Outlook of Japan’s Titanium Industry 2013

International Titanium Association 2013
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Chairman of the Japan Titanium Society
1. Outlook of Japan’s Titanium Industry 2013

2. Continuous Effort to Expand and Explore Applications

3. Current Activity for Now and Future

4. Conclusion
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Shipment of Titanium Mill Products

Annual Shipment (in MT)

- 25,000
- 20,000
- 15,000
- 10,000
- 5,000
- 0

Outlook for Demand in Japan

Fluctuation of Mill Products Shipment for the last 6 years

Annual shipment in MT

- 2008
- 2009
- 2010
- 2011
- 2012
- 2013

(outlook for January to June)

- Aerospace
- PHE
- Power plant
- Electrolysis+Chemical
- Desalination
- Automobile+Architecture
- Resale
- Consumer products, Sports, Medical, etc.
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Production of Titanium Sponge

Annual production (in MT)

- 1952
- 1955
- 1960
- 1965
- 1970
- 1975
- 1980
- 1985
- 1990
- 1995
- 2000
- 2005
- 2010
- 2013 Jan-Jun (6 months)
Outlook of Japan’s Titanium Industry 2013

Export of Titanium Sponge

- Export volume (in MT)
- Percentage of export

Yearly data from 1952 to 2010, showing trends in titanium sponge export volume and percentage of export over the years. The graph highlights significant increases and decreases in export volumes, particularly from 2010 onwards.
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“Orin”, Ritual Acoustic Bowl for Buddhist
Continuous Effort to Expand and Explore Applications

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Continuous Effort to Expand and Explore Applications

Titanium Exhaust System
Continuous Effort to Expand and Explore Applications

Titanium Exhaust System
Continuous Effort to Expand and Explore Application

Titanium Exhaust System
Construction of Marine pier for D runway of Tokyo Haneda International Airport

[Photo: courtesy of Haneda Airport Expansion Project JV]
Construction of Marine pier for D runway of Tokyo Haneda International Airport  [Photo: courtesy of Haneda Airport Expansion Project JV]
Continuous Effort to Expand and Explore Applications

Senso-ji Temple main hall in Tokyo

Heavy ceramic roofing tiles were replaced with pressed Titanium sheets having the same appearance.
Continuous Effort to Expand and Explore Applications

Sea Water Desalination Plant [Photo: courtesy of DHIC]
Continuous Effort to Expand and Explore Applications

Plate Heat Exchanger  [Photo: courtesy of Alpha Laval K.K.]
Agenda

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Ratio of middle/low grade feedstock in sponge production

- TiO2 94 - 96%
- TiO2 90 - 92%

<table>
<thead>
<tr>
<th>Year</th>
<th>TiO2 94 - 96%</th>
<th>TiO2 90 - 92%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>2011</td>
<td>80%</td>
<td>20%</td>
</tr>
<tr>
<td>2012</td>
<td>60%</td>
<td>40%</td>
</tr>
</tbody>
</table>
Current Activity for Now & Future

Titanium PHE for Ocean Thermal Energy Conversion (OTEC)

Principles of OTEC

Warm Seawater at Surface

Cold Seawater in Depth

Kume Island

50kw OTEC pilot plant
Current Activity for Now & Future

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

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

20 Corporate Members
170 Corporate Associates
34 Individual Members
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.
JTS presents 8,000 textbooks to junior high schools.

Example of contents which explain Ti manufacturing processes from ore.
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1. Demand remains still very low in Japan now

2. Attempt to expand titanium demand
   At the moment of such a weak demand situation, it is very important to make an effort to expand and explore applications of titanium in order to increase possibilities of titanium demand, and basic activities such as educational campaign and public relations about titanium should also have a great importance.

3. 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!

Please visit JTS booth where you can look at “Orin”, Ritual Acoustic Bowl for Buddhist, Titanium roofing tile for temples, etc.