cycle stresses.

A meeting with the mill's engineers, purchasing manager and hot mill managers, was held at Delroyd's Niagara Falls facility to review the problem and determine why the existing gearing design was failing so rapidly, and what could be done to solve the problem and improve the gearing life.

The Delroyd team reverse-engineered the screwdown gearbox to develop a more robust solution. The bronze gear material was changed to manganese for enhanced yield and overall strength. A larger radius and shot peen process was added to the root of the worm thread hence reducing the root stresses.

The new Delroyd gearbox design extended the gearing life from 3 years to more than 6 years. Based on the redesigned mill stand gear box success, the customer awarded Delroyd with orders for additional new complete gearboxes, spare worm/gear sets and additional gearbox rebuilds.

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P-7578-DWG 4/18

Delroyd Worm Gear®
Altra Industrial Motion

Application Profile

Product — Worm Gear Sets

Application — **Screwdown Mill Stands**

Highlights

- Reverse-engineered worm gear sets
- Aluminum bronze gear material used for enhanced durability
- Carburize hardened, ground and polished alloy steel worm

Screwdown mill stands gear drives at a major steel mill in Ohio were failing prematurely causing extensive downtime. The worm gear teeth were wearing and breaking down at an accelerated rate due to improper meshing at the contact zone. The problem created excessive pressure at the gear's pitch line/contact zone.

Delroyd engineers met with the hot mill managers to conduct an on-site inspection and short-term mill stand monitoring period. Through these efforts, it was determined that the cause of the drive failures was that three different gearing manufacturers had supplied gearing, all with different thread designs, which were being mixed and matched over time.

A spare worm and gear sample was sent to the Delroyd facility so that a new gearing solution could be reverse-engineered to ensure that all gear sets installed on the hot mill stands would have a matching thread/tooth design. The new Delroyd gearing solution extended the gearing life from 6 months to more than 6 years.

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P-7579-DWG 4/18

Delroyd Worm Gear®
Altra Industrial Motion

Application Profile

Product

Hoist Worm Gear Drives

Application

Steel Mill Charging Crane

Highlights

- Reverse-engineered enclosed worm gear reducers and worm gear sets
- Aluminum bronze gear material for enhanced durability
- Carburize hardened, ground and polished alloy steel worm
- Fabricated steel housings and mountings for strength and durability
- Redesigned lubrication system

Charging crane hoist drive gear boxes were failing prematurely at a large steel mill in Northeastern U.S. The failures were causing unfavorable outages and expensive periods of downtime.

Due to their desire and reputation to solve problems, Delroyd was called in to help analyze the situation and develop a solution. A meeting was held at the mill with various parties including an outside service group, mill engineers, maintenance managers and Delroyd engineers. All aspects of the ongoing issues were reviewed and an on-site inspection of a failed gearbox was performed.

Based on their findings, Delroyd engineering developed new worm gear sets utilizing aluminum bronze gears and redesigned the bearing mountings to enhance strength and durability. A carburize hardened, ground and polished alloy steel worm develops a smooth, work-hardened surface on the aluminum bronze gear. Extra-heavy side plates were used to connect the worm and gear shaft bearing supports, assuring proper meshing of the gear under all conditions of load. A more rigid fabricated steel housing design was utilized to reduce bending moment stresses. A redesigned, more efficient lubrication system was also incorporated.

The Delroyd design changes resulted in extending the gearbox life by over five years. The charging crane gearbox success prompted the mill to utilize Delroyd's expertise by providing gearboxes for their gantry cranes as well.

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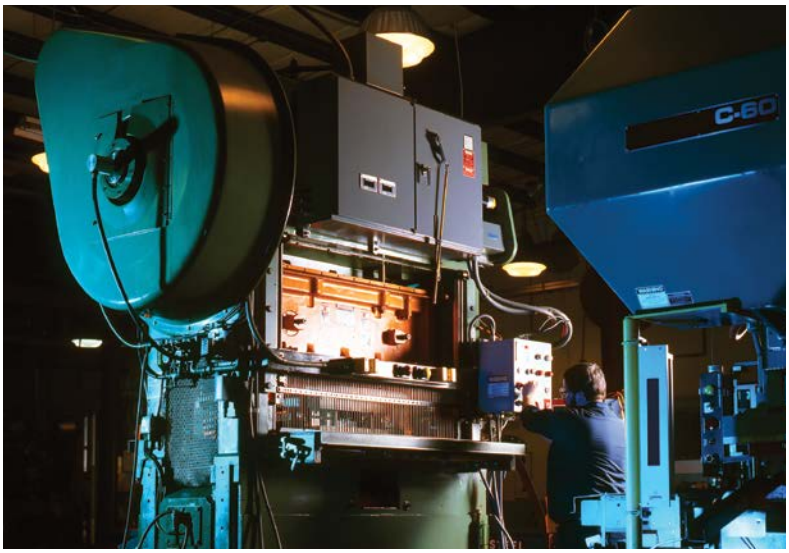
P-7580-DWG 4/18

Formsprag Clutch
Altra Industrial Motion

Application Profile



Product

Model FSR Backstopping Clutch

Application

Punch Press Feed Drive

Highlights

- Custom sprag design
- Sprags feature patented Formchrome® surface hardening
- "Free-action" sprag retainer
- 1,350 lb.ft. (1,836 Nm) torque capacity
- 1,150 RPM Max overrunning speed
- Buna-N oil seals

A Formsprag sleeve-bearing FSR clutch was selected by a leading press OEM for retrofitting onto an older stamping machine. The machine's original clutch had begun to show signs of wear after several years of service. The FSR is used as a backstopping clutch on the press feed drive.

The clutch is mounted on one end of the feed drive roller with the outer race grounded using a torque arm. This installation allows the drive roller to rotate in only the desired direction. Press feed rollers that handle steel and other stiff materials pulled from a coil need to resist the material's natural tendency to spring backwards or re-coil.

An FSR-12 model, with a torque rating of 1,350 lb.ft. (1,836 Nm) and a maximum inner race overrunning speed of 1,150 RPM, was supplied for this application. All FSR clutches incorporate Formchrome® sprags for maximum life and resistance to wear. The FSR-12 utilizes a Formsprag "Free-action" sprag retainer. A keyseat and snap-ring groove are provided to secure attached parts to the hub. The oil-lubricated unit has a Buna-N oil seal at each end of the clutch which provides positive lubricant sealing. The seals can be removed for free lubricant flow if the clutch is operated in an oil bath.

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P-7458-FC 4/18

Formsprag Clutch®
Altra Industrial Motion

Application Profile

Product

Model HSB Backstopping Clutch

Application

Steel Mill Conveyor

Highlights

- Comprised of an FSO clutch combined with an oil reservoir
- Torque capacity of 5,000 lb.ft. (6800 Nm)
- Formsprag exclusive PCE® sprag design
- Reservoir features a flush oil sight gauge

A major steel producer needed a backstopping clutch for use on an inclined conveyor that feeds coal into a coke oven at one of their Midwestern mills.

A Formsprag Model HSB 700 clutch, with a torque capacity of 5,000 lb.ft. (6800 Nm), was selected to meet the requirements of this application. HSB Series clutches are intended for use as backstops on the high speed shaft or intermediate shaft of a reducer, and as holdbacks on the head shaft of conveyors.

HSB units are comprised of standard FSO clutch with the addition of an oil reservoir. The oil reservoir is an aluminum casting with cooling fins. HSB models have a spacer replacing the seal at the reservoir end to permit free oil flow between the clutch and reservoir. The reservoir features a flush oil sight gauge and a combination breather and oil filter.

The FSO-700 clutch incorporated into the HBS 700 features PCE® sprags with Formchrome® and Formsprag “Free-action” retainers. Exclusive Formchrome sprags provide extra-long life, maximum wear resistance and lower maintenance costs. Ultra-hard Formchrome sprags are made by diffusing chromium into the surface of hardened high-carbon alloy steel to form a chromium-carbide alloy.

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P-7459-FC 4/18

Formsprag Clutch
Altra Industrial Motion

Application Profile

Product

FSO Overrunning Clutches

Application

Steel Slab Mill

Highlights

- 13,000 lb.ft. (17,680 Nm) torque capacity
- High-temp grease
- Formchrome® sprags
- Free-action retainers
- Requires no adjustments or controls

A steel slab mill utilized three cooling water pumps connected to a common manifold. Each vertically-mounted pump was driven by a 1,750 HP electric motor operating at 890 RPM. The mill was experiencing short operating life from the overrunning clutches mounted on the top end of all three electric motors. The clutches prevent each pump from backflowing when its motor needed to be shut down for servicing.

To meet the application requirements Formsprag Clutch supplied 10" diameter FSO-800 clutches with a 13,000 lb.ft. (17,680 Nm) torque capacity. The replacement clutches were shipped with special high-temperature grease and installed with increased clearance around the torque arm to accommodate thermal growth that can cause binding.

FSO overrunning clutches feature a high torque density and require no adjustments or controls. These clutches mount on a through shaft, with the inner race driven by a key. All models contain Formchrome® sprags and Formsprag "Free-action" retainers.

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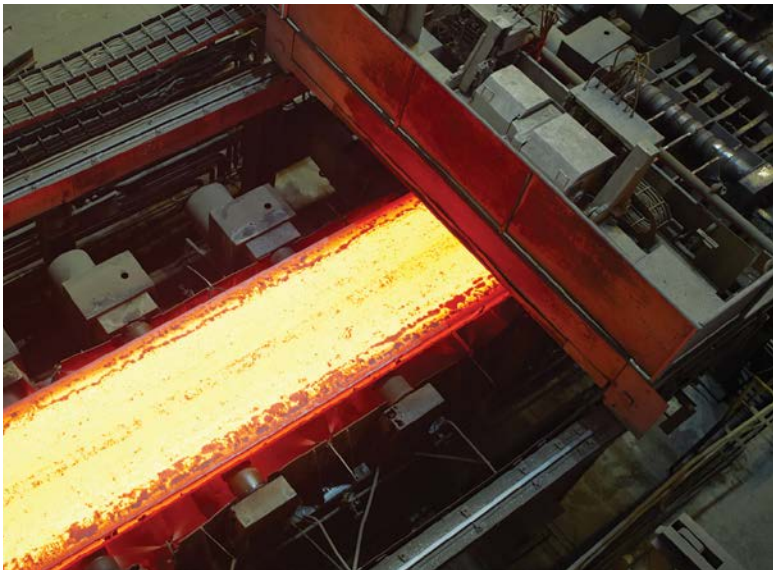
P-7988-FC 1/19

Marland Clutch
Altra Industrial Motion

Application Profile



Product

CECON Clutches

Application

Steel Strip Mill

Highlights

- Completely enclosed and designed for highspeed, continuous-duty applications
- 2,000 lb.ft. torque rating
- 4,200 RPM max speed
- Sealed self-circulating and self-filtering lubrication
- SAE 52100 alloy steel rollers

A major steel manufacturer needed a clutch solution for one of its large strip mills in the US. The mill utilizes two drives, one electric motor powers the mill when operating at normal production speeds, a low-speed motor drives the mill when inching or creeping speeds are required for inspections or servicing. Positioned between the two drive motors, the clutch provides a smooth transfer of power from one motor to the other without stopping the mill. The low speed drive is limited to one direction of rotation and cannot be reversible.

Marland CECON 2M clutches were selected to provide automatic, instantaneous change-over from one drive to the other without complex controls. CECON clutches are completely enclosed and designed for high-speed, continuous-duty applications in unprotected, adverse environments.

The CECON 2M models supplied have a 2,000 lb.ft. torque rating with a max speed of 4,200 RPM. All models feature SAE 52100 alloy steel rollers, energized springs that ensure positive engagement and an aluminum alloy cage with precision-machined roller pockets which provide controlled spacing and load sharing. Lubrication is self-contained in the sealed housing and provides self-circulation and self-filtering through stainless steel filter strainers.

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P-7971-MC 1/19

Marland Clutch
Altra Industrial Motion

Application Profile

Product

CECON Clutch

Application

Steel Mill Cooling Fan Drive

Highlights

- Completely enclosed and designed for high-speed, continuous-duty applications
- 12,000 lb.ft. torque rating
- 2,500 RPM max speed
- Sealed self-circulating and self-filtering lubrication
- SAE 52100 alloy steel rollers
- Precision-machined roller pockets

A leading industrial fan OEM needed a clutch solution for a large cooling fan installed at a steel mill. The heavy-duty fan required a low-speed turning gear drive that keeps the fan impellers rotating slowly when the main drive is shut down. Without the slow rotation in the high-temperature mill environment, the impeller would heat or cool unevenly and distort the fan blades and/or shaft. Additionally, slow rotation is necessary to insure proper lubrication of the fan bearings. When the fan's main drive is shut down, the overrunning clutch engages the smaller, turning gear drive.

The low-speed drive is also used to start the fan from rest before the larger high-speed motor is turned on. The overrunning clutch will automatically disengage the low-speed drive when the main high-speed motor is powered up, preventing potential damage to the low-speed drive.

A Marland CECON 12M clutch with a 12,000 lb.ft. torque rating and a max speed of 2,500 RPM was supplied to meet the application requirements. The clutch is positioned between the low-speed drive and the fan.

CECON clutches are completely enclosed and designed for high-speed, continuous-duty applications in unprotected, adverse environments. Lubrication is self-contained in the sealed housing and provides self-circulation and self-filtering through stainless steel filter strainers. All models feature SAE 52100 alloy steel rollers, energized springs that ensure positive engagement and an aluminum alloy cage with precision-machined roller pockets which provide controlled spacing and load sharing.

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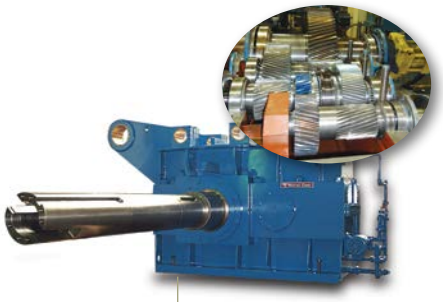
P-7972-MC 1/19

Nuttall Gear®
Altra Industrial Motion

Application Profile



Product

Recoiler Gear Drive Upgrade

Application

Steel Slitting Line

Highlights

- Increased unit service factor from .8 to 1.7
- Precision ground carburized gearing exceeding AGMA class 13 specification
- Substantial reduction in plant downtime
- Two day Installation

A major steel processor in Detroit was experiencing repetitive recoiler gear failures on their slitting line. The failures were occurring at a rate of every three to four months and plagued the plant with expensive repairs and extended downtimes.

Nuttall Gear was commissioned by the facility to complete a torque study, so management could gain insight and decide on a plan to upgrade the gear unit. The study determined that the unit was indeed underrated and massive overloading was responsible for the gear failures.

Based on the study, Nuttall proposed an upgrade for the existing unit, with a substantial increase in the service factor that would exceed the load currently placed on the recoiler. A substantial savings resulted because the original housing could be reused, eliminating the need to change the recoiler footprint, mounting arrangement and motor base.

Nuttall delivered the custom-designed gear train and assisted the customer in installing the gear set. The installation was accomplished over a two-day, off-peak period for the plant, further limiting downtime and lost production. Since the installation, the customer has not had another gear failure, thus eliminating slitting line downtime.

Nuttall Gear has made significant investments in the most advanced gear grinding equipment available today, and is proud to utilize this technology for the benefit of our customers.

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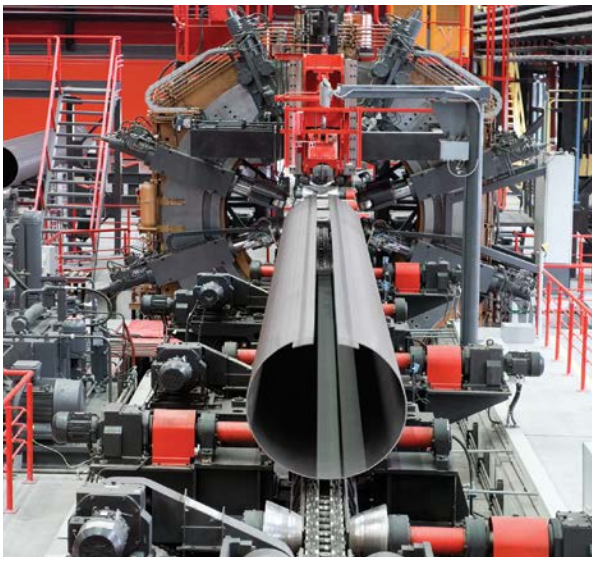
P-7540-NG 4/18

Nuttall Gear®
Altra Industrial Motion

Application Profile



Product

Custom Pinion Stand Drive

Application

Steel Tube Forming Mill

Highlights

- Two independent gear trains enclosed in one housing
- 46:1 reduction ratio
- 1150/2300 RPM input; 25/50 RPM output
- Fabricated steel housing
- Through hardened gearing

A major steel mill OEM required a custom gear drive for use on the pinion stand that pulls steel coil through a tube mill which forms the steel prior to seam welding.

The OEM contacted Nuttall Gear based on their previous successful collaborations. Nuttall engineers designed a custom drive that was properly sized to meet the performance requirements while fitting within an extremely tight space limitation.

Driven by a 100 HP motor, the unique reducer consisted of two independent gear trains, with 15" vertical offset center distance, enclosed in one housing. Each train featured a reduction ratio of 46:1, a 1.5 service factor with 1150/2300 RPM input and 25/50 RPM output. The drive also featured through hardened gearing and a fabricated steel housing.

Nuttall was able complete all design, engineering and manufacturing within the customer's tight approval and delivery timeframes.

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P-7622-NG 4/18

Nuttall Gear®
Altra Industrial Motion

Application Profile

Product

Custom Flattener Drive

Application

Steel Processing Line

Highlights

- Custom-designed enclosed reducer
- 4.5:1 reduction ratio
- 650/1200 RPM input; 140/260 RPM output
- Fabricated steel housing
- Motorized circulating oil system

A large steel producer needed a new gear drive for a flattener on one of their processing lines. Direct coupled to a 500 HP motor, the large gear reducer drives a series of nine de-tensioning rollers that relieve residual stresses as the strip steel gets pulled through them during the sizing of the coil.

Nuttall Gear was selected to provide a custom-engineered gear drive solution over several competitors based on their history of exceeding customer expectations and building heavy-duty steel mill gear drives that last longer than others.

Nuttall engineers designed a drive to meet the customer's performance requirements including specific center distances between shafts and a unique shaft arrangement configuration. A thorough understanding of the load requirements on the multiple shafts ensured proper shaft sizing.

The custom Nuttall drive featured a 4.5:1 reduction ratio with 650/1200 RPM input and 140/260 RPM output. To meet a special lubrication requirement for this particular application, Nuttall engineers developed a circulating oil system for the upper gearing and bearings that are not submerged in oil.

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Nuttall Gear®
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Application Profile

Product — Straightener Drive Upgrade

Application — **Steel Processing Line**

Highlights

- Rebuilt enclosed reducer
- Carburized and ground replacement gearing
- 1:1 reduction ratio
- 160 RPM input; 160 RPM output

A major steel producer needed an upgrade to a straightener gear drive. The service requirement on the existing drive was increased which caused the most heavily loaded gear in the train to fail due to overload. Driven by a 500 HP motor, the straightener pulls strip steel through two sets of rollers that relieve stresses while straightening the coil.

Nuttall Gear was selected over a competitor to provide the upgraded gear drive based on their long standing working relationship with the customer and their reputation for designing and manufacturing robust steel mill gear drive solutions.

The rebuilt Nuttall drive featured a reduction ratio of 1:1, a 1.25 service factor with a 160 RPM input and 160 RPM output. The gearing upgrade to the affected components was changed from a through hardened gears to carburized and ground gears for enhanced wear resistance and improved shock load capacity.

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P-7624-NG 4/18

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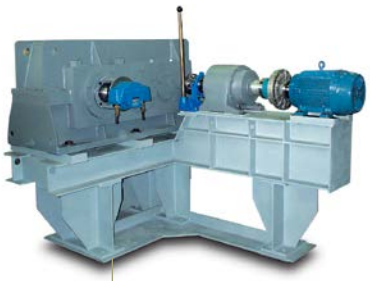
Application Profile



Product

Drivetrain Assemblies

Application

Blast Furnace Slag Granulator

Highlights

- Custom-designed enclosed parallel-shaft reducers with carburized and ground gearing
- Moduline R-Type concentric in-line, shaft-mounted creep drives
- Complete drivetrain assemblies including customer-supplied components
- All components mounted to custom-fabricated pedestals
- In-house testing performed on all assemblies

A global designer and manufacturer of slag granulator systems needed heavy-duty drivetrain assemblies for a new steel mill installation. Molten slag is a by-product generated by the mill's blast furnace during the steelmaking process. The slag granulator utilizes several identical drivetrain assemblies to move the slag slowly on a conveyor while it is subjected to water jets which disperse/convert the slag into small granules. The slag granules are used in a variety of applications including the manufacture of Portland cement.

Nuttall was contacted based on their extensive experience with heavy-duty drivetrain applications. Nuttall engineers worked closely with the OEM's team to design the overall drivetrain assembly configuration. Nuttall manufactured custom-designed primary parallel-shaft enclosed reducers which featured an input rating of 50 HP @ 1750 RPM with a reduction ratio of 279.258:1.

Nuttall also built Moduline R-Type concentric in-line, shaft-mounted creep drives which are needed to keep the slag moving to prevent hardening when the mill is not producing steel. The creep drives featured an input rating of 15 HP @ 1750 RPM with a reduction ratio of 5.169:1.

The complete drivetrains, including the Nuttall reducers as well as customer-supplied couplings, torque limiters and motors, were assembled and mounted to custom-fabricated pedestal bases by Nuttall technicians. In-house testing of all drivetrains was completed prior to shipping directly to the mill location.

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P-7678-NG 4/18

Nuttall Gear
Altra Industrial Motion

Service Profile

Application

Steel Slitting Line Recoiler Drive

Field Service

Onsite Bearing Overhaul

Highlights

- Provided two field service technicians with tooling
- Off-peak outage installation
- Key plant maintenance personnel were free to work on other areas

When a major steel processor in Ohio identified a problem with the bearings on their slitter line during routine vibration analysis, they turned to Nuttall Gear.

The Nuttall Gear Field Service team immediately put a plan of action in place to provide two service technicians for a complete replacement of the bearings on the critical recoiler drive. In order to minimize production downtime, the Nuttall Gear team came in during an off-peak weekend time slot and accomplished the task in only 16 hours. The mill was back up and running first thing Monday morning.

Nuttall Gear supplied all of the tooling and labor necessary to complete the job, which freed up the customer's maintenance team for other critical repairs in the plant during the short two-day outage. The customer was extremely pleased with Nuttall Gear's response and high level of commitment.

Nuttall Gear Field Service offers many value-added solutions and services to help minimize downtime and increase productivity. From routine maintenance services, such as vibration analysis and conditional assessments, to full upgrades and emergency repairs, Nuttall Gear is committed to their customer's equipment and production needs.

Contact Nuttall Gear for service performed at your facility.

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P-7892-NG 4/18

Stromag
Altra Industrial Motion

Application Profile

Photo courtesy ©Fives

Product

NFF4F-LS Brake

Application

Aluminum Mill Pot Tending Machine

Highlights

- Electromagnetic four-face, spring-applied brake
- High braking torque with small footprint
- Robust, reliable design with very low inertia
- 4,000 to 40,000 Nm brake torque range
- Excellent heat dissipation
- All components feature special surface protection
- Simple assembly to motor, no brake disassembly required
- Protection up to IP66

Fives Services Inc., a leading global designer and manufacturer of process equipment for the primary aluminum industry, needed a robust, reliable braking solution for an aluminum mill pot tending machine. The machine is installed in mill electrolysis halls and features an overhead crane with a 27-ton capacity hoist whose main function is the metal tapping, extraction and transport of liquid aluminum from the electrolysis tanks.

Based on its proven reliability and rugged construction, the engineers at Fives selected a Stromag NFF4F-LS brake to meet the hoist's safety requirements. The electromagnetic four-face, spring-applied brake provides emergency braking functionality.

The compact NFF4F-LS brake was designed specifically for crane and other heavy industrial applications that require slow running drives with very high brake torque and a closed design. Built to perform in harsh environments, major brake components feature a special nitrocarburated and postoxidated surface treatment with an overall protection rating up to IP66.

The NFF4F-LS design provides excellent heat dissipation, high wear-resistance and easy motor mounting with no brake disassembly required. Models are available in brake torques of 4,000 to 40,000 Nm.

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P-8495-SG 9/21

Stromag
Altra Industrial Motion

Application Profile

Product

Series SDB/SAB Drum Brakes with Thrusters

Application

Steel Bar Mill Cranes

Highlights

- Drum brakes with electrohydraulic thrusters
- Service brakes
- Maintenance-free, self-lubricated bushes
- Auto-aligning brake shoe device
- Galvanized steel spindles and hinges
- Automatic wear compensation
- SDB units meet DIN 15435 & DIN 15430 norms
- SAB units meet AISE N.11 - 63.120

A leading steel producer needed a robust replacement braking solution for the overhead cranes at its round and round-corner square bar mill in the Southeastern U.S. The mill was experiencing repeated problems with the existing drum brakes and thrusters installed on multiple cranes throughout the mill.

The thruster seals were leaking because they couldn't withstand the harsh mill environment. The brakes often failed, causing an excessive amount of unplanned service delays and production stoppages. The most trouble was experienced on the cranes near the furnace where the thrusters needed to be replaced after less than a year due to heat and contamination damage.

The brakes, installed between the hoist's drive motor and gearbox, or directly on the hoist drum, function as service (holding) brakes. Each crane utilizes two to four thrusters. Rectifiers control the crane's electric motors. However, when the crane is stopped, it actually moves back and forth slightly as the rectifiers try to correct the crane's position. The drum brakes engage to securely hold the crane safely and precisely in a single position.

After visiting the mill with a distribution partner, Stromag engineers worked closely with the mill's crane maintenance engineering team. After successful in-plant prototype testing, Stromag was initially awarded an order to replace a majority of the competitor brakes. Recently, the distributor was directed to supply Stromag units for all future brake replacements.

The Stromag Series SDB/SAB drum brakes with electrohydraulic thrusters supplied follow the AISE N.11 normative and are sized for drum diameters between 13" and 30". All units featured Stromag's exclusive "Steel Makers Option" which is designed to withstand high temperature and dusty mill environments. The brakes also feature special fire protection.

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TB Wood's
Altra Industrial Motion

Application Profile

Product

DuraFlex® Couplings

Application

Steel Mill Runout Table

Highlights

- Highest operating temp
- Design for easy install/replacement
- All metric
- Global product support

SERVICE SUPPORT STRENGTH
Specify the TB Wood's Difference

TB Wood's has supplied DuraFlex WE50M couplings to connect motor shafts to individually driven rollers on a new hot strip runout table installed at a steel mill plant expansion near Budapest, Hungary. The 505-foot long runout table is equipped with 337 six-foot wide, 12-inch diameter, stainless steel rollers, each driven by a 7.5 KW (10HP) motor at 900 RPM. The new line will result in higher speeds and higher throughput from 1.8 million tons to 3 million tons per year.

The DuraFlex coupling was selected over competitive units due to its ease of assembly and simpler radial-mounting installation, rather than axial mounting, and because of its superior fatigue resistance in the tough steel mill environment. The patented design of the urethane bond to the leading edge of the steel shoe bolted to the hub, and the high quality of the urethane element itself, provide the heat, moisture and chemical resistance desired by the customer. The customer also appreciated the high misalignment rating of the coupling which offered 3/32-inch parallel misalignment and 3° angular misalignment capabilities.

The global support network offered through Altra was important to this installation in eastern Europe. The couplings were supplied with 100% metric dimensions including hardware and fasteners. TB Wood's was able to cut its normal lead time of 8-10 weeks to only 4 weeks to meet the customer's expedited deadline.

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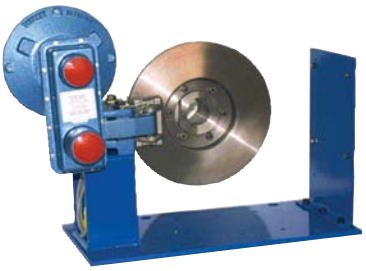
P-1799-TBW 9/20

Twiflex
Altra Industrial Motion

Application Profile



Product — MXEA Caliper

Application — **Steel Mill Cranes**

Highlights

- Over 150 MXEA brakes
- 2 MXEA type calipers operating on a 910 mm dia. disc
- Covers a wide range of power ratings to provide standardization and cost savings

China Steel, one of the largest steel making plants in Taiwan, relies on Twiflex brakes to provide safe crane control within their vast mill line.

Twiflex type MXEA, fail safe, electro-mechanical calipers are installed on hoist drives, rated between 110 to 200 kW.

The crane trolley and bridge drives, 22 to 90 kW, are also controlled by over 144 of the MXEA calipers.

This is a good example of the versatility of the MXEA type caliper which can be used to cover a wide range of drive power ratings and provide standardization and cost savings.

Supplied through Siemens of Germany, the calipers are installed on a total of 32 cranes. The heaviest of these lifting duties is controlled by means of two off MXEA type calipers operating on a disc 910 mm in diameter.

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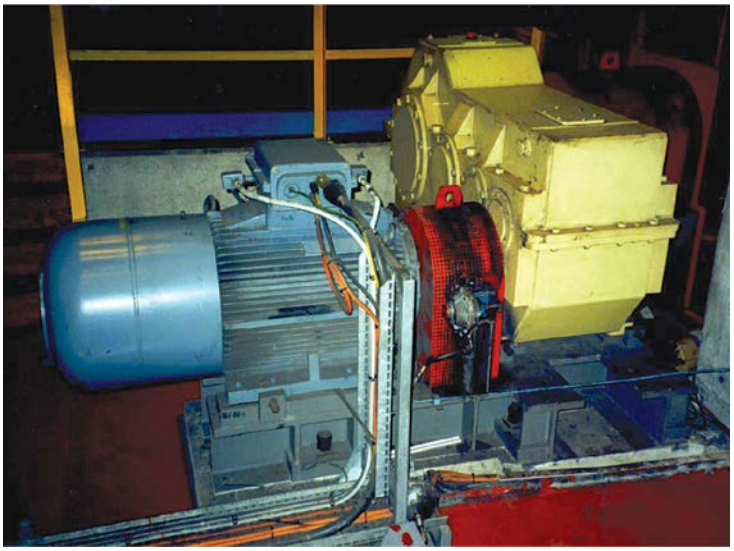
Twiflex
Altra Industrial Motion

Application Profile



Product

Twiflex MXS Pneumatic Disc Brake Caliper

Application

Cold Mill Line

Highlights

- Over 40 pneumatic disc brake calipers installed at Cold Mill
- Sensitive and rapid response to air pressure levels
- Ideal for holding and emergency stop applications

The Twiflex MXS pneumatic brake calipers are recognised as the world's standard for steel mill braking control. They are installed on metal processing lines in mills across the globe.

A recent example is the Cold Mill at Tata's Port Talbot Works where over 40 pneumatic disc brake calipers are installed on the Picking Line, the Continuous Annealing Process Line and the Galvanising Plant.

These spring applied and pneumatically released disc brake calipers are chosen for their sensitive and rapid response to air pressure levels making them ideal for emergency stopping and holding applications.

Friction pads are secured by quick-release clips, and the brakes feature spring retraction to ensure ample pad clearance when the brake is released. The MX disc brake caliper is a medium duty caliper with a three bolt base mounting: A side-mounted version - the Twiflex SMX - is also available for installations where base-mounting is not practical.

Based on a robust and industry proven design, the calipers are of simple, rugged construction and ideally suited for hot and cold rolling and finishing lines.

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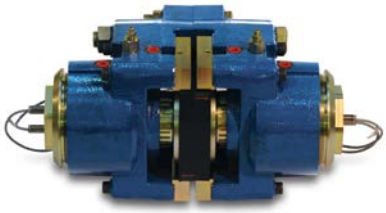
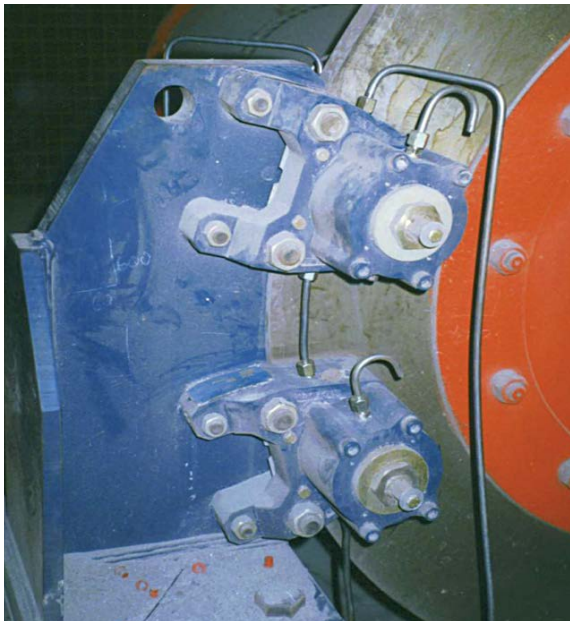
P-7229-TF 3/18

Twiflex
Altra Industrial Motion

Application Profile





Product

Spring Applied Type VCS 60 Calipers

Application

Ladle Hood Winches

Highlights

- Spring applied type VCS 60 calipers installed on winch barrels
- Motor rated for 55 kW at 1500 RPM
- 112:1 ratio gearbox connected to winch drum

A modern steel plant in the UK invests substantially in being an environmentally friendly producer, an example being the de-sulphurizing unit at their Port Talbot works.

Twiflex technology contributes with a system for controlling the winch mechanism needed to raise and lower a ladle hood winch in the BOS plant.

A single, spring applied MXSH type disc brake, released by hydraulic pressure is employed between a motor rated for 55 kW at 1500 RPM and a 112:1 ratio gearbox connected to a winch drum. The winch ropes are drawn over a series of idler pulleys which run down several floors to the main ladle hood.

Three Twiflex spring applied type VCS 60 calipers, also released by hydraulic pressure, provide the emergency brake installed on the winch barrel. These also serve to lock and hold the drum when the driving motor is de-energized.

The molten iron is transported from the blast furnace to the BOS plant in torpedo ladles pulled by locomotives. It is then poured into ladles and scrap iron and various fluxes are added. The ladles, when full, weigh over 400 tonnes and hold about 300 tonnes of hot metal which is eventually converted to steel.

Without these hoods, highly toxic gases would be discharged into the atmosphere.

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P-7231-TF 4/18

Wichita Clutch
Altra Industrial Motion

Application Profile

Product

ModEvo Tension Control Brake

Application

Thin Gauge Steel Coating Line

Highlights

- ModEvo 300/4 brake with 557 ft.lb. torque capacity
- 6.71 thermal HP heat capacity
- Unique modular design provides tension control versatility
- Optional cooling fan available for extreme heat applications
- Three actuator options are available with clamping forces of 100%, 60% or 25%
- Standard and low friction coefficients pad options

The challenge at a regional window treatment company was to ensure a consistent, even spray of the final coating on the steel material used in their manufacturing process. The steel unwinds from a coil and passes through multiple coating baths then through an oven. The coated steel is then buffed to a smooth finish followed by a final coating application. A consistent tension on the steel web is required to ensure that the final coating is uniformly applied.

The steel material moves at 300 FPM through a set of 24” diameter nip rollers positioned just ahead of the final coating applicator. A brake is required at the nip rollers to provide consistent pace, applying the 500 lbs. of tension across the total web width to ensure final coating application consistency.

Wichita Clutch application engineers determined that the nip rollers would have a rotational speed of 48 RPM while the brake will require 500 ft.lbs. of torque capacity and need to dissipate heat of up to 2.4 thermal HP.

Wichita’s ModEvo size 300/4 brake was the ideal choice to provide the necessary torque and heat dissipation for this unwind application. The brake has a 557 ft.lb. torque capacity and a 6.71 thermal HP heat capacity when used with an optional fan. The ModEvo modular design will allow the customer to increase torque capacity or line speed at a later date by simply adding an additional set of air actuator modules. Conversely, if they need to reduce the size of the web to the point where the brake might be oversized, they can easily disconnect one of the modules from the air source to downsize the brake.

The brake is controlled via an electric-to-pneumatic transducer that varies air pressure to the brake based on a 0-10 volt analog signal from the customer’s PLC control.

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P-7670-WC 4/18

Wichita Clutch
Altra Industrial Motion

Application Profile

Severe damage on non-genuine copper wear plate

Product — Genuine Wichita Replacement Wear Plate

Application — **Steel Mill**

Highlights

- Genuine Wichita Clutch replacement wear plate
- Precisely matched with mating Wichita clutch and brake components
- 2-year warranty

In an attempt to save a small amount in maintenance costs, a metal processing mill in Malaysia chose to install a non-genuine replacement copper wear plate in a Wichita Kopper Kool clutch. After a short period in service, the production line had to be shut down since the braking system developed a serious coolant leak and started overheating. Further investigation showed that the unauthorized copper plate had become distorted and suffered from serious wear that led to the leaks.

The mill's maintenance manager eventually replaced the bad wear plate with a genuine Wichita replacement plate. All replacement Wichita Clutch brand copper wear plates are precisely matched with mating Wichita clutch and brake components for optimum performance and ease of installation.

The short term gain of purchasing a non-genuine replacement part at a reduced cost almost always results in a much greater expense in terms of repairs and lost production. This type of problem has been seen time and again across many industries and in many applications. In some instances the lost production costs can spiral to huge sums.

Wichita has years of experience in building value into every Genuine Wichita Replacement Part. Competitively-priced Wichita parts, made with quality materials and leading-edge technology, outlast the competition, resulting in lower life cycle costs.

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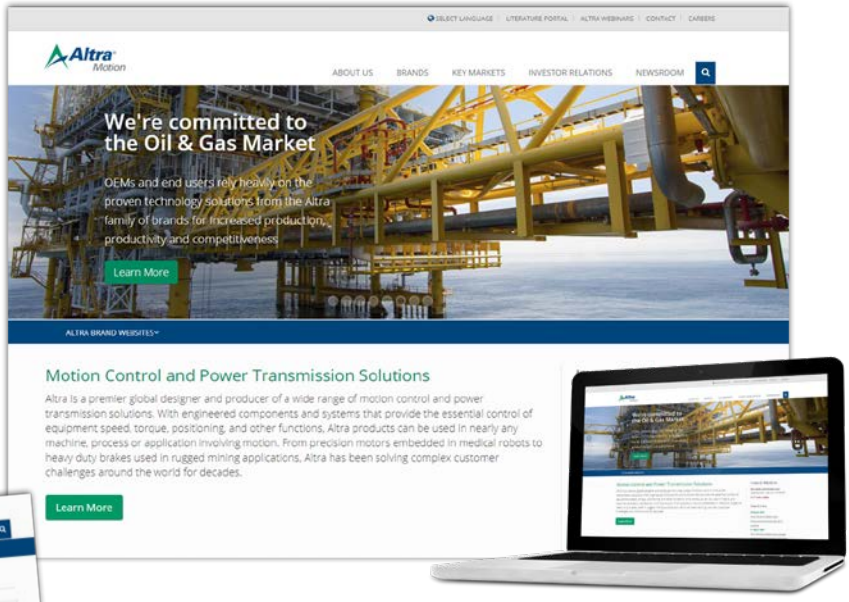

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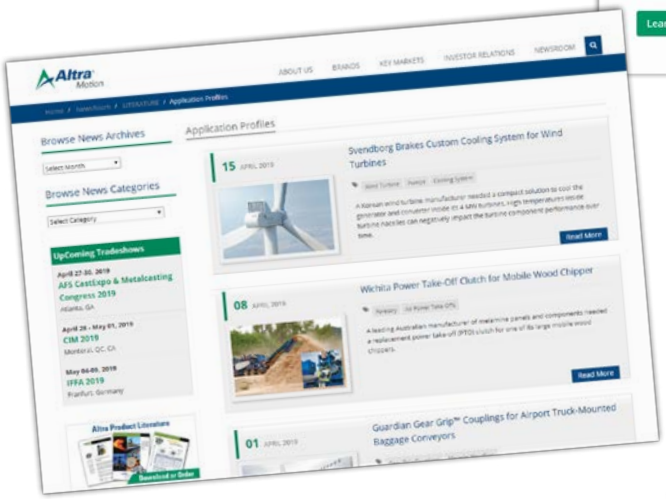

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