

Compact Hot Strip Mill for TRICO Steel Company, USA

The construction of compact hot strip mill that connects the thin-slab continuous casting machine with the hot strip mill continuously is gaining popularity mainly in North America and Asia because it needs less equipment investment.

Mitsubishi Heavy Industries, Ltd. together with Sumitomo Metal Industries, Ltd. received order and delivered the compact hot strip mill for TRICO Steel Company, USA, and has gained a high reputation. The mill is

introduced below.

1. Facility

Fig. 1 shows the overall line configuration and Table 1 the specifications of rolled material.

2. Features

(1) Delivery term

The first coil was successfully completed on 29th of March, 1997 in a short delivery term of 26 months after the order was received, by using standardized component machines.

(2) Facility

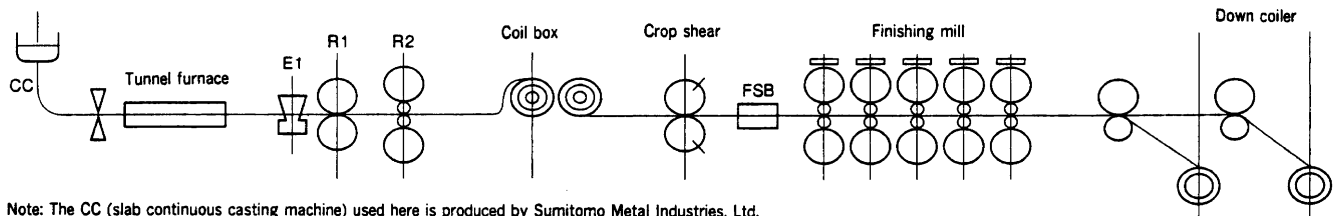
- The small facility length (distance between roughing mill and down coiler: 150 m) ensures lower facility cost including civil, building, etc.
- The application of PC mill can reduce the number of finishing mill stands, ensuring high cost performance.

(3) Product quality

- The adoption of coil box and hydraulic AGC for all

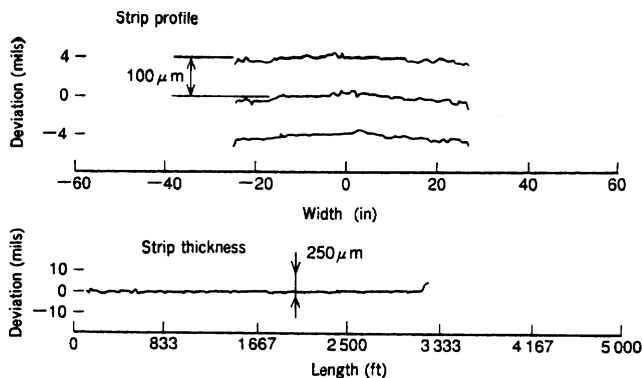
Table 1 Specifications of rolled material

Item	Specification
Production rate	2 million t/y
Steel grade	Low, medium, high carbon steel, HSLA
Slab thickness (mm)	90
Product thickness (mm)	1.0 to 15.88
Product width (mm)	914 to 1 650

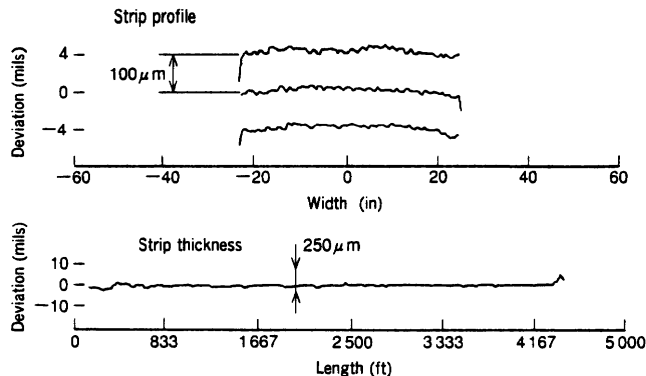


Note: The CC (slab continuous casting machine) used here is produced by Sumitomo Metal Industries, Ltd.

Fig. 1 Overall line configuration



(a) Low carbon steel 0.076 x 53 in (1.93 x 1 350 mm)



(b) Low carbon steel 0.060 x 48 in (1.52 x 1 219 mm)

Fig. 2 Examples of actual strip thickness and strip sectional profile

finishing mill stands ensures high strip thickness accuracy. (Fig. 2)

- The adoption of conventional PC mill with high reputation ensures excellent sectional profile and shape. (Fig. 2)
- The adoption of medium thickness slab (continuous casting machine by Sumitomo Metal Industries, Ltd.) and the appropriate descaling effect ensure outstand-

Continuous Galvanizing and Shearing Combination Line for PANZHIHUA Iron & Steel Co. of China

PANZHIHUA Iron & Steel Company, located in the southern part of Shichuan Province, China and established in March 1965, mainly produces rail-related products such as hot rolled (stretched) materials, wire rods etc. PANZHIHUA has recently built a new cold rolling mill and started the production of cold rolled materials as well as galvanized sheet iron for buildings.

Mitsubishi Heavy Industries, Ltd. (MHI) in collaboration with its Chinese counterpart, has produced the continuous galvanizing and high-speed shearing combination line required for the aforementioned final products. When hot run operations began in March 1997, coil of commercial quality was produced from the second coil onward and the ability of the line to produce steel product of remarkably high quality was confirmed.



Fig. 1 Continuous galvanizing line

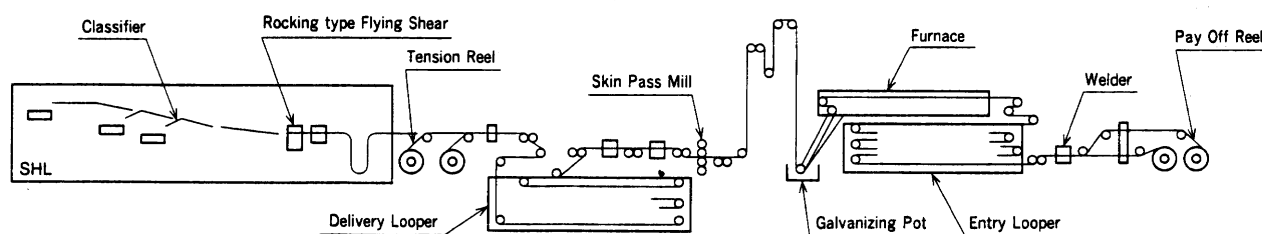


Fig. 2 Overall Schematic layout

ing surface quality as compared with the compact mills of other companies.

(4) Minimum strip thickness

The facility aims at the strips of minimum thickness 1.0 mm (width: 1 370 mm), which can be sold outside as the substitute for cold coil.

(Strip of thickness 1.0 mm and width 1 235 mm has so far been produced as of September 9, 1997.)

Production level reached 100% capacity four months after the start of operations, and since then the line has been running smoothly, earning an enviable reputation and an excellent sales record.

1. Main Features

Type: hot dip & horizontal furnace type CGL

Steel types to be treated: CQ, DQ

Strip dimensions

Strip thickness: 0.25 to 2.5 mm

Strip width: 720 to 1120 mm

Coil weight: entry/delivery side max. 18 t

Line speed (Center section): max. capacity 120 m/min

Production rate: 156 480 t/y

2. Line outline

The photo below shows the Skin Pass Mill and the Tension Leveller in side view. The line is composed of the entry section, the furnace and galvanizing section (center section), the delivery section for coiling, and the shearing section for the production of steel sheets (Fig.2).

2.1 Entry section

The machines between the Pay Off Reel and the Entry Looper compose the entry section. There are two pay off reel units, allowing for off gauge scrap to be cut from the head and tail ends of the strip without the necessity of a line stop before it is welded to the preceding coil. Coil opening and crop disposal operations are carried out automatically, and these operations are triggered by the signals transmitted from the coil end detector and the thickness gauge respectively. The welder welds the tail end of the preceding strip to the head end of the trailing strip. The entry side comes to a stop at the time of welding, but a large capacity horizontal looper allows a constant supply of strip during that time, without any change in the center section running speed.