

## ITT Pumps Solve Maintenance and Performance Problems for Chinese Steel Mill

At a continuous casting and rolling mill in China, a set of dry-mount pumps were a constant source of maintenance and performance problems. Replacing these pumps with submersible Flygt brand pumps from ITT provided the answer plant engineers were looking for.

Located along the Yangtze River, the Ma'an Shan Iron & Steel Co. Ltd. is one of the largest iron and steel producers in China and the largest industrial enterprise in Anhui province. After more than 40 years of development the company boasts a production capacity 5 million tons of iron, steel and steel products. With total assets exceeding RMB 22 billion, Ma'an Shan ranks sixth in steel output and fifth in steel products output in the world.

### Pump Problems at the Plant

Prior to 2004, the sheet billet continuous casting and rolling plant used 30 dry long shaft pumps to pump water from the steel rolling rotational flow well and continuous casting rotational flow well to the horizontal flow basin. With a need to dramatically increase production at the plant, the technical parameters, material composition and capacity of these pumps could not meet plant demands.

There was a very long list of the deficiencies of the two different types of dry pumps that were used. To begin, the pumps provided low power output, high-energy consumption and a required bimonthly maintenance interval. Further, the difficulty of removing and re-installing these pumps made maintenance difficult and increased their maintenance cost. The pump axletrees required frequent oiling, and shaft alignment problems required great efforts to correct. These pumps also used B-level dry electromotors, which are not waterproof. The stuffing seals of these pumps required changing at short intervals and were not fully waterproof, making them inferior



**ITT's Flygt brand large submersible pumps provide critical service in the steel rolling and continuous casting operations of the steel mill.**

to mechanical seals. The pipeline is also very complicated, needing water indraught and vacuum pumps in order to start the pump. The base facilities for these dry pumps was also very complicated. Finally, the pump house's vulnerability to water damage increased the risk of production slowdowns if flooding occurred.

### Flygt Brand Pumps Provide Technical Solution

Because of the performance and capacity deficiencies of dry pumps, in 2004 the company's sheet billet continuous casting and rolling plant replaced the dry mount pumps and installed high-capacity ITT Flygt brand CP 3306 and CP 3400 large submersible centrifugal pumps to provide the water service to the horizontal flow basin. These two types of submersible pumps

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hold advantages in technical parameters and material composition that have aided in overcoming the capacity deficiencies and maintenance problems of the dry pumps.

The advantages of these two types of Flygt brand pumps lay in their low energy consumption, long continuous running time, and higher power output (160kw and 75kw for CP 3306 and CP 3400 respectively). If a normal maintenance program is properly conducted, these pumps can run continuously for more than 5 years. Periodic oil changes make maintenance itself simple and convenient, and the pump is easily accessed for repairs by lifting it directly along guiding pole.

The H-level submersible electromotor installed in the Flygt pump can endure a maximum temperature of 180°C and enjoys a high level of insulation. The pump uses double corrosive-resistant mechanical seals constructed of WCCR sintered and coated tungsten. The pipeline system is simple, and the pump can be started directly without need for input and output control valves. Base facilities are also unnecessary, saving space, time,

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and money. The pump is completely waterproof, and makes little noise while running.

### Service and Support Solutions

The Flygt CP3400 submersible pump installed in the rotational flow sedimentation tank for steel rolling and the Flygt CP3306 submersible pump in the rotational flow sedimentation tank for continuous casting have been running smoothly for over one year. These pumps have greatly reduced the client's maintenance burden from monthly or bi-monthly maintenance to basic servicing every three years and major repairs every five years.

To provide effective after-sales service, ITT operates a service station in Shanghai covering the Ma'an Shan Iron & Steel Company so that service engineers can respond to the requirements of clients within 24 hours.

With the initial experience with the Flygt brand technology and after sales service, the sheet billet continuous casting and rolling plant has decided to remove all of the remaining dry long shaft pumps installed in its rotational flow sedimentation tanks and replace them with ITT Flygt brand submersible pumps. Furthermore, the Ma'an Shan Iron & Steel Company's new Five-Year Plan calls for all rotational flow sedimentation tanks in newly developed product lines with a production capacity of 5 million tons or more to be designed in accordance with the Flygt submersible pump design scheme.