

TC102: 10/20

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

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

**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 50 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 problem-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 plants with tight clearance restrictions or booster drives for underground mines with thin seams, manufacturers exploit the product's compact size and light weight.



Driving cross belts, screen feeds, recirc belts, hopper feeders, transfer conveyors, and belts under screens and crushers, Rulmeca Motorized Pulleys are used on crushing/screening plants, stackable conveyors, radial stackers, reversing shuttle conveyors, and miniature conveyors in aggregate and frac sand production, highway construction, mining, and recycling.



With a light weight of 8,600 lbs. and an overall width of 78", these two 75 HP, 24.8" diameter Motorized Pulleys move coal underground at 1,200 tph on a 48" wide conveyor more than 1,200'. Easy to relocate and safer than an exposed drive system, this is an ideal dual drive.

## 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 a major US salt producer, this 75 HP 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.

## 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.



Since 1985, hundreds of Rulmeca Motorized Pulleys have been put into service in taconite mines, steel mills, ship loading terminals, and coke plants in Minnesota, Michigan, Indiana, Pennsylvania, 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 that a drive 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 Motorized Pulleys made this possible. More than ten years of successful operation have confirmed that belt life has been extended.



In 1999 this major United Kingdom quarry replaced a single 100 HP drive on its reversing shuttling conveyor with 50 HP Motorized Pulleys in the head and tail positions. This 24.8" diameter dual 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 HP, where needed.

## Belt Bounce & Material Spillage

High tension in the top belt on concave conveyor curves can cause problems at start-up and during normal running, depending on the conveyor geometry and amount of top side tension.



This US cement producer eliminated 4' of start-up belt bounce and subsequent belt and feeder damage on their concave reclaim tunnel conveyor when they upgraded from a 75 HP head pulley to two 50 HP Motorized Pulleys in the head and tail positions. The 360° of belt wrap decreased slack side tension and enabled the operator to use the existing belt in spite of the fact that installed power was increased by 33%.

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



A dual drive (2 x 20 HP) 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), but the operational advantages of the dual system overshadowed the optimization of the spare.



## 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 Rulmecca Motorized Pulley.



Belt wrap was increased from 180° to 360° at this western US trona mine by the adding a 50 HP 24.8" diameter Motorized Pulley to the head of this 30 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.



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. Rulmecca Motorized Pulleys dissipate heat into the belt and also offer oil warming options.



This Alaskan rail-to-ship transfer terminal installed a 75 HP 24.8" diameter Motorized Pulley in the ship loader shuttling boom conveyor when they up-graded the machine to handle 2,000 tph of coal. Faced with frigid conditions, the operator chose the optional 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 Rulmecca 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 Rulmecca Motorized Pulleys dissipate motor heat into the belt, some operators consider Motorized Pulleys to be "belt warmers," which is an advantage in winter weather.

# PRODUCTS & OPTIONS

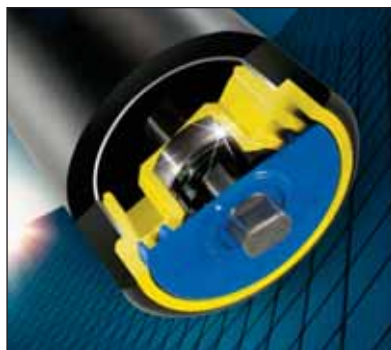
Model	Diameter	HP	Belt Speed	Min. RL	Weight*
220M	8.5"	0.5 - 5.5	48 - 600	15.75"	138 lbs
220H	8.5"	0.5 - 7.5	30 - 600	17.72"	169 lbs
320M	12.64"	1.0 - 15	38 - 600	19.69"	381 lbs
320H	12.64"	1.0 - 15	24 - 480	21.65"	439 lbs
400M	15.75"	3.0 - 20	76 - 760	23.62"	510 lbs
400H	15.75"	3.0 - 20	38 - 300	25.59"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

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

Each Rulmecca Motorized Pulley consists of a 3 phase AC squirrel cage induction motor, directly coupled to a 2 or 3 stage helical gearbox, mounted on a fixed shaft within an oil-filled hermetically sealed steel pulley shell. Options include: rubber and ceramic lagging, internal backstops and brakes, special paint, labyrinth seals, and stainless steel components. All motors are VFD-compatible and available in power supplies of 230, 380, 460, 575, and 995 volts.

## OTHER PRODUCTS

In addition to Motorized Pulleys, the Rulmecca Group produces a wide variety of bulk materials handling conveyor components including: steel and thermoplastic rollers, transoms, garland



sets, idler pulleys (with live and dead shafts), belt cleaners, dust hoods, and impact bars under the Rulmecca, Precismeca, and Melco brands.

## RULMECCA GROUP

Headquartered in Bergamo, Italy, Rulmecca Group is the world's largest supplier of Motorized Pulleys, rollers, idlers, and pulleys for heavy duty belt conveyors. The privately held group employs more than 1,200 people in 22 production and sales companies around the world serve Rulmecca Group clients in more than 85 countries, as follows:

Motorized Pulley sales and service: United States, Italy, England, and Denmark.

Manufacturing companies: Germany, Canada, England, Italy, South Africa, Thailand, Venezuela, and China.

Sales companies: Australia, Sweden, Finland, Spain, Portugal, France, Turkey, and Indonesia.

Traditionally focused on bulk materials handling, Rulmecca Group introduced its own range of Motorized Pulleys, rollers, and components to the international unit handling and food processing market in 2013.





## PRODUCTION and R&D

The Rulmeca Germany GmbH Motorized Pulley production and R&D center, with a staff of more than 120, is in Aschersleben, Germany, producing more than 8,000 units per year and performing all research & development.



Rulmeca Corporation offers application engineering assistance as well as assembly and repair service from the Wilmington, NC facility. "Quick Ship" is available on most of the company's Motorized Pulley portfolio and "Same Day Service" is available on the most popular model/power/speed combinations, as required.





**RULMECA MOTORIZED PULLEY PEOPLE ARE NEAR YOU  
WHENEVER YOU NEED US. WE SPEAK YOUR LANGUAGE  
AND UNDERSTAND YOUR NEEDS.**

**GLOBAL PRESENCE  
LOCAL SERVICE  
LOCAL CONSULTING  
LOCAL ASSEMBLY**

**Moving ahead.**

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