



Titanium Sponge Production Technology

Overview

Based on the laboratory-scale technology developed at BARC, the process has been successfully upscaled to Pilot Scale at IREL (India) Limited, RETTP, Bhopal, enables the conversion of titanium-bearing feed materials into high-quality titanium sponge suitable for downstream melting and alloy manufacturing operations. The technology has been developed with emphasis on product quality, operational reliability, safety, and efficient utilization of resources.

Process

The technology employs a metallurgical route for the conversion of titanium-bearing feedstock into titanium sponge through a sequence of controlled chemical and thermal processing operations. The process is designed to produce titanium sponge with controlled chemical composition and physical characteristics suitable for subsequent melting and alloy manufacturing operations. Depending on the desired production scale, the plant may be configured for batch, semi-continuous, or integrated commercial operation.

Salient features

- Indigenous technology for production of titanium sponge.
- Scalable from pilot-scale facilities to commercial production plants.
- Suitable for strategic and high-technology applications.

Advantages

- Production of quality titanium sponge suitable for downstream melting operations.
- Reduced dependence on imported titanium feed materials.
- Potential integration with downstream titanium alloy and component manufacturing facilities..

Areas of application

- Production of titanium metal and titanium alloys.
- Aerospace and defence applications.
- Chemical process industries.
- Marine and offshore engineering sectors.
- Biomedical and healthcare applications.
- Power generation and energy industries.
- Automotive and advanced transportation sectors.
- Strategic and critical material supply programs.

Facilities required

- Production of titanium metal and titanium alloys.
 - Aerospace and defence applications.
 - Chemical process industries.
 - Marine and offshore engineering sectors.
 - Biomedical and healthcare applications.
 - Power generation and energy industries.
 - Automotive and advanced transportation sectors.
 - Research and development in titanium materials and applications.
 - Strategic and critical material supply programs.
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