A new Thintri
MARKET STUDY 2005

The Titanium Age:

Supply Constraints and New Markets

Thintri, Inc. announces the release of a new market study, **The Titanium Age: Supply Constraints and New Markets**. The report analyzes current markets in titanium, and the sources and effects of price and supply issues. The report also discusses emerging market opportunities through the maturing of technologies that promise to reduce the cost of titanium extraction, machining and welding. Forecasts are provided for both traditional and new titanium markets in a number of key sectors.

Thintri Inc.

Thintri Inc. provides business and market intelligence for a wide range of technologies through custom consulting, technology assessments, and published market studies.

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Titanium, a resource with enormous potential in a large number of markets, has been hobbled by high costs, processing difficulties, and a recent extraordinary surge in demand that has limited supplies and raised prices dramatically.

Titanium has the highest strength-to-density ratio of any metal, is essentially nonmagnetic, and is highly resistant to corrosion, even in hostile environments like salt water. Furthermore, it is highly biocompatible. Titanium has become well established in aerospace, trucks and heavy vehicles, medicine, chemical processing, and general industry.

In recent years, titanium suppliers have worked hard to bring the benefits of titanium to new applications. Just as new markets for titanium have opened up, the supply of titanium has tightened considerably, with notable effects on the price. Much of the constricting of supply is attributable to sharply rising aerospace demand as well as greater use in steel production, which has reduced the supply of scrap.

The effects have been dramatic: prices for some forms of titanium have more than doubled in the past year and some users are simply unable to obtain enough titanium. The steep increase in price has dampened enthusiasm for titanium in new markets where it offers substantial long-term cost savings.

In response, suppliers of titanium sponge have rapidly moved to expand their output, largely by reviving mothballed factories. The result is that prices are likely to stabilize but are not likely to fall significantly.

At the same time, more than 20 low-cost extraction methods are under development that promise titanium (and, in some cases, alloys) at potentially very low cost. These processes are at varying levels of development; some are still in the research stage, others are ready to commercialize and only need resolution of business issues or funding to build production facilities. In addition, methods to reduce the cost of fabrication, welding and machining are also under development.

A likely scenario is that within a few years or so at least one or two, and possibly more, of these new, low-cost processing methods will enter production. The resulting stability and decline in prices will create an opening whereby new markets can be captured, bringing titanium to a broad range of new applications. On the other hand, if prices do not decline sufficiently to enable new applications, suppliers of low-cost titanium will merely sell their product for high prices and extraordinary profits. In that sense, low-cost production processes offer a substantial investment opportunity.

Understand the Markets

Thintri's new market study analyzes the current state of traditional titanium markets and the crisis in price and supply constraints. The effects of emerging low-cost titanium processes and the market forces that will determine the outcome of today's price/supply fluctuations are investigated in detail. New and sometimes unexpected market opportunities are analyzed and forecasts are provided for both traditional markets, some of them unaffected by low-cost processes, and new market opportunities created by low cost titanium.

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The report is based on in-depth interviews with more than 60 experts from industry, Government and academia, as well as a broad range of published materials.

Market Segmentation and Forecasts

Titanium, raw materials production

Sponge consumption, regional and global forecasts

Milled Products, regional and global forecasts

Market segments:

- Aerospace
  - Engines
  - Airframe
  - Landing Gear
- Industrial
  - Chemical processing
  - Automotive
    - Cars
    - Trucks and heavy vehicle
  - Medical
    - Implants
    - Surgical instruments
  - General industry
- Military
  - Aerospace
  - Marine
  - Land-based
- Consumer

Emerging Markets for Low-Cost Titanium

- Effect of new processes
  - Extraction (FFC, Armstrong, SRI, MER, etc.)
  - Fabrication
  - Welding
  - Machining
- Aerospace markets
- Automotive markets
- Industrial markets
- Medical
- Consumer

Price: $3900

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