SNAPSHOT

Tube Mill

Dofasco

Overview

Industry:
Metals

Focus:
Improved Process
Warehouse

Full Engineering
Equipment Coordination

Dofasco successfully entered the tubular business in 1997 with the construction of its No. 1 Tube Mill. With the success of this first mill, a second was soon required.

JNE Consulting headed up the design engineering for the No. 2 Tube Mill, including all civil, mechanical and electrical engineering, as well as coordination between equipment suppliers.

The No. 2 Tube Mill, like its predecessor, produces tube by forming hot rolled plate steel into a continuous tubular section which is welded at the seam, then cut into various mill lengths.

The mill lengths are then processed through a finishing floor, or re-cutting operation, where the mill lengths are re-cut into specified lengths, de-burred (removing jagged edges left by the cutting process), cleaned and packaged into bins for shipment. This complete process is fully automated with minimal manual intervention.

The tubes are then further processed by other companies using tubular hydroforming, which consists of forming and shaping the tube in a mold using immense water pressure. Compared to results of conventional methods of overlapping and welding, the resulting hydroformed parts are lighter, of better quality and have lower production costs. These parts are used in various frame components of popular vehicles such as General Motor's Jimmy and Blazer.

The requirements of the automotive industry for larger tubes, increased diameter-to-thickness ratio, different shapes (rectangle, ellipse and other), and various lengths have mill equipment vendors sharpening their pencils and envisioning new designs to meet the current production demand.

New NAC 20" saw cutting through a large tube

The challenge for the No. 2 Tube Mill is the demand for re-cutting large diameter tubes rapidly while keeping the cut quality within stringent tolerances.

The project team examined three distinct cutting methods — shearing, band-sawing, and cold sawing (circular saws). Shearing was fast and band sawing was cost effective, but cold saws delivered the best combined speed and cut quality.

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A prototype saw, developed for Dofasco by NAC (a division of New Automation Corporation), operates on the principle of varying the feed rate of the blade through the tube. The results are a very rapid and clean cut.

JNE also provided engineering for a 125,000-square-foot warehouse, erected in a disused coil yard, to store tubes from the No. 1 and No. 2 Tube Mills. The warehouse is heated by three 2,500 MBH vertical heaters in the winter, and dehumidified by two 160-ton mechanical refrigeration units in the summer to maximize the storage life of the tube product.

Phase 2 warehouse under construction

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