



*The first phase of Baoti's titanium strip coil production line is now going through trial production, and expected to be fully commissioned this year.*

## **Baoji Titanium Industry Co., Ltd: Continuous investment = influence**

2012, the Chinese year of the dragon, signifies happiness, prosperity and revitalisation. To Baoji Titanium Industry Co., Ltd (Baoti), "the largest Chinese titanium manufacturer and supplier", 2012 is even more meaningful since it is also the 10th anniversary of the company's listing on the stock exchange. As the only listed titanium enterprise in China, Baoti has, over the last 10 years, had one outstanding "first" after another in local industry. From 2009 to 2011, the annual output of the company has ranked among the world's top three for 3 years in a row, and the volume of its shipments increased from 2,300 tonnes in 2002 to 18,500 metric tons in 2011. In 2011, completion of "ten production lines" for titanium sponge, melting, forging, plate, strip coil, seamless tubes, welded tubes, rod and wire, precise castings and scrap recycling, sees Baoti as the only manufacturer in China to own a complete titanium industry chain, also the only titanium supplier in China that has obtained quality system and material processing certification from more than ten world-class aerospace companies such as Airbus, Boeing, BOMBARDIER, Goodrich, etc. Following our last visit in September, 2010, Stainless Steel World once again travelled to Baoti to catch up with Mr. Jia Shuanxiao, General Manager, and Mr. Yang Xiaoming, Vice General Manager of the company to learn about recent developments and future plans of this titanium giant.

*By Huang Juan*



mass production of casting products used for golf club heads, but has also achieved a much more cost-effective and quality production. What's more, the company is planning to further optimize capacity and quality of precision casting products by adding hot isostatic pressing and after treatment systems along with some associated lines.

Besides all this, to further ensure a material supply source and optimize the titanium sponge production line, the company has invested 47.64 million USD into electrolytic and chlorination technology, turning the existing semi-process production line into a full process line with a capacity of 10,000 tons. It is worth noting that China's first and most advanced titanium strip coil production line costing 116.40 million USD in 2010, is now going through trial production. Mr. Jia explains: This strip coil line is mainly equipped with a German made 20-high cold rolling mill, and phase 1 is expected to commence full production within this year with a capacity of 5,000 tons, which will break through China's long time dependence on import for titanium strip coil!"

The forging, plate, seamless tubes and welded tubes systems have also been optimized and the company is seeking to purchase a titanium mine to complete the industry chain and prevent possible problems on sourcing material. "By completing this chain, and commissioning associated dynamic systems, today's Baoti industrial zone already possesses the hardware necessary to serve clients from more industries!" Mr. Jia adds.

### Management Optimization

Committed to maintaining a top class service and to enhance the company's reputation among its clients, Baoti is very focused on their internal management and has looked at ways to improve production and delivery for its clients. They have been building up their advanced ERP system and the lean management concept has also been implemented within the whole company to achieve a more cost-effective operation.

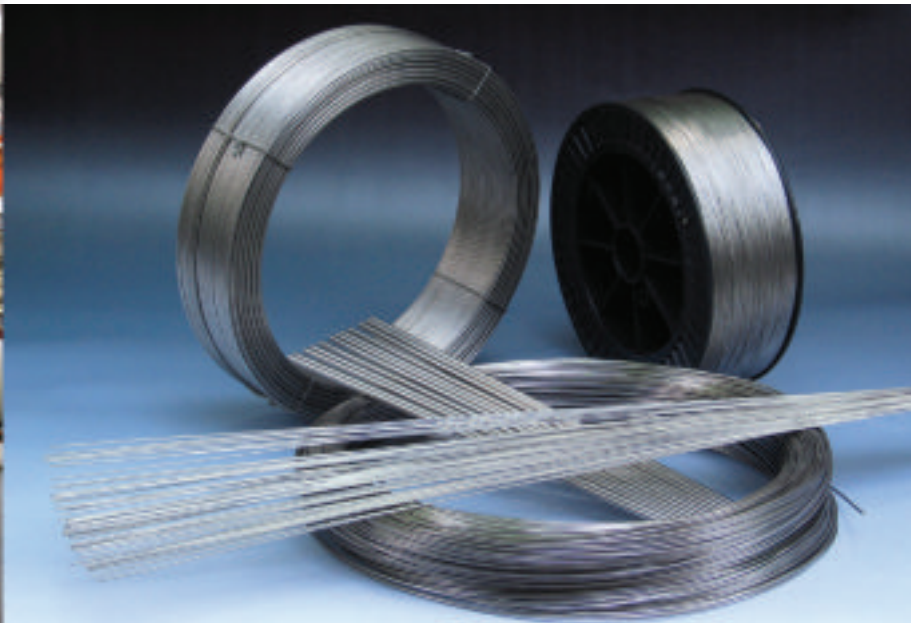
### Expansion in External Cooperation

In addition to investing in hardware and software, as an open minded market player with a collaborative spirit, in 2011, Baoti established strategic cooperations with some well known Chinese companies to establish a new profit growth area. The agreement at the end of last year with Tisco, arguably the world's largest stainless steel manufacturer is a good example of this. The joint venture between the two companies with capital amounting to 31.76 million USD, 51% owned by Baoti, is expected to open for business by the end of Q1, 2012. Mr. Jia explains: "The purpose of this cooperation is for both parties to benefit from each other's advantages in facilities and technology, and to expand the market for each other by developing titanium, stainless steel, nickel and other new products together. For example, titanium primary products can be produced by Tisco's advanced facilities, allowing Baoti to focus on deep-processing of titanium products which will also help the company to establish a new

Just like any company committed to long-term development, Baoti has never stopped investing in itself. Mr. Jia Shuanxiao begins by telling us about Baoti's achievements over the last year. At the end of 2011, Baoti had almost finalised completion of its "ten production lines". The newly imported 10,000t forging press and 4 sets of 15t vacuum consumable arc furnaces (VAR), together with the 8000t oil press and associated blending/distributing and electrode compact system will all start operating in the second half of 2012, which will increase the capacity of the melting system to 30,000 tons. The rod and wire production line with a capacity of 2,000 tons is now going through pre-commissioning, while the recycling system has already gone into full production. To further optimize its original casting production system, consisting of graphite and lost-wax casting lines, in 2011, Baoti added two sets of 150kg vacuum skull furnaces and 1 induction furnace as well as importing the advanced EPS lost-foam casting technology, which has not only fulfilled the



2500t fast speed forging press.



Some of the products of Baoti.

production base in the future.” He elaborates further: “Benefiting from Tisco’s hot rolling mill, extrusion press equipment and forging machines, Baoti will be able to further expand its capacity of titanium rod wire and forging products and, in contrast, the capacity of Tisco’s stainless steel products can be expanded by utilizing our titanium rod wire production line and cold rolling line.”

Besides this, as a major titanium product supplier for AVIC Special Materials Industry Co., Ltd., Baoti invested 7.94 million USD in its ‘Capital increase and share expansion for foreign investment raiser’ Project in 2011, and thus became the second largest shareholder of this project at one stroke. The aim is to build up a national resource and logistics base

for China’s special aviation material industry which offers spot goods, logistics service, sales and processing, etc, and thereby create a new profit growth point. Mr. Yang Xiaoming, Vice General Manager, adds: “In order to further promote our reputation and boost technical networking with counterparts, Baoti was actively involved in the organizing of The 12th World Titanium Conference held in China, in 2011, and during the event, June 24th -26th, the ‘Forum on Development and Trends of Titanium Materials Manufacture Technologies’ held by Baoti was quite a success with the participation of more than 260 experts and academicians from Titanium associations and institutions of various countries over the world.”

### R&D Strength

Actually the success of the above mentioned International Forum demonstrates the leadership of Baoti in terms of R & D strength in domestic China. According to Mr. Jia Shuanxiao, Baoti has been entitled by government agencies “National Enterprise Technology Center” and “National Titanium and Titanium Alloy Scientific Cooperation Center”. Based on this, Baoti has set up the Baoti Research Institution to enhance the development of new titanium products. For some time Baoti has undertaken the R&D for National Key Project titanium alloy products, eg, materials for deep diving submersibles. In past years, Baoti has provided more than 20 innovative titanium alloys for National Key Projects. More than that, Baoti Research Institution also gave birth to dozens of new materials and technologies. The most successful of these are the Ti-341 and Ti-3111, specifically for golf club heads. These two materials have been widely welcomed by several world famous golfing brands. So far the annual supply of these two plate materials amounts to 500 tons.

Apart from their outstanding achievements in titanium alloy R&D, Baoti also plays a leading role in the development and production of zirconium alloys in comparison with domestic counterparts. In early 2009, the company passed the pressure vessel zr-3 zirconium plate (tube) technical qualification issued by the China Standardization Committee on Boilers and Pressure Vessels, and thereby became the only zirconium product supplier for pressure vessels and realized



The Forum on Development and Trends of Titanium Materials Manufacture Technologies held by Baoti in 2011 during the 12th World Titanium Conference was well attended.

the first batch production and sales of industrial zirconium product in China. Nowadays, Baoti has not only established a sound zirconium production process system, but also possesses patent rights with regard to melting and processing. To date, Baoti's zirconium plate and tube product has been successfully applied in several major domestic ethylic acid projects.

### Market Growth

The peerless advantage in technology research and strict quality control enabled Baoti to obtain the Product and Quality System Approval from a number of world famous aviation enterprises, such as Airbus, Boeing, Bombardier, Goodrich, Rolls-Royce, SNECMA, etc., to establish long term partnerships. They have also obtained certification of NADCAP special heat treatment methodology, NDT, physico-chemical test and, in 2011, the TÜV Certificate was awarded to Baoti.

Along with this success, the application of Baoti products has also been widely expanded in many industries such as aviation, aerospace, shipbuilding, oil, power, chemical and sports equipment. Mr. Yang Xiaoming gives us some examples: Baoti has become the most important titanium supplier for China commercial aircraft; it has been involved in the China supply chains of Airbus, Boeing and Goodrich; it has supplied enormous amounts of titanium to Bombardier C Series and in 2011, it successfully penetrated the Japanese aeronautics market. Its titanium ingots have been used



*Bird's eye view of Baoti Industrial Zone.*

in a lot of sea water desalination projects in the Middle East and its tubes and plates have been widely used in domestic salt making, caustic soda and PTA projects. "The sales volume of titanium in 2011 reached 18313 tons in total, with 19.3% taken up by the export sales," says Mr. Yang and he further explains, "It has been one of our goals to expand our international market, and we are proud to see that our reputation in European and American markets has also increased, likewise our market share in Japan, Korea and Southeast Asia."

### A promising Future

When talking about the future, Mr. Jia Shuanxiao is confident. He states that titanium, as a new material, will be widely used, due to its outstanding performance, in marine resource exploitation, sea water desalination,

nuclear power generation, medical industry and sports equipment industries. Additionally, he thinks that it will become the market trend for titanium to be used as an alternative to other metals, considering its relatively stable price as compared to the changeable price showed in nickel, molybdenum, copper and stainless steel during the past decade.

"With such a major premise, we will keep a close eye on the market trend when operating a R&D project, to expand our application markets, such as nuclear power and medical markets," says Mr. Jia, who sums up the expectations of the company. "With the gradual commissioning of the 'ten production line', our bottleneck problems in capacity have been mostly solved. Today, Baoti has already become one of the leading titanium manufacturers in terms of facilities and capacity, and what we will do in the future is to further optimize our technology and internal management which we believe will finally lead us to our goal of becoming one of the most influential titanium manufacturers in the world!"



*Electron beam cold hearth melting furnace.*

### Facts & Figures

Name:	Baoti Titanium Industry Co., Ltd.
Main products:	Titanium material, plate, rod, wire, pipe, castings, forging and zirconium products.
Staff:	3009
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