



Motorized Pulleys Variable Frequency Drives



Cement Plant Weigh Feeder - (Oklahoma—USA)

Weigh Feeder, driven by a flux vector VFD, has 30" wide belt with 4" sidewalls and is powered by a 16" diameter 5.5 HP model 400H Motorized Pulley with a belt speed range of 0.8 to 80 fpm. Since amp draw and Motorized Pulley temperature were carefully monitored during commissioning, feeders are capable of moving a wide range of material throughput (from less than 1 tph to more than 100 tph.) VFDs automatically vary the power supply frequency from 1 Hz to 100 Hz.

Technical Precaution: Since Motorized Pulleys cool their motors by transferring heat through the pulley shell into the conveyor belt, it was essential to verify that adequate cooling was available through the wide frequency spectrum.

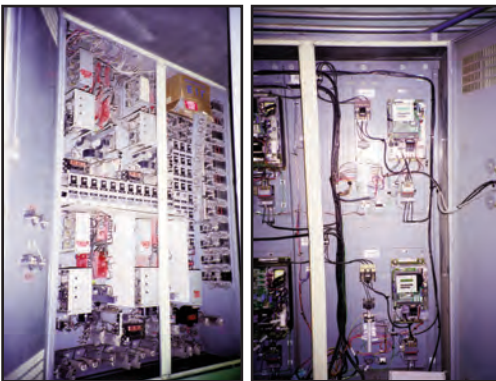


Cement Plant Dual Drive with Load-Sharing - (Oklahoma—USA)

A 550 foot long reclaim tunnel conveyor, fed by six feeders, has a concave vertical curve and elevates material from beneath the storage pile 138' up to the transfer tower. Original 75 HP drive in transfer tower was replaced by two 50 HP Motorized Pulleys, one on the tower and one in the tunnel, controlled and synchronized through the use of two flux vector VFDs.

Note : This control system insures load-sharing and provides overcurrent protection, ramp up and ramp down, and variable belt speed, if necessary.

The dual drive configuration also eliminated belt bounce in the vertical curve. Previously when the conveyor was started empty, it bounced up at least 4 feet and damaged the belt and feeder support structure.



Taconite Plant Control Panel- "Before & After" (Minnesota—USA)

Left photo shows control panel of taconite plant DC-powered variable speed conveyor control system before 1995 conversion to AC drives. Note SCR's, relay banks, and timer banks.

Right side shows control panel after conversion to AC motorized pulleys controlled with variable frequency drives. Elimination of SCR's and relay banks improved reliability, simplified troubleshooting, and reduced energy loss.

Technical Precaution: The power and current range of the VFD must be selected according to the full load amperage given on the Motorized Pulley data plate.



Various Limestone Quarries (Georgia—USA)

Photo shows two of ten 15.75" diameter Motorized Pulleys installed 1994-1998 to automatically "choke feed" tertiary gyratory crushers. Working in combination with a VFD and an ultrasonic sensor, each Motorized Pulley drives a 36" wide belt at a maximum speed of 120 FPM to transfer 4" minus product from hopper to crusher throat at 425 TPH.

Technical Precaution: Do not allow resonant frequencies in the power line to cause voltage spikes in the motor. Potential resonant frequencies may be eliminated by limiting the distance between the VFD and the motor, installing a filter on the VFD output, and/or selecting a VFD which modulates pulse width in a manner so as to avoid resonance.