



# Technical Bulletin No. 105

## Motorized Pulley “Feeder Drives”

---



### Limestone Quarry (Georgia—USA)

Two 15.75” diameter 5.5 HP Motorized Pulleys were installed 1994 to automatically “choke feed” tertiary gyratory crushers, working in combination with variable frequency drives (VFD) and optical sensors. Each pulley drives a 36” wide belt at a maximum speed of 120 FPM to transfer 4” minus product at 425 TPH.

**Technical Precaution:** *When driving motorized pulley with VFD on 460 volt 3 phase 60 Hz power supply, always restrict frequencies to allowable frequency spectrum of 12 to 66 Hz to avoid torque loss and heat build-up. Filter VFD output if VFD is more than 30’ from motorized pulley to avoid resonance-induced voltage spikes.*

---

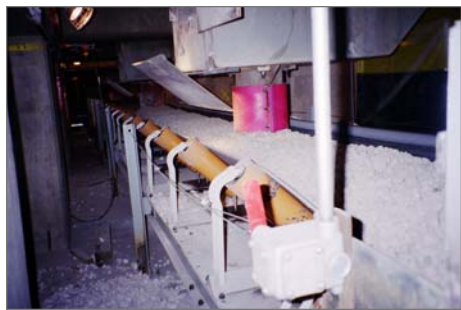


### Foundry for Railroad Truck & Rail Castings (Ohio—USA)

Installed at first American Steel Foundries plant in 1980, this 15.75” diameter 10 HP motorized pulley transfers recycled foundry sand to mold area at 150 TPH. Conveyor makes 30 start/stops per hour. Ambient environment is hot (>104° F) and contains a high percentage of airborne abrasive particulate. Photo taken in 1993, after 13 years of service.

**Technical Precaution:** *When installing motorized pulley in hot environment (>104° F), specify optional Class H motor windings and synthetic oil. Contact Rulmecca if ambient temperature will exceed 120° F.*

---



### Taconite Processing Plant (Minnesota—USA)

Two limestone feeder belt drives beneath storage silo were converted from 20-year-old DC motors to AC-powered motorized pulleys in 1995. An ABB VFD drives each 19.72” diameter 5.5 HP motorized pulley to a maximum of 120 FPM. Conversion enabled plant operator to eliminate exposed motors and gearboxes and replace SCRs, relays, and timer banks with VFDs in control panel.

**Technical Precaution:** *When driving motorized pulley with VFD on 460 volt 3 phase 60 Hz power supply, always restrict frequencies to allowable frequency spectrum of 12 to 66 Hz to avoid torque loss and heat build-up. Filter VFD output if VFD is more than 30’ from motorized pulley to avoid resonance-induced voltage spikes.*

---



### Electric Power Plant (Connecticut—USA)

Designed and built in 1989 by ABB, this refuse derived fuel (RDF) plant uses two 12’ diameter trommels to separate light burnable trash from landfill material. A 24.80” diameter 30 HP Motorized Pulley drives each steeply inclined trommel feed conveyor at 300 FPM. Each 100’ long 48” wide feed belt is fitted with cleats and sidewalls to elevate 250 TPH of refuse at 45° inclination.

**Technical Precaution:** *When using motorized pulley to drive a single direction belt on an incline use built-in mechanical backstop to prevent material from rolling downhill when belt stops.*

---



## Cement Plant (Belgium)

Photo shows one of five hopper feeder conveyors beneath aggregate mixing bins installed near Brussels in 1994. Each 30" wide feeder belt is driven by an 8.5" diameter 4 HP Motorized Pulley at 200 FPM. Collector belt is driven by a 15.75" diameter 10 HP at 250 FPM.

**Technical Precaution:** When designing hopper feeder drives always include material shear force in power calculations. Rulmeca Corporation conveyor design software is available at [www.rulmecacorp.com](http://www.rulmecacorp.com).



## Cement Plant (Dornreichbach—Germany)

Cement company installed twelve product load-out conveyors in 1994 at this German facility. A 12.64" diameter 4 HP Motorized Pulley drives each sidewall-type truck feed conveyor at 250 FPM.

**Technical Precaution:** When designing drives for sidewall-type or cleated belts, always include dead weight of extra material in power calculations. Rulmeca Corporation conveyor design software is available at [www.rulmecacorp.com](http://www.rulmecacorp.com).



## Limestone Quarry (Georgia—USA)

After testing the "automatic choke feed" concept in 1994 and 1995, this national aggregate producer incorporated Motorized Pulley-driven hopper feeder conveyors at five additional quarries in the Southeast and Midwest US. As explained on page one, this concept networks a motorized pulley with an optical sensor and a VFD to automatically choke feed each gyratory crusher to optimize product size and throughput rate.



- Hermetically sealed enclosure increases system reliability
- Internal motor & gearbox minimizes conveyor drive size & weight
- Self-lubricating gearbox design decreases maintenance expense
- Enclosed drive and "dead shaft" improve operator safety
- Direct drive lowers electrical power cost



**Precismeca Limited (Canada)**  
606—19th Avenue, Nisku, Alberta T9E 7W1  
Tel. 800-661-4065, Fax. 780-955-9412  
Email: [sales@precismeca.ab.ca](mailto:sales@precismeca.ab.ca)  
Website: [www.precismeca.ab.ca](http://www.precismeca.ab.ca)



**RULMECA Corporation (USA)**  
6740-E Netherlands Drive, Wilmington, NC 28405  
Tel. 910-794-9294, Fax. 910-794-9296  
Email: [mgawinski@rulmecacorp.com](mailto:mgawinski@rulmecacorp.com)  
Website: [www.rulmecacorp.com](http://www.rulmecacorp.com)