Titanium Scrap

More Questions than answers?
United Alloys and Metals, Inc

- Established 1973
- Global purchaser, processor, and supplier of aerospace scrap products.
- Provides collection and processing services around the world.
- Approved to provide destruction services. (AFRA certified for recycling)
United Alloys and Metals, Inc.

Columbus, Ohio Facility
- 18 Acres/12 Acres under roof
- Full in house processing and analysis

Santa Fe Springs, CA Facility
- 144k sq. ft. site with 75k sq. ft. warehouse

$12,000,000 invested in expansion in the last four years
Examples of Product
Cronimet GmbH

- Established 1980
- HQ in Karlsruhe, Germany
- 68 subsidiaries, partnerships, and representative offices
- Focus on recycling and mining
- Approximately 5,500 employees worldwide

- Two aerospace scrap processing facilities:
  - Metalloy- Norderstedt, Germany
  - Karlsruhe, Germany
Cronimet Worldwide
Presentation Overview

- Why use Scrap?
- Scrap supply Demand Situation
- Factors moving forward:
  - Sponge and master alloy supply
  - New Scrap demand in Europe
  - World Trade situation
  - Scrap demand for ferro-titanium production
  - Scrap processing capacity
- Summary
Advantages to using Scrap

- Low cost alternative to virgin materials.
- Fills the void when raw materials are in tight supply
- Saves energy
- Good for the environment
USGS TITANIUM RECYCLING STATISTICS
(Metric tons)
What does the current scrap supply look like?
Titanium Scrap Cycle

- Melting cycle begins
  - Scrap in short supply

- Manufacturing slows
  - Scrap generation drops
  - Inventories liquidated

- Melt rates increase
  - Scrap pipeline begins to fill

- Melt rate slows
  - Scrap moves to oversupply

- Melt rate peaks
  - Scrap in Supply demand balance

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Titanium Scrap
Supply/Demand- (Aerospace)

Global commercial aircraft annual deliveries, by region: 2008 to 2017

Source: CAPA Fleet Database.
Titanium Scrap
Supply/Demand- (Industrial)

Industrial Demand
(Metric tons X 1000)
What is the sponge situation and how will it affect the scrap market?
- Sponge capacity remains available.
- Sponge inventories have dropped.
- Prices have firmed.
- There is some concern about adequate supply of feedstock to the sponge producers.
How will the current vanadium situation affect scrap demand?
Vanadium drivers

- Chinese Steel production continues to increase consumption of vanadium
- Less than 5% of vanadium consumption is in titanium.
- Limited suppliers of high grade V2O5
“Scrap is an above ground Mine”

- Titanium and vanadium units are readily available in scrap.
- New mining operations are extremely expensive and require long lead times.
- *Scrap comes to the market quickly and without the cost and risk of new mining operations.
  - Scrap processors running at very high utilization rates. Current generation will require some increase in processing capacity.
Will increased aerospace titanium scrap demand in Europe affect scrap supplies coming to the United States?
EcoTitanium®, first aviation-grade titanium recycling plant

EcoTitanium® is the first plant in Europe to produce aviation-grade titanium alloys by recycling. It will make titanium ingots from titanium alloys scrap (turnings and massive scrap) collected from major aircraft manufacturers and their subcontractors.

INTEGRATED SOLUTION FOR TITANIUM

PLASMA ARC MELTING

SCRAP

MACHINING

PRODUCTS

SPONGE

FORGING

INGOTS

VAR

BILLETs

UTMART

PLMMS

ECOTITANIUM

CLOSED

DIE FORGING

ECOMAX

AUBERT & DUVAL

MKAD
Titanium Imports 2015-2018 (metric tons)

Ti Imports to US
2015-2018 Cummulative
(Originating Region, Tonnage, Market Share)

- **EUROPE**: 33,162 (48%)
- **CHINA**: 824 (1%)
- **SOUTH AMERICA**: 20,192 (29%)
- **ASIA (w/o China)**: 13,011 (19%)
- **MIDDLE EAST**: 1,842 (3%)
- **OTHER**: 100 (0%)

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How will the current trade and tariff issues affect scrap movement?
United Alloys & Metals Inc.

Tariff on Chinese scrap Titanium

- 10% tariff on all titanium scrap went into effect on 9/24/18
- Tariff will increase to 25% on January 1, 2019 without a new trade agreement.
- Uncertainty has lead to reduced transactions in the interim (The unknown)
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2015-2018 Cumulative
(Originating Region, Tonnage, Market Share)

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United Alloys & Metals Inc.
Are increasing ferro titanium volumes and pricing a threat to aerospace scrap supply and pricing?
Ferro Ti versus scrap Turnings prices
Argus Metals
Summary

- Scrap usage continues to increase driven by availability and cost benefits.
- Aircraft build rates continue at high rates increasing both supply and demand for scrap.
- Vanadium supply and pricing issues will put pressure on scrap.
- New scrap demand in Europe will change the flow of scrap.
- Trade disputes put a question mark on scrap imports to the U.S.
- Low cost 30% Ferro titanium should prevent major upward movement of ferro titanium prices from pressuring aerospace scrap prices.