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An Outline of Temper and Processing Line for Steel Coils

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Synopsis :
At Chiba Works, the newly designed line, named "Temper & Processing Line (TPL)," started its operation in April 1983. TPL has a 2 stand-6 high skinpass mill, combined with a high speed coil preparation line and a packaging line, and produces ultra-thin cold-rolled steel for tin plates, black plates and tin-free steels. To actualize a continuous and high speed line, the technique of skinpass rolling on the weld line, method of eliminating the stop mark and a high-speed side-trimmer of 1600 m/min, the highest in

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Pay-off reel
Side trimmer
Dividing shear
Off-gage cutting device
Welder
Temper mill
E.S. Oiler
Tension reel

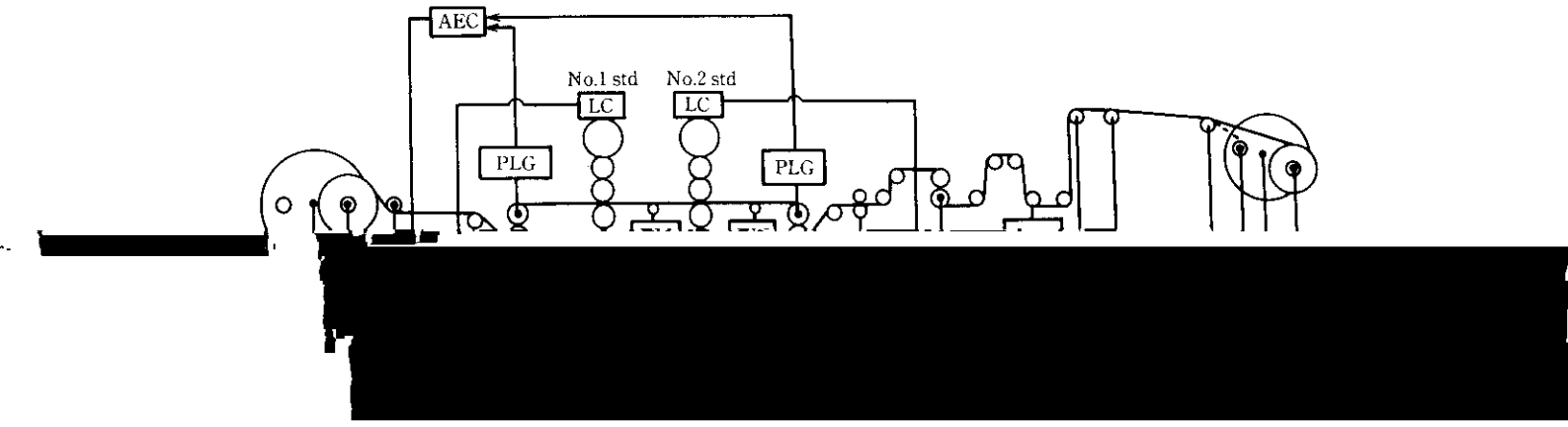
coil is produced.[2] The distance from the pay-off reel to the tension reel is 30.5 m and the sheet length within the

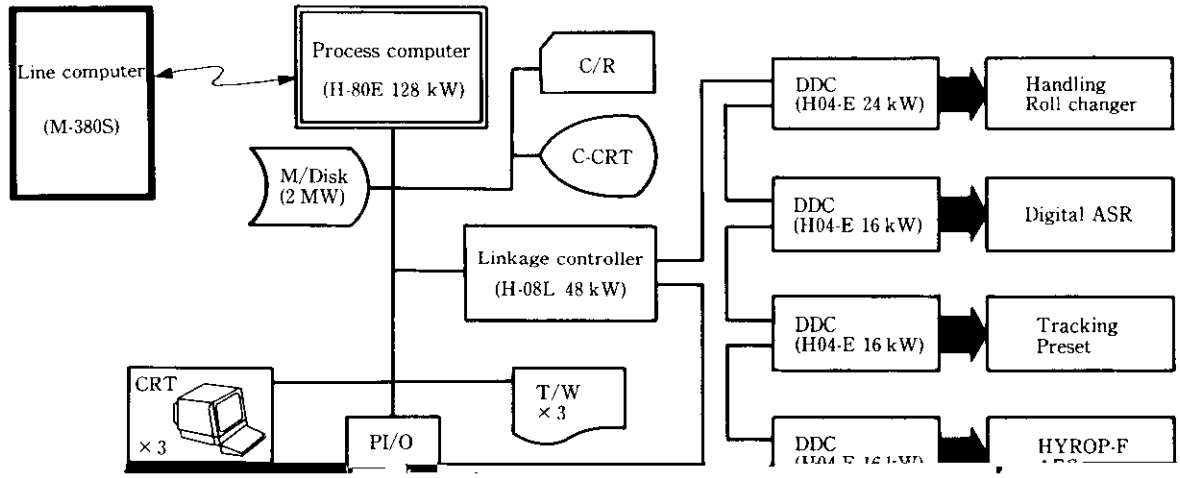
3.5 Finishing Equipment

Coiling and delivery of products can be monitored from the main pulpit, which is located before the tension reel.

The TPL and No. 3 CPL are adjacently located in

Two-head turning side-trimmers were adopted so that careful blade adjustments can be made on the standby trimmer head, resulting in shortened blade changing time. Furthermore, a motor-driven adjust-


AEC
No.1 std
No.2 std
LC
LC
PLG
PLG


Line computer
(M-380S)
Process computer
(H-80E 128 kW)
C/R
C-CRT
M/Disk
(2 MW)
Linkage controller
(H-08L 48 kW)
DDC
(H04-E 24 kW)
Handling
Roll changer
DDC
(H04-E 16 kW)
Digital ASR
DDC
(H04-E 16 kW)
Tracking
Preset
DDC
HYROP-F
CRT
×3
PI/O
T/W
×3

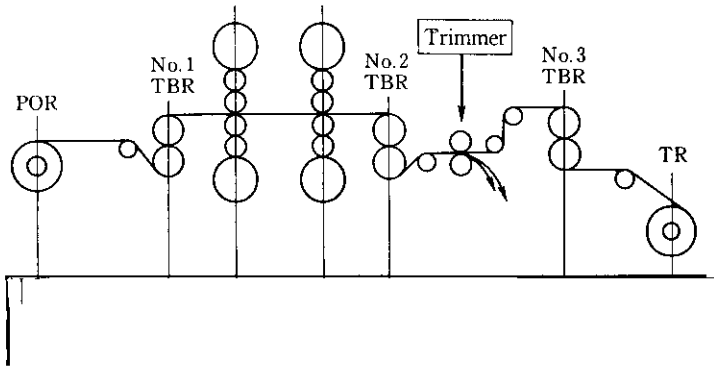
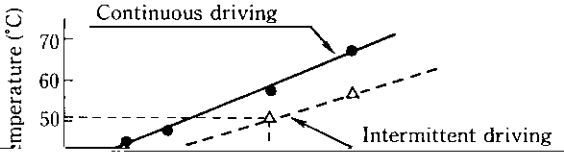


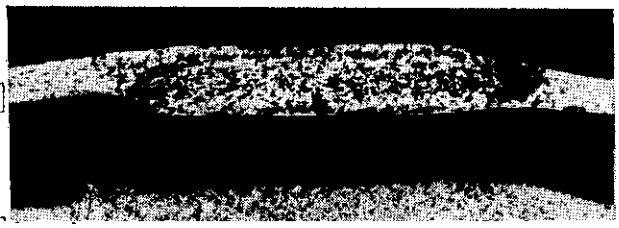
Fig. 5 Tension map of TPL

constantly applied to the sheet.

(3) Reduction in variations in clearance during operation

During operation, the clearance between the upper





tion of such stop marks becomes a problem. In this line, the formation of stop marks is prevented by maintaining some definite proportion of rolling tension as a stationary tension even during mill stops[6].

5 Automation Techniques

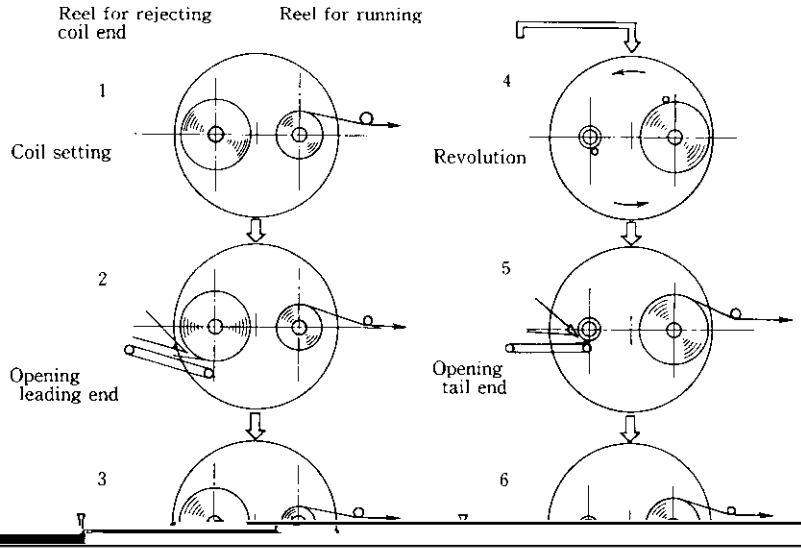
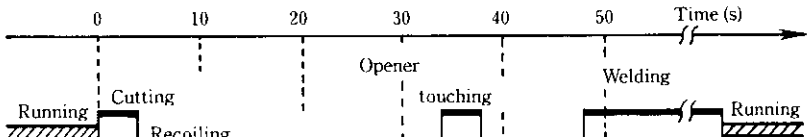


Fig. 10 Coil Preparation in entry section



5.2 Delivery Coil-Dividing

Figure 12 shows the delivery coil-dividing equipment, using carrousel reels. As shown in **Fig. 13**, automatic

tions of the scrap baler. The weight of trimmed scrap is constantly monitored by a DDC. When a set weight is reached, trimmed scrap is pressed into a square block, as shown in **Fig. 14**, and is automatically removed by a con-

makes judgments regarding range of coil weight, the number of welds and so forth. At the dividing point, it is possible to take samples. An automatic spool insertion device is provided for cases where a spool is necessary to protect the inside portion of the coil.

6 Measures to Assure High Quality

6.1 Effect of Continuous Operation

Because the off-gages of the leading and tail ends of

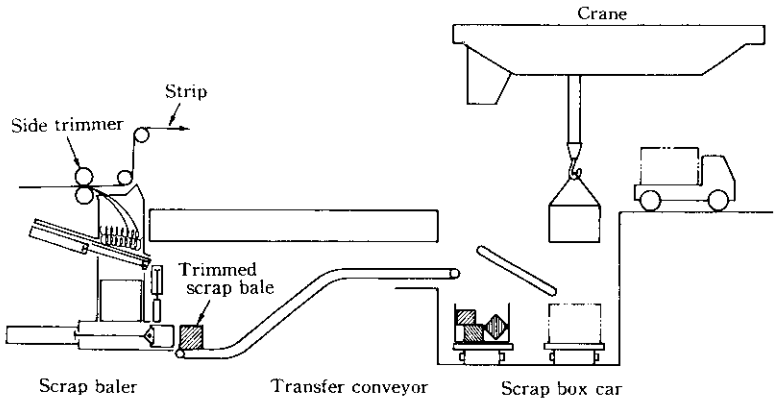


Fig. 15 Automatic trimmed scrap transfer device

6.2 Concept of Clean Mill

The problem of oil adhesion to the strip during dry

7 Conclusions

Today, steel mills are required to increase their pro-

hydraulic mining and hydraulic cylinders are not