



Narrow strip - wide strip - narrow strip ...

Steel strip hardening and tempering line incorporating martempering and austempering technology for strips up to 650 mm (25") wide and 1.52 mm (0.06") thick (wide, medium and narrow strip, max. 16 strands); capacity: 1300 kg/h (1.4 USt/h)



Flexible hardening and tempering line for Wickeder

The German firm Wickeder Westfalenstahl operates one of the world's most modern plants producing tempered steel strip in Pleasant Prairie, Wisconsin, not far from Chicago. An EBNER steel strip hardening and tempering (H/T) line for martensite and bainite material went into operation at the facility, which sits directly on Lake Michigan, in 1994.

The new facility now austempered and martempers unalloyed to low alloyed carbon steels. EBNER supplied this H/T line - as they did their first in the 1990s - as a complete facility, with strip handling gear, heat treatment section and a computerized process control system.

The most notable feature of this facility is the high level of flexibility with respect to the dimensions of the strip that it can process. The facility can handle wide strip up to 650 mm (25.6") and narrow strip down to 12.7 mm (0.5"); as many as 16 strips can be processed at once. Strip thicknesses range from 0.1 (0.004") to 1.52 mm (0.06").

To process multiple strips, a coil package with up to 16 separate coils is placed on a single winding sleeve. Further downstream are strip shears and a welder, along with a vertical looper that provides the extra strip needed when changing coils.

The heat treatment section consists of a gas-fired hardening furnace with a muffle measuring 11,700 mm (38.4 ft) in length and 800 mm (2.6 ft) in width. Next, a molten metal quench provides for optimum cooling, strip flatness and shape.

After passing through the air cooler, leveling furnace and tempering furnace with gas-tight air cooler, the steel strip can receive a specific color finish in a so-called bluing furnace. After heat treatment the strips are transferred to narrow strip handling gear. The gear consists of 2 x 16 vertical take-up reels. This allows each individual strip to be wound and secured separately. At that point they are virtually ready for shipping. A central operating system controls the strip handling gear and the heat treatment furnace, and also manages the heat treatment programs and archives process data. The overall length of the facility is 104 m (341 ft) and is designed for a throughput of 1,300 kg (1.43 USt) per hour. [02]

Overall view of the facility from the take-up end (line installed in 1994 on left)

