Melco is a member of the Rulmeca Group

On December, 6th 2006 Rulli RULMECA S.p.A., acquired the leading South African roller manufacturer MELCO Conveyor Equipment, a well known brand in South Africa and on the international bulk handling market.

Melco, established in 1970 employs over 400 people who design, development, manufacture and marketing of high quality, competitively priced, conveyor idlers and structure.

Melco is ISO 9001: 2008 certified and manufactures to DIN, SANS 1313 and CEMA specifications.
Introduction to Motorized Pulleys
General Overview

- Power range from 0.10 kW to 250 kW
- Diameters from ø138 to ø1000mm
- Complete stainless steel options up to ø400 - AISI 303/304 - alternatively 316
- Any voltages up to 995V
- Insulation Class F - alternatively Class H
- Electromagnetic brake, external brake shaft or backstop
- Standard ambient temperature range: -25°C to +40°C
- Rubber or ceramic lagging
- ATEX 95 - Zone 22 - dust explosion proof motors for dusty grain handling
- CSA certified motors available
Why use a RULMECA MP’s?

Exposed drive

- Much space, many parts
- Dust reduces the efficiency because of temperature increase
- Often Oil leaks based on design
- Lower efficiency based on the design – right angled worm gears
- Great deal of maintenance

Rulmeca Motorized Pulley

- RMP compact hermetic sealed design, space saving
- Dust cannot effect the AC-motor
- Less parts
- Less maintenance
- **Higher efficiency:**
  - Continuous oil cooling system
  - High efficient spur gear design
  - Constant temperature at full-load
Motorized Pulley Benefits

Internally powered
- Protects drivetrain from environment
- Saves space
- Improves personnel safety

Hermetically sealed
- Improves drive reliability

Self-lubricating
- Reduces maintenance labor

Runs on standard 3 phase power supply
- Retrofits easily (quick installation)
Where can I use Motorized Pulleys

RULMECA MOTORIZED PULLEYS-
The perfect drive unit for corrosive chemicals and abrasive bulk materials:
- Steel & copper
- Coal & coke
- Granite
- Phosphate
- Sewage sludge
- Quarry
- Agriculture
- Marine
- Mining
The inner life of a Motorized Pulley

Stationary External Shaft

Factory Oil-filled

"Drip Lip"

Two Double Lip Seals

Electric AC Motor

Spur Gear Box

Rotating Drum

Deflection Seal

Terminal Box

Oil-filled
Hermetically sealed

- Inner dust lip seal (brown) made of Viton to withstand higher pressure
- Outer dust lip seal (black) natural rubber
- Deflection seal (blue) thermoplastic polyuretham

Standard sealing system for MP range 220M – 320H
Key Feature

Degree of sealing: IP 66/67

- The drive elements are encapsulated within the drum.
- An ingenious shaft seal system provides perfect protection for the motor, gearbox and bearings from extraneous influences such as high-pressure cleaning, liquids, dirt, dust and chemicals.
Low maintenance costs

- MP’s are nearly maintenance free
- Oil changes are recommended after 30,000 hours for standard mineral oil and 50,000 hours for synthetic
- Self lubricating system equals reduced downtime
- Seals should be changed after 30,000 hours in service
- Expected bearing lifetime between 50,000 & 70,000 hours
- Lifetime of gears about 50,000 hours
- Regreasable sealing system has to be checked from time to time -> visible level indication
Automatic Lubrication Option

Retrofit large and smaller Motorized Pulley units

- Labyrinth seal automatic re greasing
- Full range of grease canisters available
- Easy installation
- 90 Day grease canisters are recommended
- Inspection required periodically

Large pulley retrofit kit

Small pulley retrofit kit

Refill kit
Compact, Light and Safe!

- Space-saving, compact, internally driven
- Lighter than exposed drives (only one drive enclosure - not 3)
- Eliminates heavy cantilevered drive support structure
- Safer than exposed drives - no moving external components
- Due to compact design allows move space around the work area

Compact design

Less support structure required
Space saving design

✓ Compact and aesthetic power package

✓ No external gearbox, chain guard, motor and pillow block bearings
Simple to install

- Fit it and forget it!
- Simple and quick to install
- Easy to assembly and to align
High Efficiency

The pulley is driven directly by the internal gearbox, giving the Motorized Pulley an efficiency of:

up to 95%

Therefore, less energy is required. This makes RULMECA MOTORIZED PULLEYS one of the most economical conveyor drives.
Flame proof 800H/HD MP - encloser “Exd”

Design of flame proof gaps

Brass bushing pressed in to the steel cover

Brass used to avoid sparks
Rubber and ceramic lagging options

- Full rubber lagged
- Partial rubber diamond
- Partial rubber smooth
- Full ceramic diamond
Brake possibilities internal or external brakes

External brake shaft

Electromagnetic Brake

Backstop

Cover plate
Rollers in Roller Assembly
Flat Inclined Plane Cam
Surface
Outer race
Cam
Electrical Connection Possibilities

Small Terminal box

Large Terminal box

Straight Connection

1000HD Terminal box

Motorized Pulley Presentation
All RULMECA MOTORIZED PULLEYS have 3 built-in thermal protection switches:

- Connect to normally closed control circuit
- Designed to provide back up to plant current overload protection
Different Mounting Brackets

Mounting brackets type KL30, KL41-HD, KL42, KL60

!!!Optional attachable for executions 138E-500M

Mounting brackets type AL/ALO

!!!Factory assembled from execution 500H-1000HD

KL41-HD
RULMECA Manufacturing Facility

- Situated in Aschersleben Germany
- Facility covers more than 50,000 square metres
- Contains 130 CNC and conventional lathes, hobbing and toothing machines
- Facility has research and development team and programme
- Ability to full load testing up to 250kW
- Capacity to manufacture 10,000 units per annum
- 150 employees and 20 engineers on staff
- Largest manufacturer of Motorized Pulleys in the world
Maintenance and Service Support

- High level technical support provided by Rulmeca engineers and technicians in Aschersleben, Germany and Johannesburg, South Africa
- Certified service agents strategically positioned in country
- Ability to provide service support in shop or on site depending upon location
- Spare Motorized Pulley available in stock i.e. common sizes
- Installation assistance supplied upon request
- Preventative maintenance support available
- Local sales and technical support available
Tarmac Aggregates

Various dual and single drive overland applications

Tarmac is a global leader in the extraction and processing of crushed rock aggregate. In the UK alone, they produce in excess of 42 million tonnes of aggregate each year. Tarmac currently operates more than 180 quarries and sand and gravel operations in the UK, Europe and the Far East. In June 2007 Tarmac upgraded 14 conveyors at Blashford quarry to increase the loading capacity from 150 to 350tph, with the additional benefits of improved reliability and reduced maintenance and energy costs.

This new installation is powered by 18 ceramic lagged RULMECA MOTORIZED PULLEYS

10 x 22kW x 1.6 x 630 x 950 (5 x twin drive)  
8 x 37kW x 1.6 x 630 x 950 (4 x twin drive)

Pre RULMECA Drives - Average Power consumption was 92,000 kWh/month  
With RULMECA Drives - Average power consumption is now 78,000 kWh/month  
Total saving of 14,000 kWh/month. Cost per kWh 0.10 x 14,000 saving £1,400 per month, £16,100 per year (based on 50 weeks production)

Figures based on 2008 and 2009  
All figures supplied, courtesy of Tarmac Blashford
Motorized Pulleys use to increase ship loading rates

Alaska Railroad Corporation (ARRC) increased the ship loading rate from 800 to 2,000 TPH at the company’s 22 year old rail-to-ship Seward Loading Facility (SLF) on Resurrection Bay, Alaska in 2005 as part of a facility acquisition and upgrade to decrease operating costs and revive export of Alaskan steam coal to Korea and other export markets.

When increasing the ship loading rate from 800 to 2000 TPH, Krech, Ojard, & Associates specified more powerful drive systems for all of the conveyors in that circuit. However, they were faced with a dilemma on the shuttle boom conveyor drive... how to install a 75 HP (55kW) motor, gearbox, and pulley in the restricted space of the shuttle support structure without expensive major modifications. The solution came when Roger Meittunen of Engineering Design Services suggested a RULMECA MOTORIZED PULLEY to Krech, Ojard, & Associates designers. The Model 630H provided a 75 HP (55kW) motor powered by the facility’s 460V/3PH/60Hz power supply in a “narrow footprint” of 24 inch (630 mm) diameter, 47.24 inch (1200mm) face width, with a mounting bracket spacing of only 59 inches (1500mm). Only minor changes were required to remove the old pulley, pillow blocks, and drive system to accommodate the Motorized Pulley. Another interesting feature of this project is the use of a 460V/100watt anti-condensation heater built into the Motorized Pulley.
Allouez Dock

Motorized Pulleys use for Bucket Wheel Reclaimers

Burlington Northern Santa Fe Railroad (BNSF) completed the overhaul of two of three 40 year old crawler-mounted bucket wheel reclaimers at the company’s rail-to-ship transfer terminal for taconite pellets located near Superior, Wisconsin. The objective of the upgrade was to reduce high maintenance expense while improving system reliability in the stockpile area. The upgrade included structural changes, replacement of on-board diesel engines, and the installation of RULMECA MOTORIZED PULLEYS.

RULMECA engineers presented the Motorized Pulley concept for the bucket wheel reclaimers to BNSF suggesting a “Dual Drive” arrangement for the tail conveyor due to its requirement of 200 HP (150kW). That year three Model 800H Motorized Pulleys, with 31.5 inch (800 mm) diameter and 57 inch (1400 mm) face width were purchased. Each Motorized Pulley provided 120 HP (90 kW) at a belt speed of 768 fpm (4 m/s) on a power supply of 460V/3ph/60Hz, generated by the newly-installed on-board diesel generator. The compact design minimized structural modifications and greatly simplified the “Nested Dual Drive” configuration beneath the tail conveyor. The successful upgrade of the first machine encouraged BNSF to upgrade a second Bucket Wheel Reclaimer, completed in 2005, using three 100HP (75kW) RULMECA MOTORIZED PULLEYS. The third and final set of Motorized Pulleys was delivered July 2006.
Thankyou for your Attention

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