

The Leader of ...  
**Thailand's Rolls Maker**

**TTS ROLLS**  
Thai Tech Steel (2013) Co.,Ltd.

## PRODUCTION PROCESS

### ABOUT US

Thai Tech Steel (2013) Co., Ltd. ("TTS2013") is South East Asia's leading roll manufacturer, managed by a team of experienced managers and is supported by respected professors, metallurgists and engineers.

#### History of TTS2013

In 1987, the former factory operating under the name Thai Tech Steel Co., Ltd, started to produce rolls when it entered into a joint venture with a Japanese party and bought technical know-how of static and centrifugal roll casting techniques from Hitachi Metals, Ltd., Japan.

With the technical know-how Thai Tech Steel Co., Ltd, started to operate independently since 1994 and was jointly incorporated again by Singaporean and Thai Parties in 2003 under the name Thai Tech Steel (2003) Co. Ltd.

In 2013, the original owner of Thai Tech Steel Co., Ltd, with the original management team and experienced staffs came together to form Thai Tech Steel (2013) Co., Ltd. and took over the assets of Thai Tech Steel (2003) Co., Ltd including machineries, factory facilities and all of the equipment to start producing quality rolls again.

The experienced management team at TTS2013 has expanded our production capacity from 2,500 metric tonnes to the present production capacity of 10,000 metric tonnes per annum. The scope of expansion involved new installation of centrifugal casting machines, CNC machineries and equipments; and skills upgrading of workers with relevant industrial training programs.

This has enabled TTS2013 to produce large adamite and double-poured centrifugal cast rolls for medium section mills; and work rolls for hot strip and plate mills with roll weight up to 12-15 metric tonnes per piece.

Various critical inspections are incorporated at all stages of the production process, which include chemical composition inspection with spectrometer, microstructure analysis, dimension tolerance check with taper gauge and ultrasonic inspection.

Today, Thai Tech Steel (2013), with its brand of TTS ROLLS, is the leading roll manufacturer in South East Asia. We produce state-of-the-art ductile nodular cast, acicular, steel base adamite and double poured centrifugal cast products for various applications including bar & wire rod, light & medium section, seamless tube, rings, kocks, sleeves and work rolls for hot strip and plate mills. Our products are currently exported to 45 countries in the world with major customers in countries that include the United States, Europe, Middle East Gulf countries, Africa and South America.

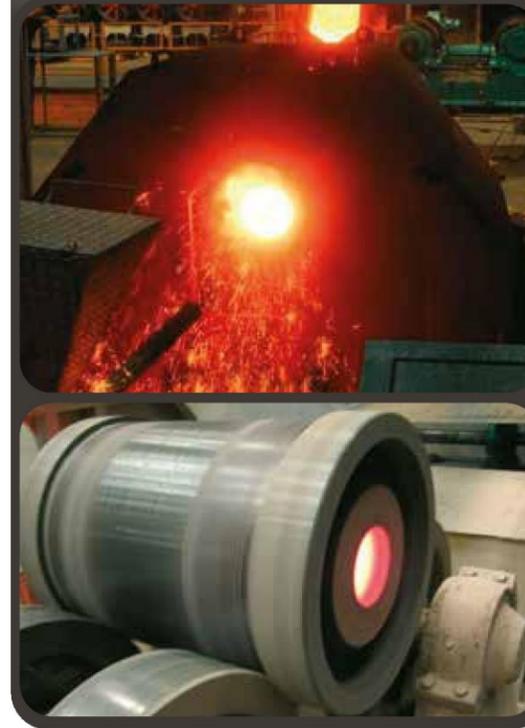
### Centrifugal Casting

The TTS2013 double poured centrifugal casting process was developed for more complex microstructures to meet superior hardness requirement with excellent wear and thermal fatigue resistances while improving the strength of the neck and core of the roll. We could produce a maximum outer diameter of 900 mm with barrel length up to 3000 mm.

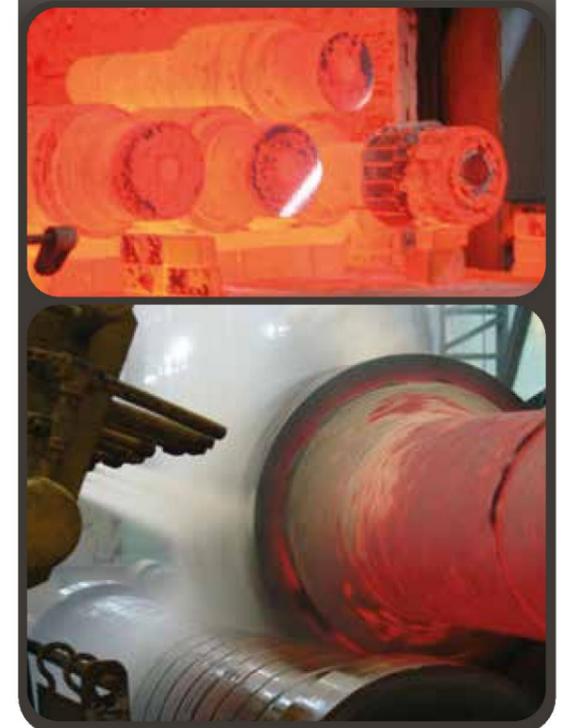
### Heat Treatment & Cooling System

Specially controlled conditions under TTS2013 heat treatment process enable our adamite rolls to perform in the stringent rolling conditions, in which the rolls are subjected to high cyclic impact load and/or high reduction rate; and our adamite rolls are designed for excellent resistances in wear and roll breakage.

#### Centrifugal Casting



#### Heat Treatment



### Machining Process

We have more than 100 machines installed with the capacity to produce rolls, rings, tubes and sleeves up to an outer diameter of 1,300 mm. These machines could handle the roll weight up to 15 metric tonnes per piece. By using the appropriate CNC machines, we are able to produce rolls with very high precision according to customer specifications.



**At TTS2013**, we have proven and appropriate technology and machinery for our casting, heat treatment, and machining processes to ensure a high standard quality and performance.