

BAOTI Group: quality products and maximum value



Baoti own ten integrated production lines for titanium sponge, melting, forging, rolling and down-stream products, including ingot, billet, slab, plate & sheet, coil, extruded pipe, seamless tube, welded pipe, square/round bar, wire and forging. All production is controlled with strict quality systems.

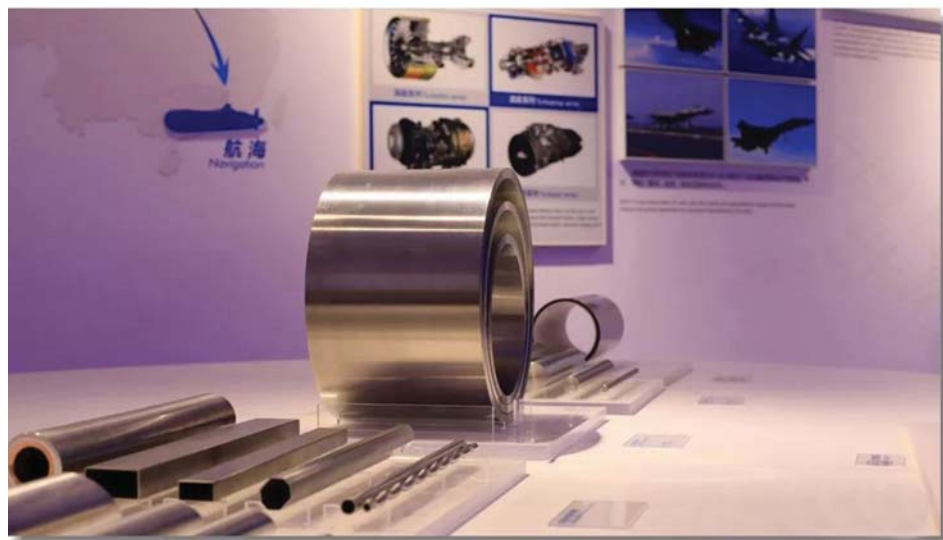
Baoji, the city in China where the Baoti Group is located, is widely recognised as China's "titanium city" and is a flagship for the titanium industry. Among the numerous titanium enterprises in the city, Baoti Group is conspicuous for its long history, innovation, reliable quality and outstanding performance. Over the years, Baoti Group has led the market in representing titanium products made in China. The Group is committed to serving its clients with quality products, and to spreading awareness of Chinese titanium across the international market. Stainless Steel World met our friends Baoti Group for an in-depth conversation with Mr. Wensheng Wang, President of the Group. He explained how Baoti Group stays competitive by continually creating the maximum value for its clients all over the world.

By Laura WANG, Stainless Steel World China

In 1965, a large group of engineering experts and talented technical experts travelled from all over China to the city of Baoji to join the Baoti Group. They were committed to establishing a scientific research and production base for China's rare metal materials. For the past 55 years, hard work, faithful dedication, science and realism, has developed Baoti Group into China's most extensive

specialised rare metal production and R&D base. Today the Group is primarily focused on titanium and titanium alloy. It has developed a complete industrial chain, covering titanium sponge melting, processing, deep processing, equipment manufacture, etc. By 2008 the Group's output of titanium products exceeded 10,000 tons for the first time. Over the decades, it has contributed significantly

to the development of China's aerospace and other high-technology industries. However, facing the challenges of a rapidly developing market economy, as a State-owned enterprise, the Baoti Group was inevitably confronted with institutional challenges which limited the company's further development. Under these circumstances, President Mr. Wensheng Wang, leading a new



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management group, proposed an innovative strategy for future growth based on “producing quality products and expansion into various markets”. Since then, Baoti Group has entered upon a new stage of advanced development. The successful implementation of a series of reform strategies led to a stable, rising trend in production and sales. Sales into the international market, in particular, have entered a period of rapid growth, with export volumes expanding year by year. In 2019, the production of leading titanium materials reached 19,000 tons, and the delivery of export products reached 4,260 tons, up 46.9% year on the previous year. Of the many products exported, plate & sheet metal continues to be in high demand throughout the year, while the proportion of plate, sheet and bar products exported can reach 80%. Baoti Group has a long history with Stainless Steel World, yet every visit to their offices provides new experiences and surprises. One thing which remains constant in the company’s culture and philosophy is their hard-working, dedicated and tireless spirit. While adhering to this core spirit, Mr. Wang has focused on market-oriented reforms, innovation and improved efficiency

since taking office. “Years of efforts to implement market-based reforms, globalisation and improvements to our products and service have grown Baoti Group into a leading company domestically. We will keep exploring the international market by increasing volumes and categories, to stand out among the fierce competition in the global arena.”

Five core strengths

Producing high-quality products is a common theme throughout the interview. Mr. Wang: “We firmly position ourselves at the high-end of the market. Technological improvements always come first and are constantly ongoing. What’s more, we will root this principle deeply into the overall development of the whole industry chain, and build a world-renowned industrial group with stronger capabilities in terms of manufacturing, research and development, and service.” Mr. Wang went on to detail how the Baoti Group keeps strengthening its core competitiveness.

No.1 Quality management system

Baoti Group has passed the National Standard, National Aerospace Standard, The Military Standard and other third-party quality system approvals. It is the only titanium processing enterprise in China that has passed the quality certification of Airbus, Boeing, SAFRAN, Bombardier, Rolls Royce and other internationally renowned airlines. It has also gained accreditation for NADCAP, PED, NORSOK, TUV230, ASME (pressure equipment) and other aviation, chemical and petroleum-related products.

Based on the current trend of global economic integration, Baoti Group actively carries out all kinds of audit and certification work to better integrate with the international market and further expand international business. It also adheres to problem-oriented and closed-loop management to promote the improvement of the enterprises comprehensive abilities.

No.2 Well-equipped production chain

Baoti Group has a great deal of advanced equipment for melting, casting, forging, rolling, testing, etc. These include machines such as a cold bed furnace, 10-ton VAR furnace, 15-ton VAR furnace, 2,500-ton forging machine and a 10,000-ton forging press. The technology was imported from sixteen countries around the world, including the United States, Japan, Germany and Austria. The overall equipment level has reached an internationally advanced level, providing robust guarantees for product quality. To fill in any gaps and eliminate production bottlenecks such as unmatched and uncoordinated production, Baoti Group has carried out many technical upgrades of its production lines. Today it operates one of the most complete and sophisticated titanium industrial chains ever built. It covers titanium mineral resources and melting; titanium alloy melting and material processing; titanium deep-processing; equipment design and fabrication; and titanium recycling.

No.3 Recognised technological superiority

Baoti Group’s world-class large material testing centre is recognised

as a State-Level Enterprise Technology Center. It is especially noteworthy that Baoti Group is the primary developer of the titanium and titanium alloy National Standard, National industry standard and the Military Standard. It has been in charge of defining over 90% of titanium-related national standards, national military standards and non-ferrous industry standards. With absolute influence over the industry, in 2019, Baoti Group attended the ISO Annual Meeting in Paris on behalf of China where its proposals for standards for titanium processing gained international recognition. 'Baoti' brand titanium and titanium alloy materials are renowned nationally, and it is the only brand from China's titanium industry to be honoured as one of China's top 500 brands. After more than 50 years of development, Baoti Group has accumulated expertise in processing technologies and production techniques including titanium sponge melting, forging, sheet, strip, seamless pipe, welded pipe, bar, wire, precision casting, and material handling. The Group has also mastered a series of key technologies for preparing and processing titanium materials such as large-size ingot melting, BTWH forging and pack rolling. A total of 60 patents are still in force. In December 2016, the patented 'vacuum creep furnace' project won the gold award for Chinese patents. The innovation solved the bottleneck problem for titanium used in aviation, aerospace and navigation in China.

No.4 Well-prepared process technology

Baoti Group attaches great importance to technological achievements and is



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committed to continually improving the stability of its processes and product quality. By designing a logical process flow, the company has revised the production process to maximise efficiency. The Group also strengthened supervision of the production process. This includes establishing key process control points, improving and stabilising the production process, and the timely rectification of any unstable processes or those which could affect product quality.

At present, Baoti Group can manufacture products following national, industrial, and other technical standards required by clients. Moreover, it is certified with ISO, ASTM, AMS, ASME, MIL, EN, JIS and other advanced standards, providing a wide range of grades of titanium and titanium alloy products.

Mr. Hailong Zhang is the factory director in charge of producing aviation plates for export. Addressing how to make quality products, he said: "In recent years,

we have attached great importance to process innovation, testing and exploration, to improve product quality stability and reduce product cost. In addition, with the continued emphasis on added-value products, our factory has increased investments in technical transformation measures, particularly for equipment in the post-process treatment stage, including plate treatment, surface process treatment, etc."

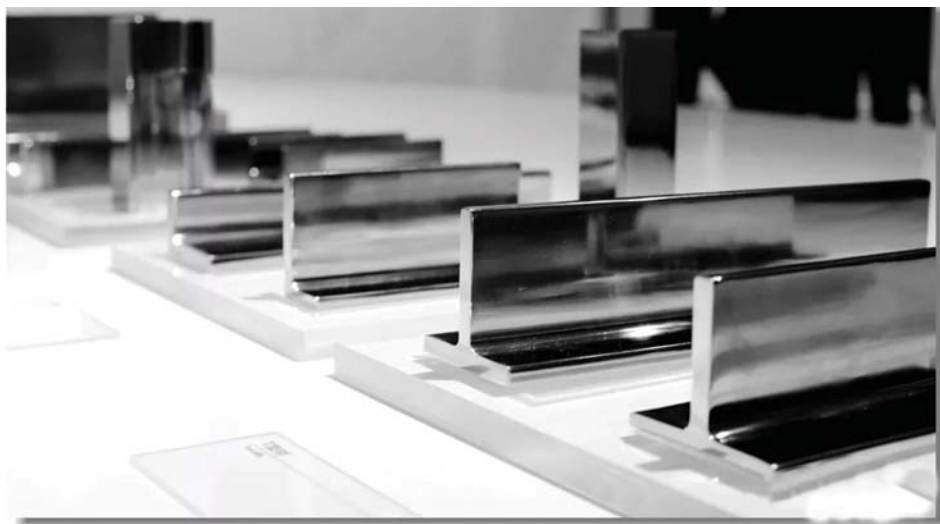
No.5 Well-organised talent team

Baoti Group is committed to building an international base for scientific and technological cooperation in the field of titanium and titanium alloys.

To promote its independent ability to innovate and improve its core competitiveness, Baoti Group has established R&D platforms, including a Postdoctoral Workstation and the Shaanxi Provincial Experts & Academician Workstation, etc. These platforms allow the company to introduce talented staff and build professional development teams to promote the continuous improvement of key technological progress.

Baoti Group, which is also known as the "West Point" of the titanium industry, has more than 7600 employees, including 36 senior engineers, 487 senior technicians, 145 master's degree students in business administration, metal materials and mechanical and electrical engineering. The Group puts great effort into the cultivation and care of employees and therefore has a stable staff team.

According to Mr. Wang, "People are Baoti Group's most valuable asset." Therefore the company always gives priority to improving its employees' sense of happiness in terms of strategy for future development. "This is not



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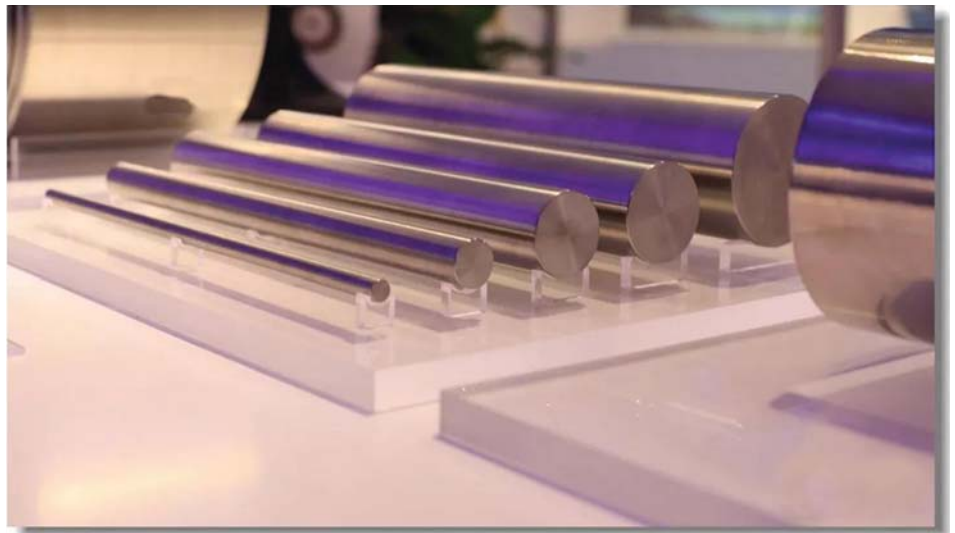
only to secure Baoti's growth but also for the sound development of the whole industry to achieve a sustainable future". In the 21st century, the influences of the internet business model and consumer demands have intensified market segmentation. To comply with the requirements of this new era, Baoti Group is striving to continuously strengthen the five core competitive advantages mentioned above to effectively achieve long-term, healthy, sustainable development of the enterprise.

Challenge indicates breakthrough

In 2018, senior leaders within Baoti Group released a new "two-step" strategic goal. The first stage, spanning 3-5 years, will see the production of leading titanium products rise to 30,000 tons. At the same time, the company will develop into a first-class domestic enterprise with strong profitability. The second stage, taking place within 8-10 years, will see the production of leading products exceeding 40,000 tons. The company will become the leading supplier to the world aviation industry and major domestic customers. In order to realise these two steps as soon as possible, Baoti Group is determined to focus on the following two aspects over the coming years, and strives to become a world-class enterprise in the titanium industry.

Speed up the construction of high-quality projects

In 2019, Baoti Group made plans to spend nearly 2 billion yuan on investments to speed up technical renovation work and introduce enterprise-applicable equipment. The plans, starting with solving key problems of quality, technology and



Baoti titanium bar production is largely exported.

processes, aim to meet the bottleneck challenges which restrict the development of the enterprise. At the same time, the Group will balance and improve manufacturing capacity to expand the scale of production and marketing. Recently, Baoti Group has begun to implement large-scale investment projects for the construction of a high-quality titanium alloy ingot, pipe and profile production line; development of an aerospace wide-size titanium alloy plate & sheet, coil and foils production line; construction of a testing and inspection centre and scientific research pilot test platform, and also metal composite material relocation and expansion, etc.

Transformation through innovation

Titanium is widely used in the fields of aerospace, shipping, PTA, offshore industry and the petrochemical industry. Because it is pro-biological, safe, and non-toxic,

it is also well accepted by industries closely related to people's life (biomedical, household products, automobiles).

"We value our business accountability, so Baoti is constantly pushing technology, innovation, and cost reduction in every process. We also expect to cooperate with other raw material manufacturers and suppliers in the industrial chain to reduce costs further and achieve technological innovation and breakthroughs. We regard this to be our historical mission and vision for making titanium. As a matter of fact, we have made considerable technological progress on the road of exploration. For example, Baoti Group is the first enterprise in the market to possess pack rolling technology for titanium alloy. Although some enterprises can also operate this technology, they are yet to match our standards," Mr. Wang continued.

With the advent of the global industry 4.0 era, there is a trend to combine traditional manufacturing techniques with Internet technology to realise intelligent manufacturing. In 2019, Baoti Group established an intelligent manufacturing centre to carry out strategic planning and process control of its manufacturing, automation and technology upgrades. At present, the "intelligent" forging factory is used as a demonstration project to promote the integration of automation, information, and intelligent development. Speaking about future developments, Mr. Wang stressed: "Baoti Group will always give priority to product quality, and on this basis, continue to expand product application areas and reduce costs. More importantly, we will keep making efforts to improve the product and corporate image, to serve the clients with fine products, and to create maximum value."



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