



WIDE, HIGH SPEED, FOIL MILLS
SHANGHAI SHENHUO ALUMINIUM
FOIL CO LTD, SHANGHAI, CHINA

EFFICIENT PRODUCTION OF HIGH QUALITY, LOW COST FOIL



CHALLENGE

As the demands for aluminium foil applications in terms of quantity and quality have increased, so have the demands on the equipment that produce the foil.

Today's rolling mills are, therefore, expected to produce foil at less than 6 microns, in widths exceeding 2 metres and be capable of speeds in excess of 2000 metres per minute. At Shenhua, the customer required high productivity and exceptional product quality to meet the demands of both domestic customers and export markets.

Primetals Technologies aluminium portfolio provided a solution to meet these needs.

SOLUTION

The Shanghai Shenhua foil mills are the most advanced foil rolling mills in the world today. Fully designed in 3D, the three wide, high speed foil mills were supplied to Shanghai Shenhua Aluminium Foil Co Ltd as part of the foil plant development in Pudong Kangqiao Industrial Zone, Shanghai.

Commissioned in 2007, the three foil mills are designed to produce in excess of 25,000 tonnes of thin foil per year.

The three mills include a range of state of the art rolling features, including numerous design features, specifically for high speed operation. Primetals Technologies provide process support on every new foil mill project which ensures the smoothest start up and quickest production build up, and for Shenhua, the start up of the mills was achieved in record time for a new foil mill project.

PROCESS CONTROL

The specific demands of wide, high speed foil mills relating to product quality and mill operation are catered for with a range of proven mill design features. Primetals Technologies world leading technological Process Control System provides on-line control of strip flatness and gauge, producing finished foil of the highest quality.

ACHIEVED RESULTS

- The first coil rolled on each mill was of saleable quality
- The foil roughing mill achieved rolling speeds > 1750 mpm at start up + 20 days
- The foil intermediate mill achieved:
 - A rolling speed of 1000 mpm on the first coil
 - Rolling speeds > 1800 mpm at start up + 7 days
 - Foil thickness of 7.5 microns at start up + 16 days
- The foil finishing mill also achieved 7 microns within the first week of rolling
- Usual industry guarantees were met and exceeded for:
 - Thickness
 - Flatness
 - Surface quality
 - Coil build up
 - Strip breaks
 - Productivity

Comprehensive data logging, reporting and diagnostic features form an integral part of the control package maximising the operating efficiency of the mills.

PROJECT SCOPE

- Three foil mills
- Production of 25,000 tonnes per year
- Rolling material 2m wide

EQUIPMENT FEATURES

- Coil sequencing.
- Integrated foil feeding.
- 'E' block configuration roll bending.
- Work roll and back up roll positioning system.
- Mill bearing temperature monitoring and analysis.
- Automatic passline height adjustment
- Fast work roll change facility.
- Strip dryness system.
- Hydraulically operated, dual pivot, constant force ironing roll.
- Beltwrapper (roughing and intermediate mills).
- Schneider roll coolant filtration system, manufactured and designed under license by Primetals Technologies.

PROCESS AUTOMATION FEATURES

- Technological Process Control System.
- Air Bearing Shapemeter.
- ISV sprays & hot edge sprays.
- Variable Crown (VC) back up roll.
- X-Ray thickness gauges.
- Roll eccentricity compensation.
- Rolling schedule maintenance system.
- Productivity & yield optimization.
- S7 PLC for sequence control functions.
- Automated coil, spool and scrap coil handling systems.

	ROUGHING MILL	INTERMEDIATE MILL	FINISHING MILL
Feed stock	AA 1000/3000/8000	AA 1000/3000/8000	AA 1000/3000/8000
Max. entry thickness	0.60 mm	0.35 mm	0.10 mm
Min. exit thickness	0.012 mm	2 x 0.0055 mm	2 x 0.0055 mm
Min. / Max. strip width	1000/1920 mm	1000/1920 mm	1000/1920 mm
Max. coil weight	12,500 kg	12,500 kg	12,500 kg
Feed stock			
Mill size	ø280/1000 x 2150 mm	ø280/1000 x 2150 mm	ø280/1000 x 2150 mm
Max. stand speed	2000 mpm	2000 mpm	1200 mpm
Stand power	1800 kW	1200 kW	550 kW
Max. rolling load	800 t	800 t	800 t

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Brochure No.: T07-4-N661-L2-R-V1-EN

Printed in UK

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