



TC102: 04/23

## **MOTORIZED PULLEYS IN MINING, MINERAL PROCESSING, & GENERAL BULK HANDLING**

Compactness, light weight, improved safety, high reliability, low maintenance requirements, and excellent aftermarket service are why major equipment manufacturers and conveyor operators choose Rulmeca for their Motorized Pulleys.



# **RULMECA®**

MOVING AHEAD

## Product Highlights

Why have conveyor designers and operators chosen Rulmeca Motorized Pulleys as their preferred belt conveyor drive instead of exposed drive systems for more than 60 years? There are many reasons, as explained below.



The advantages of improved safety, higher reliability, lower maintenance, lower operating expense, and excellent aftermarket service have stimulated conveyor designers and operators of permanent facilities and mobile plants throughout America, Europe, Africa, Asia, and Australia to specify Rulmeca Motorized Pulleys.

### MOTORIZED PULLEY BENEFITS

- Improves Conveyor Reliability
- Saves Space
- Increases Efficiency
- Lowers Maintenance Expense
- Reduces Energy Consumption
- Makes Installation Easier

In addition, Rulmeca's compact, easily-mounted, hermetically-sealed conveyor drive has solved chronic problems which are difficult for exposed drive systems. These problems include: size restrictions, corrosion, abrasion, belt life, belt tracking, inadequate power, belt bounce, material spillage, belt slippage, and freezing conditions.

How is the Rulmeca Motorized Pulley able to offer these operational and maintenance advantages? Unique product design and proper applications engineering.



Enclosing the drivetrain within a hermetically-sealed, oil-filled pulley shell makes the drive compact and protects it from harsh environments.

Its compactness and light weight enable Rulmeca

engineers to suggest creative prob-

lem-solving Motorized Pulley drive configurations including head, tail, and dual locations.



### MOTORIZED PULLEY FEATURES

- Compact & Lightweight
- Internally-Powered
- Hermetically Sealed
- Self-lubricating
- Fixed Shaft (No External Bearings)
- Internal Thermal Protection
- VFD Compatible
- Easy-to-Mount Brackets

As shown above, the Rulmeca hermetic seal, fixed shaft, special paint, ceramic lagging, and gasketed terminal box were an excellent solution to the exposed drive system's chronic maintenance problems. Note how the internally-powered Motorized Pulley eliminated exposed components such as motor, coupling, chain & sprocket transmission, pillow blocks, enclosures, and support structures.



## PROBLEMS SOLVED

Where have Rulmeca Motorized Pulleys solved operational, safety, and maintenance problems? Wherever the problems' severity required.

### Size Restrictions

Whether producing portable aggregate plants with tight clearance restrictions or conveyor drives for underground mines with space restrictions, manufacturers exploit the product's compact size and light weight.



Driving cross belts, screen feed conveyors, recirc belts, hopper feeders, transfer conveyors, and belts under screens and a variety of crushers, Rulmeca Motorized Pulleys are used on portable crushing/screening plants, stackable conveyors, radial stackers, reversing shuttle conveyors, and miniature conveyors in aggregate and frac sand production, highway construction, mining, C&D debris handling, and recycling of various metals.



With a light weight of 5,100 lbs. and overall width of 91", this 150 HP, model 800H, 31.5" diameter Motorized Pulley moves coal from a western US coal mine directly to a power plant overland conveyor. This is an ideal primary conveyor drive because reliability is essential.

## Corrosion

Mining and handling salt necessitate costly maintenance and frequent replacement of exposed equipment... unless hermetic seals and self-lubrication eliminate that challenge.



One of numerous Rulmeca Motorized Pulleys used by major US salt producers, this unit dramatically reduced maintenance expense while increasing conveyor drive reliability. The mine eliminated the need to grease external bearings and replace corroded drive components while reducing the oil change frequency to 50,000 operating hours by using synthetic oil. That equates to an oil change every six years, based on a "24/7" operating schedule.

## Abrasion

Taconite ore's abrasive effects on exposed motors, gearboxes, couplings, and pillow block bearings are expensive, unless they are protected from that harsh environment.



Rulmeca Motorized Pulleys have been put into service in the United States in iron mines, steel mills, rail-to-ship loading terminals, steel foundries, coal mines, and coke plants in Minnesota, Michigan, Indiana, Wisconsin, Pennsylvania, Ohio, West Virginia, and Alabama.



## Belt Life & Tracking, Low Power

More belt wrap or power may be easily added to problem conveyors because Rulmeca Motorized Pulleys can be installed anywhere a drive pulley or idler pulley is mounted. After upgrading three bucket wheel iron ore reclaimers with a 200 HP dual drive system on the discharge conveyor, this



Great Lakes rail-to-ship transfer terminal extended discharge belt life by decreasing slack side tension. A serpentine belt wrap angle of 420° produced by the two 31.5" diameter model 800H Motorized Pulleys made this possible. More than fifteen years of successful operation have confirmed that belt life has been extended.



In 1999, this quarry replaced a single 100 HP drive on its reversing shuttling conveyor with two 50 HP Motorized Pulleys, one in the head position and one in the tail position. This 24.8" diameter model 600H dual drive system eliminated belt tracking problems and significantly extended belt life, thanks to 360° of belt wrap and lower slack side tension. It is also possible to add power to an existing conveyor by replacing an appropriate idler pulley with a Motorized Pulley.

Drive load-sharing is available through the use of VFDs, enabling operators to add any combination of Motorized Pulleys or powers, as needed.

## Belt Tension, Bounce & Spillage

High tension in the top side carrying strand can be reduced in inclined conveyors by using a dual drive configuration.



This US limestone producer reduced maximum belt tension at the discharge (head) pulley from 27,000 lbs. to 17,000 lbs. after modifying his conveyor drive design from a single 300 HP drive with a 384 fpm belt speed to a dual drive with a 600 fpm belt speed. This will yield a significantly longer belt life because of reduced belt stress. Each of the two drives was a 150 HP, model 800H, 31.5" diameter Motorized Pulley controlled by load-sharing VFDs.



This Midwest US salt mine reduced belt bounce and eliminated a flat catenary and subsequent material spillage at the tripper in their raw salt storage shed loading conveyor by replacing one worn 40 HP head drive with two new stainless steel 20 HP, model 400M, 15.75" diameter Motorized Pulleys in the head and tail positions.

A dual drive configuration, consisting of two 20 HP conveyor drives, was suggested for the shed feed conveyor so that one spare Motorized Pulley could back up the shed feed as well as the shed take-away conveyor (20 HP). This Rulmeca Motorized Pulley spare optimization plan has been used successfully, with a variety of Motorized Pulley models, at salt mines in New York and Louisiana for more than 15 years.



## Belt Slippage

Rain or ice and snow can cause belt slippage and stiffness, decreasing belt/pulley traction and interrupting production. Adding belt wrap is simple through the addition of a Rulmeca Motorized Pulley.



Belt wrap was increased from 180° to 360° at this western US trona mine by the adding a 60 HP, model 630H, 24.8" diameter Motorized Pulley to the head of this 40-year-old radial stacker. It eliminated slippage of the 100 HP tail drive during rainy conditions. The 2,400 lb. Motorized Pulley replaced a 3,200 lb. idler pulley, requiring no structural modifications to the stacker truss.



Since temperatures can reach -20° F at this iron ore terminal, night time frost can build up beneath the carrying strand of belt causing slippage at start-up. The installation of two 180 HP Motorized Pulleys at the head and tail positions, with electronic load-sharing, eliminated the problem on this reversing shuttle belt, which feeds the 60 ship loader surge bins. A close up of the west end drive is shown.



## Freezing Conditions

Starting conveyors in freezing conditions can be problematic due to stiff gearbox oil and rigid belting. Rulmeca Motorized Pulleys dissipate heat into the belt and also offer oil warming options.



This Wyoming coal mine upgraded their overland conveyor feed system with a 150 HP, model 800H, 31.5" diameter Motorized Pulley. Faced with frigid conditions, some operators choose the optional built-in anti-condensation heater, which maintains a constant warm temperature within the pulley shell when the machine is idle. Other operators use "trickle voltage" heating to serve the same purpose.



Located in Scotland, this major coal transfer terminal has installed model 800HD and 1000HD Rulmeca Motorized Pulleys on the dock (330 HP), in the ship loader (2 x 180 HP) and in the rail loadout system (2 x 100 HP), taking advantage of the thermal characteristics of the drives.

Since Rulmeca Motorized Pulleys dissipate motor heat into the belt, some operators consider Motorized Pulleys to be "belt warmers," which is a significant advantage in freezing winter weather.

## Motorized Pulley Product Range

model	diameter (in)	power (hp)	speed (fpm)	min. RL (in)	weight (lbs)*
220M	8.5	0.5 - 5.5	48 - 600	15.75	138
220H	8.5	0.5 - 7.5	30 - 600	17.72	169
320M	12.64	1.0 - 15	38 - 600	19.69	381
320H	12.64	1.0 - 15	24 - 480	21.65	439
400M	15.75	3.0 - 20	76 - 760	23.62	510
400H	15.75	3.0 - 20	38 - 300	25.59	602
500M	19.72	3.0 - 20	48 - 480	25.59	667
500H	19.72	7.5 - 40	120 - 760	29.53	1,090
630M	24.80	7.5 - 30	150 - 760	29.53	1,006
630H	24.80	30 - 75	240 - 960	37.40	1,907
800M	31.50	30 - 61	300 - 960	37.40	2,251
800H	31.50	75 - 180	384 - 1,064	45.28	4,966
800HD	31.50	75 - 180	240 - 600	51.18	5,641
1000HD	40.16	220 - 330	600 - 1,320	55.12	10,362

\* At maximum power and minimum roller length (RL).

### Our products

Each Rulmeca Motorized Pulley consists of a three phase AC squirrel cage induction motor, directly coupled to a helical gearbox, mounted on a fixed shaft within an oil-filled hermetically-sealed steel pulley shell.

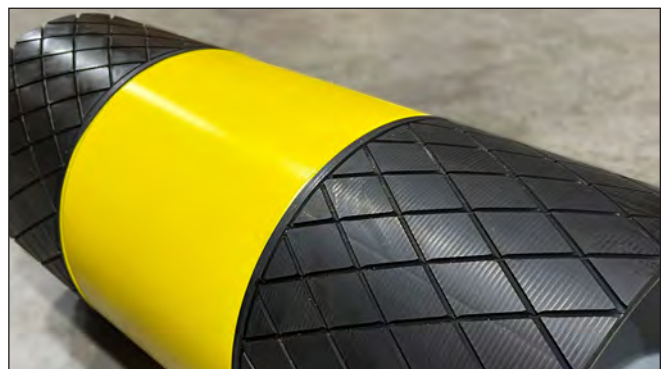
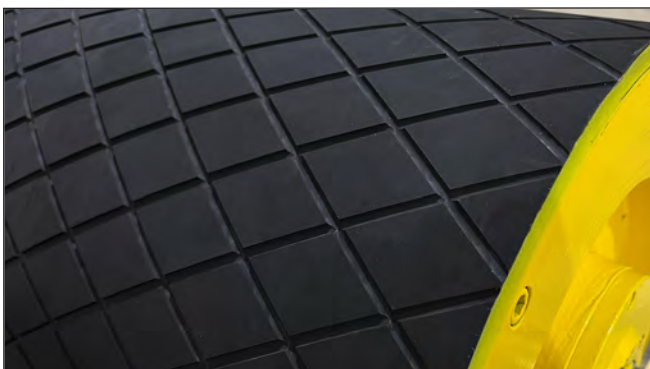
Rulmeca's bulk portfolio includes seven models from 0.5 HP to 330 HP. When combined in "multiple drive configuration", conveyor drive power is virtually unlimited. All popular belt speeds and face widths are available.

Motors are VFD-compatible and available to run on three phase power supplies including 230v, 380v, 460v, 575v, and 995v.

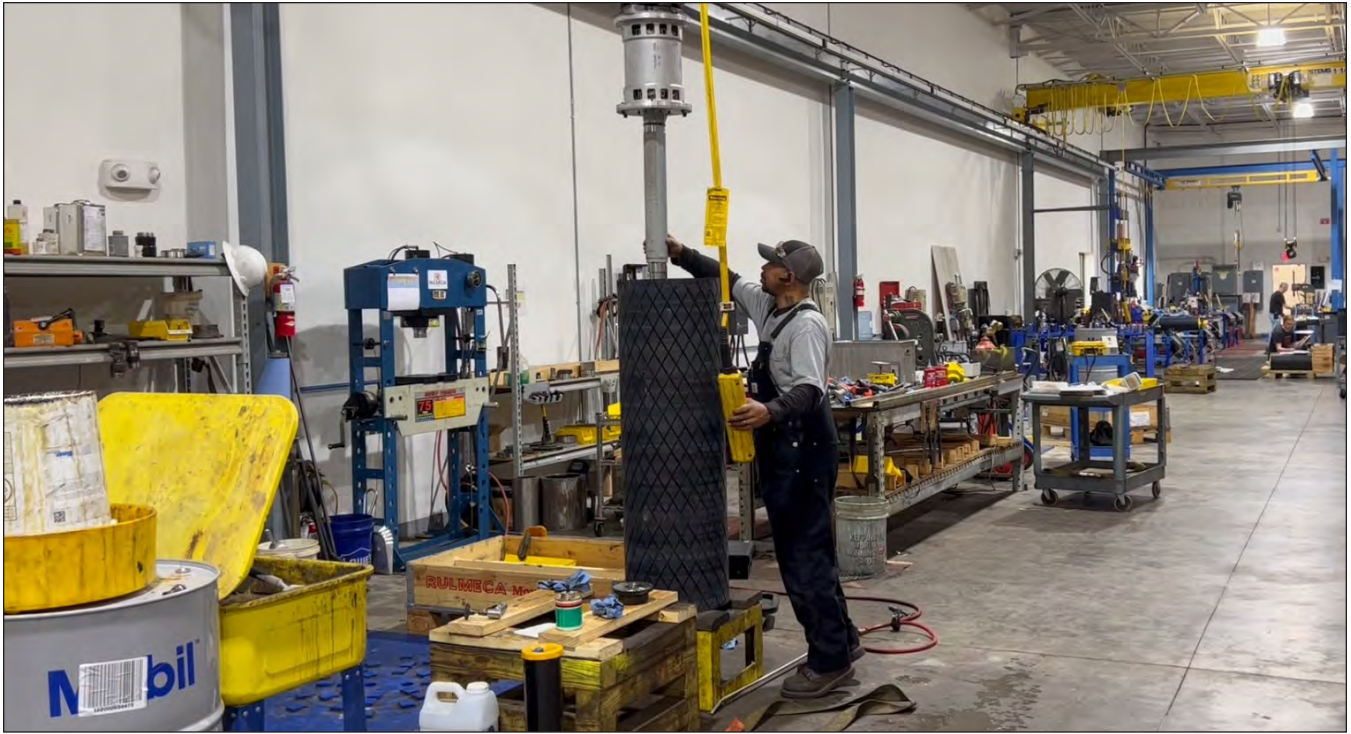
Rulmeca Corporation offers quick shipping from its Wilmington, NC facility on selected Motorized Pulleys.

### Options

Options include rubber and ceramic lagging, internal backstops and brakes, special paint, labyrinth seals, and stainless steel components.







## Local Assembly & Aftermarket Service

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Equipment manufacturers and conveyor operators throughout the United States rely on Rulmeca Corporation for timely delivery of premium quality Motorized Pulleys and excellent aftermarket service.

With a growing staff, expanded in-house capabilities, and large inventory of parts, Rulmeca offers application engineering assistance as well as local assembly of a full portfolio of Motorized Pulley models, powers, and sizes.

Factory-trained technicians also provide complete aftermarket service from simple oil, seal, and gasket change-outs to complete motor diagnosis to full drivetrain overhauls and pulley shell relagging, all backed by the Rulmeca Corporation product warranty.

Rulmeca Corporation offers quick shipping from the expanded Wilmington, NC facility on selected Motorized Pulleys.





**Close to you!**

**Global presence, local service,  
local consulting, local assembly**

Rulmeca Motorized Pulley People are near you whenever you need us. We speak your language and understand your needs.

**Rulmeca Corporation**

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