Author - Mr. Wuzhuang Zou, the President of BAOTI Group Ltd, the Chairman of Chinese Titanium, Zirconium and Hafnium Association.
This presentation will include the following items:

1. A brief introduction of the titanium industry in China
2. An update on the titanium sponge situation in China;
3. An update on melting and casting of titanium in China;
4. An update on the situation with titanium mill products in China;
5. Trends in the Chinese Titanium Industry for the past several years;
6. An update about BAOTI Group;
7. An outlook on the future development of the Chinese titanium industry.
1. Brief introduction of the titanium industry in China

- Similar to the US and Russian titanium industries, the Chinese titanium industry is 60 years old;

- First research and development work started in Beijing in the mid 50s;

- By the mid 60s, China built a sponge plant in Zunyi and a titanium processing factory in Baoji, now known as BAOTI;

- The current status of titanium industry in China could be characterized as a Golden Era;

- By the end of 2009, the titanium sponge and titanium melting annual capacity had reached 79,600 metric tons and 73,000 metric tons respectively.
2. An update on the titanium sponge situation in China

- Since 2004, the Chinese titanium sponge industry received substantial financial investments;
- The capacity of two main sponge manufacturers, Zunyi and Fushun, expanded and many new titanium manufacturers emerged and by 2005, there were 40 companies involved in sponge manufacturing.
- Many new titanium manufacturers were offering low quality sponge;
- In 2008, production of sponge was around 49,600 metric tons, China became the world’s largest titanium sponge manufacturer.
2. An update on the titanium sponge situation in China

Data from Chinese Ti/Zr/Hf Association
2. An update on the titanium sponge situation in China

- The capacity in 2008 was much larger than the actual output:
  - Capacity – 71,000 metric tons
  - Actual output – 49,600 metric tons;
- The current titanium sponge production capacity of facilities that are current and under construction is 180,000 metric tons;
- 180,000 metric tons is much more than the Chinese market can absorb.
2. An update on the titanium sponge situation in China

- The rapid development of titanium sponge challenged the industry:
  - In 2006, Zunyi held 77% of the sponge market share in China;
  - In 2009, Zunyi held 40% of the sponge market share in China.

- In other countries, few titanium sponge manufacturing companies were founded, companies were primarily extended.
3. An update on melting and casting of titanium in China

Chinese titanium ingot capacity and growth rate (t, %)

Data from Chinese Ti/Zr/Hf Association
3. An update on melting and casting of titanium in China

Table 2. Chinese titanium ingot capacity and growth rate (t, %)

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
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<th>2006</th>
<th>2007</th>
<th>2008</th>
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<td>24,600</td>
<td>25,500</td>
<td>26,300</td>
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<td>48,300</td>
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<td>(+123.6%)</td>
<td>(+3.7%)</td>
<td>(+3.1%)</td>
<td>(+54.4%)</td>
<td>(+19.0%)</td>
<td>(+43.3%)</td>
<td>(+5.4%)</td>
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<tr>
<td>BAOTI</td>
<td>4,000</td>
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<td>6,000</td>
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<td>12,000</td>
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<tr>
<td></td>
<td>(+123.6%)</td>
<td>(+3.7%)</td>
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<td>(+54.4%)</td>
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<td>(+43.3%)</td>
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<tr>
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<td>10,000</td>
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<tr>
<td></td>
<td>(+123.6%)</td>
<td>(+3.7%)</td>
<td>(+3.1%)</td>
<td>(+54.4%)</td>
<td>(+19.0%)</td>
<td>(+43.3%)</td>
<td>(+5.4%)</td>
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<tr>
<td>NIN</td>
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<td>500</td>
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<td>4,000</td>
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<td>8,000</td>
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</tr>
</tbody>
</table>

Data from Chinese Ti/Zr/Hf Association
3. An update on melting and casting of titanium in China

The main investments in 2007 and 2008 were distributed as follows:

- BAOTI Group and Baosteel: Both of these companies installed four sets of 10 metric ton VAR furnaces each;
- BAOTI Group also installed one set of 2400 KW EB furnaces;
- Northwestern Institute of Non- Ferrous Metals Research (NIN) installed two sets of 8 metric ton VAR furnaces.
4. An update on titanium mill products

- At this time, the Titanium Industry of the People’s Republic of China has integrated a full cycle of titanium production – mining, melting, mill products and product applications.

- In China, the manufacturers of mill products are concentrated in three areas: Shaanxi, Lioning, and Shanghai.
4. An update on titanium mill products

- The output of mill products in 2009 was around 25,000 metric tons, which is double of what was in 2005.

- Half of these were flat products (sheet and plates), forgings – 22% and tubes and pipes – 24%.

Data from Chinese Ti/Zr/Hf Association
4. An update on titanium mill products

The output of titanium mill product of Chinese major producers in 2006-2009

<table>
<thead>
<tr>
<th>No.</th>
<th>Company</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tr>
<td>1</td>
<td>BAOTI</td>
<td>4,960</td>
<td>7,463</td>
<td>9,541</td>
<td>9,345</td>
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<tr>
<td>2</td>
<td>Baosteel</td>
<td>1,066</td>
<td>535</td>
<td>1,682</td>
<td>276</td>
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<tr>
<td>3</td>
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<td>4,595</td>
<td>1,200</td>
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<tr>
<td>4</td>
<td>WST</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,510</td>
</tr>
<tr>
<td>5</td>
<td>All others</td>
<td>5,838</td>
<td>11,047</td>
<td>15,313</td>
<td>12,170</td>
</tr>
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<td>Total</td>
<td>13,864</td>
<td>23,640</td>
<td>27,736</td>
<td>24,935</td>
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</tbody>
</table>

Data from Chinese Ti/Zr/Hf Association
4. An update on titanium mill products

Consumption of titanium mill products:

- Chemical industry – 42%
- Aerospace industry – 16%
- Sports & Leisure – 15%
- Medical – 5%

Data from Chinese Ti/Zr/Hf Association
5. Trends in the Chinese Titanium Industry for the past several years:

1. Increased production;
2. Increased capacities;
3. Increased demand;
4. Excess of supply over demand;
5. Committed Projects
6. Many sponge manufacturing companies extended their product lines by acquiring mill products manufacturers and vice versa;
7. New investments are targeted towards more complex products (titanium strip, welded tubes and large forgings).
6. Information about BAOTI Group:

BAOTI Group, located in Baoji City, Shaanxi Province near Xi’an, is the oldest titanium producer in the People’s Republic of China.

BAOTI Group is the only company in China that has a complete cycle of all types of production, starting from sponge and finishing with all types of mill products and fabrications.
In order to better satisfy customer needs, BAOTI continuously invests resources into new state-of-the-art equipment:

- 20 high cold rolling mill;
- 10,000 tons forging press;
- Scrap recycle line.
6. Information about BAOTI Group:
7. Outlook on the future development of Chinese titanium industry:

1. The global financial crisis affected the Chinese titanium industry
   - sales of many companies significantly declined;
   - many companies were forced to close.

2. The demand from the aerospace industry (Commercial Aircraft Projects, Chinese Lunar Project, the Space Station Project) and further development of the Chemical Industry should help the Titanium Industry to get back on track;

3. The titanium sponge industry is ready to support the needs of titanium melting, casting and mill products needs:
   - The current sponge production is more than 70,000 metric tons;
   - Open projects with additional capacity of 110,000 metric tons.
In the near future, the emphasis will be focused on the following items:

- Improvement of larger diameter billets production, to meet demands of the large commercial airplanes;
- Improvement of the production of titanium alloys extrusions;
- Improvement of the production of titanium strip in coil forms;
- Improvement of scrap recycling technologies;
- Constantly focus on improving production processes, product quality, and to find new applications for titanium.
Thank you!

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