

What is the Key to Outstanding Performance?



Positioning Titanium as a Future Core Business

With properties that make it an ideal material for a wide array of applications, particularly aerospace, the titanium business possesses major growth potential. The Nippon Mining Holdings Group has positioned titanium as one of its future core businesses, centered on the operations of Toho Titanium Co., Ltd. The Company Group is aggressively working to expand the titanium business and create Group synergies in this leading-edge field.

Demand for Titanium Grows Rapidly as Applications Increase

Titanium has a diverse range of advantages it offers in terms of performance under severe conditions and in extreme environments. Important properties of titanium include it being (1) light—its specific gravity is two-thirds that of stainless steel; (2) strong—its specific strength is roughly twice that of steel and six times that of aluminum; (3) corrosion resistant—its corrosion resistance is superior to that of stainless steel; (4) non-toxic—it is safe around the human body, and safe for people with metal allergies; and (5) environment-friendly—it has excellent recyclability.

At present, major applications for titanium metal include aerospace (engine components, fuselage structural components, rockets); chemical engineering products; electrical generation plants; civil engineering and construction; medical devices; automobiles (engine components, mufflers); and sports and household products (golf clubs, knives, eye glasses, etc.). High-purity titanium dioxide is used in such applications as electronic materials and functional materials for IT equipment and consumer electronics products. Titanium compounds are even used as a polyolefin catalyst in the manufacture of polypropylene, showing the extremely varied range of fields in which titanium is used. In particular, Japanese manufacturers—including the Nippon Mining Holdings

Group—enjoy a technological advantage in the area of high-quality titanium used in sheets and aircraft engines.

In the past, demand for titanium tended to be highly cyclical, and was particularly affected by global economic conditions and demand trends in the aerospace industry—one of the largest users of titanium. This was commonly referred to as the “titanium cycle.” However, since 2004 demand for titanium has grown rapidly. This growth can be attributed to a confluence of factors, including (1) a recovery in demand for aircraft following the downturn triggered by the September 11, 2001 terrorist attacks; (2) an expansion in the number of applications for which titanium is used; and (3) robust economic growth in the BRIC countries, particularly China. In particular, demand for titanium used in the manufacture of commercial aircraft is growing at a faster rate than the historical average. This can be attributed to growth of the global airline fleet as well as an increase in the average amount of titanium used in the manufacture of each aircraft, especially the aircraft models that are experiencing the strongest demand. Another driver of titanium demand growth in recent years has been rising crude oil and other energy prices. This has led to greater attention being focused on titanium’s advantages in terms of energy conservation and cost savings. We anticipate further growth in the use of titanium as a means of achieving lighter bodies and components. In addition, the base of new industrial applications for titanium is expanding, including demand from general industry for such uses as chemical plants. For these reasons, we expect global demand for titanium to continue growing in the foreseeable future.

Characteristics and uses of titanium

Primary uses	Light	Strong	Rustproof	Other
Aircraft	●	●		
Chemical industry			●	
Shipbuilding			●	
Oceanic civil engineering		●	●	
Construction	●		●	
Electricity			●	
Automotive	●	●		
Medical treatment	●	●	●	Biocompatibility
Sporting goods	●	●	●	Stylish

Strengthening the Titanium Business and Creating Synergies

The Company Group’s titanium business is mainly focused on the operations of Toho Titanium, which became a consolidated subsidiary in the fiscal year ending March 31, 2009. Possessing the advanced level of manufacturing technology necessary to cater to the exacting quality standards of the aerospace sector, Toho Titanium has built one of the leading global brands in the titanium industry.

Currently, Toho Titanium is pursuing a strategy to respond to increasing demand by expanding its production



Titanium sponge



Red hot outer cylinder

capacity for two of its main products, titanium sponge and titanium ingots*.

In the area of titanium sponge, Toho Titanium increased the annual production capacity at its Chigasaki Plant (Kanagawa, Japan) from 15,000 tons to 16,000 tons during the fiscal year ended March 31, 2008. Furthermore, in November 2007 the company began construction of the new Wakamatsu Plant (Fukuoka, Japan), which is scheduled to commence production in December 2009. This new plant will include state-of-the-art facilities to realize high productivity and energy savings, while the optimized plant layout is designed to maximize the efficiency of processing operations. Since the Wakamatsu Plant will be located near to the newly opened Yahata Plant (Fukuoka, Japan), which produces titanium ingots, it will be possible to efficiently ship the titanium sponge produced by the Wakamatsu Plant to the Yahata Plant to be used as the base material for titanium ingots. The Wakamatsu Plant will initially have a titanium sponge production capacity of 12,000 tons per year, but is designed with scope for expansion to a capacity of 24,000 tons per year in the next step. There is also room at the Chigasaki Plant for a further 6,000 tons per year expansion as the further step. Through these measures, the company's total annual titanium sponge production capacity will rise from 16,000 tons in the fiscal year ended March 31, 2008 to 28,000 tons in the fiscal year ending March 31, 2010.

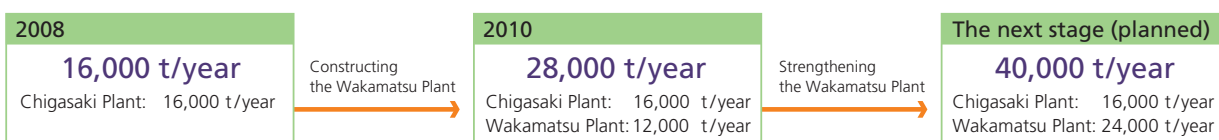
Furthermore, Toho Titanium plans on raising the combined production capacity of the two plants to 40,000 tons per year through its long-term expansion program.

In the area of titanium ingots, the Yahata Plant commenced commercial operations in April 2008, using one of the world's largest capacity electron beam (EB) smelting furnaces, with advanced energy- and resource-saving and features. The capacity of the new Yahata Plant, combined with the existing 9,000 tons capacity at the Chigasaki Plant and Hitachi EB Plant (Ibaraki, Japan), gives a total titanium ingot production capacity of 19,000 tons of per year. The new plant also has scope for an additional capacity expansion of 10,000 tons per year.

The Nippon Mining Holdings Group will strongly support the growth strategy being implemented by Toho Titanium, while also carrying out titanium resource development centering on Toho Titanium and applying the Company Group's foil and alloy technologies to the titanium field. Through these strategies to aggressively grow the titanium business, we will position titanium as one of our future core businesses.

* Titanium ingots are processed products made by the vacuum melting of titanium sponge. Ingot is a preceding product in the manufacture of the final wrought products.

Titanium sponge production capacity expansion plan



Titanium ingot production capacity expansion plan

