Overview of Japan’s Titanium Industry

International Titanium Association 2014
September 22, 2014

Shinya HIGUCHI
Chairman, the Japan Titanium Society
1. Current Economic Situation in Japan

2. Outlook of Japan’s Titanium Industry 2014

3. History of Japan’s Titanium Industry since 1995

4. Conclusion
The rate of consumption tax was raised from 5% to 8% from April 1, 2014.
Current Economic Situation in Japan

impact by consumption tax rate rise (2)

Real GDP Growth rate
(compared with previous quarter, annualized)
Current Economic Situation in Japan

Forecast of next quarters (1)

JPY / USD Exchange rate
(Tokyo foreign exchange market)

Correction of higher JPY rate
Forecast of next quarters (2)
Bank of Japan’s “Tankan” Survey
(Short term outlook of business conditions)

1. Current Condition

Japanese companies’ sentiments about current business condition were still positive at the timing of June research.
2. Forecast of Future (after 3 months) Condition

SME’s sentiments about future (after 3 months) business condition changed into positive side at the timing of June research.
Forecast of next quarters (4)

Machinery Orders in Private Sector
(excl. orders for ships and those from electric power companies)

Leading indicator for private investment
Current Economic Situation in Japan

Forecast of next quarters (5)
Real GDP growth rate
(compared with previous quarter. Annualized)

Average of forecasts by Japanese 7 analysis companies as of Sep. 8;
2014. Jul-Sep : 3.8%
    Oct-Dec : 2.4%
2015.Jan-Mar : 1.8%
    Apr-Jun : 1.4% (source : Nikkei)
Situation concerning Nuclear Power Plant in Japan

- “Basic Energy Plan” (Apr. 2014)
  - - - “important base-load power source”

- Examination by Nuclear Regulation Authority concerning resumption of Nuclear Power Plant operation (case by case).

- Public Opinions
1. Current Economic Situation in Japan

2. Outlook of Japan’s Titanium Industry 2014

3. History of Japan’s Titanium Industry since 1995

4. Conclusion
Outlook of Japan’s Titanium Industry 2014

Production of Titanium Sponge

Annual production (in MT)

<table>
<thead>
<tr>
<th>Year</th>
<th>Production (MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014.1Q</td>
<td>8,397</td>
</tr>
<tr>
<td>2010</td>
<td>42,178</td>
</tr>
<tr>
<td>2005</td>
<td>63,400</td>
</tr>
</tbody>
</table>

Production has been increasing over the years.
Shipment of Titanium Mill Products
Difference compared with the same half in the previous year

Outlook of Japan’s Titanium Industry 2014
Agenda

1. Current Economic Situation in Japan
2. Outlook of Japan’s Titanium Industry 2014
3. History of Japan’s Titanium Industry since 1995
4. Conclusion
<Period I 1995-2004>
- Expansion and exploration of the application of titanium for industrial usage. Application of titanium have been expanded in the various industrial sectors.
- September 11, 2001
  => After a slump of demand for Aerospace sector, demand had been increased gradually.
History of Japan’s Titanium Industry since 1995

Plate Heat Exchanger

[Photo: courtesy of Hisaka Works, Ltd.]
< Period II  2005-2008>
- Titanium demand had expanded for Aerospace sector and for infrastructure.
- Demand for titanium mill products exceeded the capacity of sponge production.
- Supply-demand balance of titanium metal had rapidly tightened.
  Price of titanium products rose sharply.
- Price of raw material (Synthesized rutile) were stable.
Construction of Marine pier for D runway of Tokyo Haneda International Airport

[Photo: courtesy of Haneda Airport Expansion Project JV]
History of Japan’s Titanium Industry since 1995

Kyushu National Museum
(Fukuoka, Japan)
History of Japan’s Titanium Industry since 1995

National Center for Performing Arts (Beijing, China)
History of Japan’s Titanium Industry since 1995

Titanium Exhaust System
**History of Titanium Industry since 1995**

- **<Period I>**: 1995-1998
  - Period I shows a steady increase in demand for titanium.

- **<Period II>**: 1999-2002
  - Period II marks a significant price rise, leading to demand and supply imbalances.
  - Some customers switched to alternative materials.
  - Investments for extra capacity of titanium sponge.

- **<Period III>**: 2003-2007
  - The Great East Japan Earthquake and Lehman Brothers Bankruptcy caused major disruptions.

- **<Period IV>**: 2008-2013
  - Global economic crisis and decrease of titanium demand.
  - A big supply-demand gap has continued including negative impacts by Lehman and the Great East Japan earthquake.

**<Period III 2009-2011>**
- Global economic crisis and decrease of titanium demand.
- Because of a sudden price rise at period II, following situations which could cause supply-demand balance easing appeared:
  1. Some customers changed their material from titanium to another one.
  2. Investments for extra capacity of titanium sponge.
- Big supply-demand gap has continued since then including negative impacts by Lehman and the great east Japan earthquake.
History of Japan’s Titanium Industry since 1995

Sea Water Desalination Plant [Photo: courtesy of DHIC]
History of Japan’s Titanium Industry since 1995

< Period IV  2012-2014>
- Supply-demand balance situation in period III has continued. Titanium demand for industrial sectors has been low because of Nuclear Power Plant situation and economic situation in China.
- Inventory adjustment in Aerospace sector.
- Price of mill products declined sharply because of strong price competition.
- Price of titanium raw material rose because supply-demand balance of TiO2 for pigment had tightened.
History of Japan’s Titanium Industry since 1995

Fluctuation of Mill Products Shipment for the last 6 years

- Automobile & others
- Aerospace
- PHE
- Electrolysis & Chemical
- Power plant & Desalination

Graph showing the shipment of mill products for the last 6 years, with categories such as Automobile & others, Aerospace, PHE, Electrolysis & Chemical, and Power plant & Desalination.
< Period V  2015 - >
- Titanium demand for Aerospace sector is expected to increase.
- The level of titanium demand increase for Industrial sector is unclear at the moment.
=> In order to increase whole volume of titanium demand, activities to expand and explore titanium application by titanium industry and individual companies are very important.
History of Japan’s Titanium Industry since 1995

JTS Organization chart

- General Meeting
- Board Meeting
- Executive Meeting

- Awards Committee
- Application Development Committee
- ITF Committee
- Administration Committee
- Editorial Committee
- Environment Committee
- Technical Committee
- ISO/TC79/SC11 Committee
- Academia-Industry Cooperation Committee
- Secretary

- Desalination & Environment
- Construction & Ocean Eng.
- Medical Appliances
- Associate Members Committee
- Water Service WG
- Fastener WG
- Welfare & Medical WG
- Sanitary WG
- West Japan Branch

20 Corporate Members
172 Corporate Associates
32 Individual Members
History of Japan’s Titanium Industry since 1995

Technological Development by collaboration among Industry, Universities and Ministries

JTS / Academia-Industry Cooperation Committee is positioned as a coordinator for this collaboration.

- Provision of opportunities for debating the direction of technological development among Industry, Universities and Ministry (METI)
- Discussion of development issues for new technologies from a medium to long-term perspective.
- Provision of opportunities for discussion of needs and solutions between Industry and Universities.
- Coordination of intimate contact for young engineers and researchers between Industry and Universities with the purpose of development of human resources.
1. Current Economic Situation in Japan

2. Outlook of Japan’s Titanium Industry 2014

3. History of Japan’s Titanium Industry since 1995

4. Conclusion
1. Titanium demand remains low in Japan now. The level of titanium demand increase for Industrial sector is unclear at the moment. Steady growth forecast of Japanese economy is a positive factor.

2. Contribution to the world titanium industries
   We will continue to make a great effort to contribute to the world titanium industries through stable supply of high-quality titanium sponge and mill-products to global customers, expansion and exploration of the application of titanium, and technological development, etc.
Thank you very much for your kind attention!