

# Continuous Annealing Line

## Baoshan Iron & Steel Co. LTD

### Project background

ABB Continuous Annealing Lines are characterized by accurate control of the annealing process, and by the production of high quality products. It brings all electrical and automation activities under common control platform to provide efficient power and maximize productivity. The implementation of this process line symbolized that Baosteel started up Chinese most competitive package material production base. Featuring an extremely thin product specification, high annealing temperature, fast process speed and high automation level, the production can be improved greatly. The new processing facility, with an annual production of 420,000 metric tons, will produce tin strips and chromium strips, as well as thin gauge CQ cold-rolled sheets.

The complete offer from ABB includes automation control system, variable speed AC motors and drives, Stressometer® Flatness System for SPM, etc

### ABB technical superiority

- The core technology of the ABB multi-drive is DTC - Direct Torque Control, that's first class motor control system. The consistently excellent performance of multi-drive guarantees that the drive is not the limiting factor in the process. DTC technology has been proven in various applications and demanding environments guaranteeing the high reliability of the drive. This is one base of the accurate small tension control in the furnace section.
- Integrated automation system 800xA delivers a single operation engineering, and information management environment for an extended automation scope. System 800xA wide security features support regulatory compliance and ensure safe, reliable operations. ABB 800xA System based on object/aspect characteristic can integrate operation, control and information management seamlessly together to enable multi-tasking, and configuration flexibility, all types of information search and statistics possible. Integrated control platform for a more unified system of maintenance and the latter provides a familiar development environment and the broader space. ABB's AC 800PEC are standard metallurgical treatment solutions used in a unified treatment of high-end PLC controller, the cycle can be achieved the fastest processing time of 25 microseconds,



and supporting very fast analog/digital conversion and nominal/actual value comparison directly on peripheral I/O module.

- The well known of ABB measurement products, tension meter and flatness system, Stressometer® 7.0 FSA, are used for the high quality measurement and control system used in skin pass mill to achieve precise metal strip flatness.

### Customer background

Baosteel Group Corporation (Baosteel) is the most competitive steel producer in China. And Continuous Annealing Line was an extremely important project of Baosteel's 'Tenth-Five Year Plan'.

On Sep.11, 2007, the first qualified coil was completed under the management of ABB Metals within only three months on site commissioning. Based on high availability of ABB's equipment, the stable tension and speed control, on May.30, 2008, 9 months after completion, this continuous processing line ensured the achievement of a high product quality, high yields, low energy consumption, low operating costs and minimum down-time. The speed of process section reaches at 800m/min, that makes it the world's fastest line of this type. And with the thickness of 0.15mm, it also sets a new record as the world thinnest processing line.



## General Information

Material	Steel grade CQ, T2.5, T3, T4, T5, IF T2.5
Productivity	420,000Ton/year
Width	700-1080mm
Thickness	0.15-0.5mm
Furnace max temperature	800°C
Entry&exit Speed	1000m/min
Process max speed	800m/min

## Scope of Supply

ABB supplied the electrical and automation system and carried out the plant designing, project management, training, erection and commissioning work.

### Drive System

- Low voltage drives (ACS800)
- AC Motor

### Measuring System

- Elongation and flattening control.
- Tensiometer
- Weld seam detector

### Automation System

- Level1
  - 800xA system
  - AC800PEC controllers
  - Operation/engineer stations
  - Control desks and boxes
  - I/O Panels
  - Emergency stop system
- Level2
  - Manufacturing Execution System with standby server configuration
  - Complete process line control system
  - Oracle Database Management System

### Control Interface



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