INOVANCE

Automation case study

Cold pilger application

The customer is an Indian industrial automation company with strong expertise in a range of products. They've been in business for over ten years and have a track record of steady growth and satisfied customers. Their commitment is to offer the right products, services, and support at the best possible cost to a range of automation customers, including cold rolling pipe mills.

The Challenge

Cold rolling pipe mills are each unique in terms of plant design. However, they all tend to have the following components: the main motor and its transmission mechanism, a steering box, a transmission shaft, a rolling mill stand, a rotary feeding mechanism, a feeding chuck and bed, a mandrel card tightening device, an inlet and outlet chuck, a feeding device, and a discharging device.

The rotary feed mechanism is a crucial part of the cold rolling tube mill. It runs in complete synchronization and coordination with the reciprocating motion of the rolling mill stand, and it must rapidly move between the front and rear limit positions so as to complete the rotary feed movement within the fixed angle range of the crankshaft.

The customer was using a traditional rolling mill rotary feed mechanism with a gearbox. This had high impact and noise levels, and was not really suitable for high-speed rolling. That's because, in a gearbox rotary feed mechanism, a high rolling speed leads to significant errors in feed amounts and rotation

angles. Meanwhile, in the case of hydraulic rotary feeding mechanisms, even though the structure is simple and contains fewer parts and less inertia, there are still many problems. Hydraulic components are easily damaged, oil leakage is often high, and feed rates and rotational angles are still not accurate enough for high-speed rolling. Finally, with a DC motor mechanism, noise is greatly reduced and operating speed is increased, however motor response speed is slow, and accuracy of feed volume and rotation angle is still far from perfect.

The solution

The customer was aware of all these drawbacks in the various rotary feeding mechanisms, and was looking for an up-to-date servo drive and motor solution that did not suffer from these issues. After a consultation with global industrial automation company Inovance, a complete Inovance solution package was chosen. This included the **AM403 motion controller, IS650N & SV660N Servo drives, ISMG1 & MS1H3 servo motors, and an IT7100 HMI.**

Key Benefits

- Reduced feed and rotation errors
- Significant increase in machine efficiency and speed
- Smooth running mechanism

The benefits

Inovance's solution delivered significant performance improvements in terms of speed, quality, and efficiency of the customer's cold rolling pipe mill operations. Machine speed and efficiency was radically increased, errors of feeding and rotation were reduced, and the mechanism ran considerably more smoothly.