Delroyd Worm Gear®
Altra Industrial Motion

Application Profile

Product — Worm Gear Drives

Application — **Screwdown Mill Stands**

Highlights

- Large radius added to worm thread
- Manganese gear material for enhanced yield and strength
- Through hardened, ground and polished alloy steel worm
- Worm thread root was shot peened to provide stress reduction at contact zone

A large steel mill in Pennsylvania was experiencing continuous problems with the gear drives in their screwdown mill stands. The existing manufacturer's gear material was breaking down which caused fatiguing, cracks and broken teeth due to inherent designed duty-cycle stresses.

A meeting with the mill's engineers, purchasing manager and hot mill managers, was held at Delroyd's Niagara Falls facility to review the problem and determine why the existing gearing design was failing so rapidly, and what could be done to solve the problem and improve the gearing life.

The Delroyd team reverse-engineered the screwdown gearbox to develop a more robust solution. The bronze gear material was changed to manganese for enhanced yield and overall strength. A larger radius and shot peen process was added to the root of the worm thread hence reducing the root stresses.

The new Delroyd gearbox design extended the gearing life from 3 years to more than 6 years. Based on the redesigned mill stand gear box success, the customer awarded Delroyd with orders for additional new complete gearboxes, spare worm/gear sets and additional gearbox rebuilds.

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