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Yieh United Steel Corporation (YUSCO)

Improving the thickness accuracy of hot-rolled plate

New processes and products Safety

Challenge

YUSCO's hot rolled plate is produced in the rough mill which is part of our hot strip line. The thickness of the plate is controlled by adjusting the gap between the working rolls. However, this is done without measuring equipment. The accuracy of the gap varies according to the different temperatures of the plates as they go through the rolls.

To improve thickness accuracy, the operator has to measure the thickness of the plate at high temperature to set the gap for the next plate. This exposes the operator to a high temperature hazard.

Action

The target thickness for the plates is between 16 and 30 mm. In the original rolling pattern, thickness was controlled by the rough mill. After rolling, the plates were pushed to the crop shear and cut to the required length.

Thickness accuracy was improved by modifying the rolling pattern. The new rolling pattern has the following steps:

1. Using the rough mill, the plate is rolled to a thickness that is between two and five millimetres greater than the final thickness required.
2. The plate is moved to the finishing mill where it can be rolled into heavy gauge strip at the required thickness. Measuring equipment is available so quality can be controlled.
3. The heavy gauge strip is moved to the crop shear where it is cut to length.

Outcome

Implementation of the modified process has resulted in a dramatic improvement in thickness accuracy. With an allowed deviation of ±0.3 mm, accuracy has improved from 34 to 100%.

The new procedure also avoids the high temperature risk to the operator.