

SCIENCE & TECHNOLOGY

The improvement of roller mills

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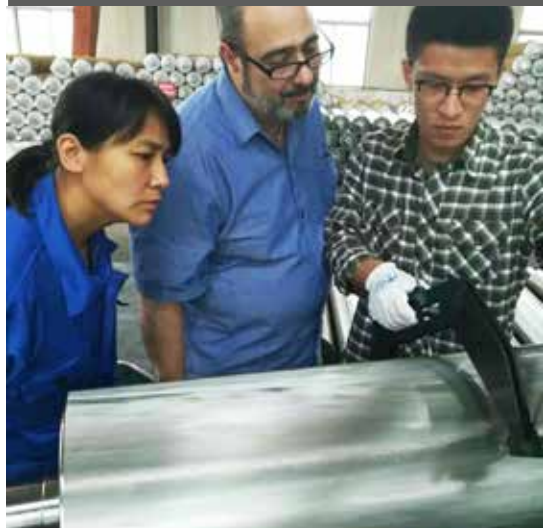
Rollers are the key components of roller mills. The manufacturing quality and precision of the rollers decides the flour quality and, therefore, the success of the mill as a whole.

China's roll production, after half a century of development, and the efforts of several generations, is constantly improving in terms of technical level and equipment. Successively the chill cast iron, the centrifugal casting process to produce high quality roll, has been upgraded repeatedly. Especially, since the turn of the new century, the main production

factory has switched to electric furnaces and improved formulae, rapidly improving the quality of products.

The product technical performance of wear resistance and hardness uniformity has received universal enhancement, the roll surface hardness in the 68 o ~ 74 o, whilst the depth of the roll martensite layer is between 8-13 percent (20 mm or so) of diameter.

The roll surface, after polishing, is grooved into tooth rolls. The roll surface after polishing and sand blasting is not a smooth surface anymore, therefore treatment is needed so that surface roughness stays around approximately 2.8- 5.0 o below. Because domestic rollers have proven excellent performance, they have not only completely replaced imported products, to meet the





domestic demand, but have also been so successful that batches have been exported abroad.

Taixing Xiqia roll factory, founded in 1995, is the producer of flour mill rollers, feed roller precision parts, grease rolls and are proven malt crushing roller professional manufacturers. The formulation, production technology and technical performance of the product, in strict accordance with the national standard production manufacture and testing standards, uses double metal rollers with centrifugal casting cast iron. The high strength rollers have no surface defects and greatly improve the quality of the castings and yield.

The outer layer of the cast iron roll is abrasion-resistant chilled alloy cast iron, with an inner lining for superior comprehensive mechanical properties of gray iron. The base has nickel chromium alloy cast iron with added elements vanadium, and titanium, with the benefit of increased wear resistance.

The application of 500 Hz power is equipped with a high-power inverter, each furnace used in the production process taking only a few minutes to melt the metal down, improving the production efficiency. Component analysis has spectrometry to replace chemical analysis testing materials, using spectrum analysis to measure the block percentage of 18-20 kinds of element content in the molten iron samples.

The whole process takes approximately 10 minutes, and it is fast and convenient to adjust the formula, to produce slightly different, yet still high-quality, rollers.

In 1997, the domestic trade industry expert panel reviewed Taixing Xiqia rollers as being “in the domestic leading level, capable of replacing most imported products.” Again in 2009, the national food industry well-known expert group review, identified Taixing Xiqia’s rollers as “low hardness, high wear resistance of vanadium titanium roller technology quality, which has reached the international advanced level.”

Taixing Xiqiao roll factory, with the Henan University of Technology and Buhler, participated to draft the new roller country standards in 2013, guiding the roller production and manufacturing in the country to a prescribed set of suitable standards to benefit consumers.

Taixing Xiqiao rollers also are suitable with the domestic industry’s well-known enterprises and institutions, their company having established long-term cooperation relations with many international business figureheads, such as Beijing GBS.

The companies both regularly share updates on product developments, offer training courses, technical guidance and optimisation services on machinery. Henan University of Technology and other colleges also work together to establish the relationship between the manufacture learning research cooperation and the businesses utilising this new technology.

Currently, with their product being used globally and especially prominently throughout China, including Hebei, Henan, Shandong and the Anhui province, Taixing Xiqiao are proving valuable roller mill figureheads. Products are sold directly to Italy, Brazil, Malaysia, Vietnam, South Africa and other countries, and the future for Taixing Xiqiao is particularly bright.