Titanium Industry Outlook in Japan

Presented by
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Good morning, ladies and gentlemen. I am Yasuyuki Tozaki, Sumitomo Metals in Japan. It is always good to see you all at an ITA gathering like today.

This is my second time, following last year, to make a presentation at an ITA conference, on behalf of the Japan Titanium Society, JTS.

Today's Theme (page 2)

Today, for the first part, I will review Japan's titanium production in 30 years and predict its future.

I will briefly look at the history of titanium import to Japan.

And for the third subject, I will introduce the current activities of the JTS, which I hope may interest you.

Following current topics the JTS is promoting at present, I will express my opinion about the future growth for the world titanium industry to expand its horizon.

Sponge Titanium Production (page 3)

Japan's sponge production has experienced ups and downs in 30 years as this graph clearly shows. If I focus on the recent ten years, it hit bottom in 2003 at 18 thousand tons, a production level as low as nearly 25 years ago.

From 2004 through 2008, however, it continued to increase for five years, reaching 39 thousand tons, a record high.

I believe the world's aerospace industry cannot forego Japanese sponge. However, as its competition with emerging suppliers is
becoming inevitable, Japanese makers couldn’t be complacent to survive the challenge.

**Mill Products (page 4)**

Let’s have a closer look at the volume of mill products.

In 30 years, Japan’s production has been extremely susceptible to the changes in the world economy.

Take 1990 for example. The Gulf War broke out and the bubble economy burst in Japan. As a result, productions in the following years were badly affected and in two years they decreased 30%.

However, along with the recovery of the world economy, the production turned positive from 1993. And eventually in 1997, it reached a record high, at the time, of 13 thousand tons, a 120% increase from the 1992 level.

In 2008, Japan’s production marked a new record high at 20 thousand tons on the back of booming economies, in particular following increasing demand for titanium in Asia.

Because of the financial crisis triggered by the fall of Lehman Brothers in September 2008, however, the production level in 2009 was disappointingly low. It plummeted to 11 thousand tons, only 60% of that of a year earlier, the level of ten years before.

Having said that, I am expecting a great leap in production in a few years to come. Thirty-thousand tons may not be a dream for the JTS if history repeats itself.

**Proportions by Application (page 5-11)**

Let’s have a look at the pie charts comparing 2008 and 2009. As I said, the gap between 2008 and 2009 in production volume was
very big. And the proportions of each application also differ greatly.

Take the power plant application for example. In 2008, its proportion was 17%, but in 2009 it increased to 38%, more than double. The absolute volume increased nearly 40% as well.

As demand for nuclear power is rising globally, particularly in Asia, we can expect demand for titanium will also continue to increase as one of the most stable consumers of titanium for quite some time.

The production of plate heat exchanger, PHE, sharply contracted in 2009. Its proportion among others remained nearly the same, but the volume halved in a year.

It will recover sooner or later after its widespread inventories run out because the shipbuilding industry’s demand for PHE, thus titanium, is apparently edging up.

The soda-electrolysis, aircraft, for both engines and frames, are main applications, traditionally for the JTS members, too. Their demand also highly depends on economic circumstances.

As I said, I’m sure it will pick up in the future even though the 2009 outcome was not as bright. As a higher-than-ever growth is expected in the years to come for the aerospace application, in particular, I am strongly hoping for a soonest recovery.

Meanwhile, completely new applications have emerged in recent years.

One is rust-preventive panel for the runway bridges at the new international airport adjacent to the center of Tokyo, another contribution to the aerospace industry if indirect. I hope Japan will be more internationalized thanks to this new runway. As soon
as nearly two weeks from today, the new airport will start operation. Please give it a try!

The other one is this. Because of its lightness and anti-corrosion characteristic, titanium is used for roof tiles for a well-known temple in a Tokyo's old town. Please have a look at its complicated figure despite difficulty in forming, a beautiful combination of Japanese traditional craftsmanship and the cutting-edge modern technology.

**Titanium Import (page 12-13)**

Japan's import of unwrought titanium, such as sponge, ingot and slab, increased significantly in 2007 and 2008 because of the shortage of capacity in Japan and emerging capacities in China at the same time. In 2009, the import decreased to less than a quarter that of 2008, following a drop in volume of mill products.

Mill products import from the United States has been dominant among others for a long time. The absolute volume in 2009 dropped sharply, however.

**JTS's Activities (page14-15)**

The JTS consists of 201 corporations and 32 individuals. Since its foundation in 1952, it has continued to expand its horizon thanks to its members’ unsparing cooperation.

At the same time, the JTS is taking measures to encourage its members such as increasing subsidies or making the best use of senior members who used to work for the member companies.

The JTS's basic action program includes developing manufacturing technologies, creating new markets, and maintaining and improving basic infrastructure. Of course, it should not forget to observe the world's technology and market
trend to catch up with other titanium suppliers in the international arena.

For Further Growth (page 16)

As everybody understands, the titanium industry highly depends on the aerospace industry. It's not bad at all, but to maintain even more stable growth, creating new markets and new applications will be a right way.

Second, the standardization of various specifications, such as JIS, ASTM, DIN, BS etc will help the convenience of customers increase. To this end, the JTS is ready to work closely together with concerned institutes worldwide and I'm convinced this act will help expand the demand horizon for everybody engaged in the titanium industry, as a result.

Cost reduction is an ever-lasting homework. The advantageous characteristics titanium holds over other metals, such as high specific strength and corrosion resistance, will bring more benefit to the titanium industry as a whole if cost reduction more accelerates. We cannot put this issue on the back-burner. Inequitable duties between countries have been an issue for long. If those import duties become more even, freer distribution will be possible beyond boundaries. It will help everybody gathering here today create more business opportunities.

Since the JTS is not as big as too big to fall, unlike its counterpart on the opposite coast of the Pacific Ocean, in particular, please let me continue to talk about this issue.

Conclusion (page 17)

Not only “History repeats itself,” but “The deeper the trough, the taller the peak.” So, a whopping 30-thousand tons may come true. We are already seeing a lot of evidences to prove these
sayings as some speakers suggested this morning. I am hoping to remain optimistic about the JTS's future and you all would agree with me.

Incidentally, the JTS will celebrate its 60\textsuperscript{th} anniversary in 2012. In the duodecimal Oriental zodiac, 2012 will be the fifth time of a 12-year cycle comprising 12 animals that represent each year, starting from the Mouse and ending at the Wild Boar.

The year 2012 will be the one for the Dragon. As the Dragon year's characteristic is identified as extraordinary and unusual, I suspect demand for titanium will surge in 2012 to the heavens like a dragon and hope everybody will be able to reap the benefit altogether.

In concluding my presentation, please let me extend my sincerest thanks to Frank Perryman, ITA President, Jennifer Simpson, ITA Executive Director, and all the people who worked to have today's event successfully in place.

Thank you, everybody, for listening to me and have a great day in Orlando!  

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Dr. Yasuyuki Tozaki
Chairman of The Japan Titanium Society
Today’s Theme

Ⅰ. Review of Japan’s Ti Production
   Over the past 30 years and Future Predictions

Ⅱ. Import of Japan

Ⅲ. Activities of JTS

Ⅳ. Further Growth for the World’s Titanium Industry
I. Japan’s Production
1. Sponge
I. Japan’s Production
3. Share by Application

2008 vs 2009

19,727MT

Chemical Plant 1,128 (6%)
Power Plant 3,351 (17%)
Distributor 1,654 (9%)
Automotives 1,393 (7%)
Aerospace 1,221 (6%)
PHE 5,154 (26%)
Soda-Electrolysis 2,615 (13%)
Others 3,211 (16%)

11,999MT

Chemical Plant 617 (5%)
Power Plant 4,572 (38%)
Distributor 512 (4%)
Automotives 326 (3%)
Aerospace 768 (7%)
PHE 2,745 (23%)
Soda-Electrolysis 856 (7%)
Others 1,603 (13%)

19,727MT vs 11,999MT
I. Japan’s Production
Power Generation
I. Japan’s Production

Plate Heat Exchangers
I. Japan’s Production
Soda-electrolysis
I. Japan’s Production

Aircraft Engines
Ⅰ. Japan’s Production

New Application: Airport Runway
I. Japan’s Production

New Application: Temple Roof Tiles

Gargoyle
Ⅱ. Import to Japan

Unwrought Titanium

- Other
- USA
- Ukraine
- China
- Kazakhstan
- Russia

Year: 98, 99, 2000, 01, 02, 03, 04, 05, 06, 07, 08, 09
Mill Products

- Other
- China
- Russia
- USA

II. Import to Japan
Ⅲ. Activities of JTS

1. Members

(1) Regular Members
   Titanium Sponge Producers : 22
   Mill Products Producers : 11
   Trading Companies : 9

(2) Associate Members : 179

(3) Individual Members : 32

Total: 201 corporations, 32 individuals
2. Basic Action Program

JTS multidirectional, concrete promotional measures include:

(1) Develop manufacturing technology.
(2) Create new markets.
(3) Improve basic infrastructure.
(4) Check world technology and the market trend.
IV. For Further Growth for the World’s Titanium Industry

(1) Create new markets and develop new applications.
(2) Act for international standardization. Unify various specifications (JIS, ASTM, DIS, BS etc) into the ISO.
(3) Reduce costs. Develop commercially cost-reduction processes.
(4) Review differences for sponge and mill products in import duties. Japan-3% for sponge and mill products EU-5% for sponge and mill products USA-15% for sponge and mill products
I. Japan’s Production
2. Mill Products

- Export
- Domestic

Ⅰ. Japan’s Production
2. Mill Products

- Export
- Domestic

- Gulf War
- Bubble Economy Burst
- 9.11 Terrorists Attacks
- Lehman Crisis
- Credit Crunch in South-East Asia

- Record Low
- Record High

- 10KT Record (13,286T)
- 19,727T

- +337%
- +43%
- +35%
- +4%
- +40%

- 30,000T