

Zoomlion: New Player Helps Chinese Nuclear Construction Achieve New Heights

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On December 20, after over an hour of intensive operations, the steel-lined containment dome of Unit Three of Phase Two of the Tianwan Nuclear Power Station, which weighs nearly 500 tons, was successfully hoisted and installed. It was the heaviest dome lifting operation for a nuclear plant and the first successful application of the domestically produced 3,000 ton crawler crane.

The machine that helped to achieve this historic milestone is the Zoomlion ZCC3200NP extra-large-tonnage crawler crane. The operation marks Zoomlion's venture into the large nuclear crane sector following the company's successes in the petrochemical, wind power and large venue fields of construction. It also shows that the technical standards of domestic crawler cranes have reached a new level and Chinese construction machinery is approaching new heights.

New Player in the Chinese Nuclear Power Industry

In 2014, there have been several discussions at the national level regarding restarting the construction of nuclear power stations in coastal areas. Industry insiders have widely predicted that the first half of 2015 will see a new peak in nuclear power station construction. Sun Qin, chairman of China National Nuclear Corporation, has publicly stated that China's nuclear power technology is currently experiencing a transition from second- to third-generation technology. After 2016, with the continual growth in technologies such as AP1000, the nuclear power industry will have even greater development potential, and annual investment in nuclear power station construction is expected to reach RMB 70 billion over the next 10 years.

As of the end of March 2014, the total power capacity of existing plants and plants under construction was around 48.7 million KW. According to the 12th Five-Year National Energy Development Plan, the country will soon experience a new peak in nuclear power station construction, with tens of millions of KW of nuclear power due to come on stream, which will present Chinese crane machinery manufacturers with excellent development opportunities.

Relevant data has shown that despite the country being the largest crane market and largest small-tonnage crane product exporter in the world, China is still not competitive in the extra-large-tonnage crane market. This is especially true for crawler cranes of 3,000 tons and above, for which the country is still mostly reliant on imports.

This mismatch between market demand and available technologies has placed increased requirements on the Chinese hoisting machinery manufacturing industry.

The dome, which is one of the most important components of the nuclear power facility, places very stringent demands on crane equipment. As a leading global crane manufacturer, however, Zoomlion has a lot of experience in this area.

In 2009, Zoomlion began to develop the ZCC3200NP crawler crane for the country's third-generation nuclear power facilities. In May 2011, the product was fully configured and made available, and performed a single successful hoisting operation. In April 2013, the product became the first 3,000 ton crane to receive a manufacturing license.

The ZCC3200NP has become the first 3,000 ton crawler crane in China to pass all its product tests and to be made available for sale. The crane's recent successful operation showed that the performance, safety and reliability of Zoomlion's crawler cranes can meet the technical standards for the highest certification within the crane industry and become new players in the construction of Chinese nuclear power stations.

New Stage for Chinese Cranes

The ZCC3200NP is an extra-large-tonnage mobile crane with among the best hoisting capabilities and technical standards in the world. In addition, the machine has achieved innovations and breakthroughs in many key technologies, such as its "dual vehicle structure and flexible connection device", "heavy-duty parallel ultra-long tapered lattice boom", "slewing bearing and ring rail support coaxial double slewing mechanism", "multi-source, multi-machine drive rail and independent/centralized scheduling control" and "double-track vehicle cooperative intelligent control". It has broken through the intellectual property and manufacturing technique barriers of relevant domestic and foreign companies for extra-large-tonnage cranes and taken China's crane technology to a new height.

The ZCC3200NP crawler crane has obtained over 50 proprietary intellectual property rights, including the power unit and its control method, which also received the national invention patent gold award in 2012. The technological breakthroughs of the product series has eliminated the bottleneck in domestic large cranes and promoted technological development within the industry.

These constant breakthroughs were made possible by Zoomlion's powerful research and development capabilities. Zoomlion has long been recognized as the soul of technological innovation in the Chinese construction machinery industry. Formerly the construction department of the Changsha Engineering

Machinery Research Institute, which was a national level institution, the company was the cradle of Chinese construction machinery technologies, with around 70% of the technologies used in domestic construction machinery products originating from the institute.

Zoomlion has now formed a special research team featuring hundreds of experts with doctorates and master's degrees. The team is equipped with cutting-edge testing equipment and development tools and is tasked with exploring technological advances based on common technologies to provide strong support for product development.

Take high-strength steel, which has wide applications in the construction machinery industry, as an example. China did not previously have any design standards for high-strength steel frames and the relevant technologies were kept confidential by overseas companies. This caused domestically designed cranes to be heavier and weaker than those produced overseas. Through technical research, however, Zoomlion has overcome the difficulty of creating stable high-strength steel frames and filled the domestic void. This has helped the company to develop quality high tonnage crawler cranes and laid a solid foundation for increasing their competitiveness in the international market. Public data shows that Zoomlion has led the crawler crane market in terms of market share for many consecutive years.

New Height for Chinese Construction Machinery

The successful application of the ZCC3200NP crawler crane is an example of the constant strides taken by Chinese construction machinery towards the top end of the world's value chain in recent years.

Since 2008, aided by Chinese economic development, China's construction machinery industry has enjoyed rapid development, becoming a force to be reckoned with on the world stage. More importantly, industry leaders, as represented by Zoomlion, have never given up on developing proprietary technologies and have garnered recognition from peers around the world for their technical capabilities.

On July 17, 2012, Zoomlion was officially named the secretariat of the crane technical committee of the International Organization for Standardization (ISO/TC96), marking the first and only time that a Chinese construction machinery company has been named the secretariat of a committee of the International Organization for Standardization. Since then, the Chinese construction machinery manufacturing industry has gained the initiative in international dialogue and Chinese enterprises have begun to write the rules of the game.

Since becoming a secretariat in 2012, Zoomlion has proposed two international crane standards. The two proposals not only signify an end to the long-term dominance enjoyed by European, US and Japanese companies over international construction machinery standards by a Chinese construction machinery company, it also shows that Zoomlion has led Chinese construction machinery companies from being participants of international standard setting to becoming leaders in the process.

Yang Xuetong, executive vice president of the China Machinery Industry Federation, frankly stated, "A standard that has been incorporated as an international standard can bring a lot of economic benefits and can even determine the prosperity of an industry. Having Zoomlion, a company that is competitive at the international level, participate in the formulation of international standards and converting advanced technologies into international standards will help China increase its competitiveness and strengthen its manufacturing industry."

If the formulation of standards is an important indicator of the soft power of the Chinese construction machinery industry, then the heavyweight ZCC3200NP crawler crane is important for showcasing its hard power.

The development of a large-tonnage crawler crane is an important reflection of the technological capabilities of the industry, as well as an important step for promoting the company's brand and accelerating the process of making it known on the global stage. And it appears that the first domestically produced 3,000 ton crawler crane will take the Chinese construction machinery industry to new heights.

At the recently held China International Nuclear Symposium, Francoise Morin, China Director of the World Nuclear Association, said that currently there are over 45 countries actively developing nuclear power, and the focus is shifting from developed economies with existing nuclear power capabilities to emerging countries. As a new player in the Chinese nuclear power sector, Zoomlion may have an even greater role in the future.

Source: Zoomlion