Titanium Demand and Trends in the Airframe Market

Wade Leach, Senior Vice President Commercial, ATI Specialty Materials
April 18, 2016
Forward Looking Statements

This presentation contains forward-looking statements. Actual results may differ materially from results anticipated in the forward-looking statements. These and additional risk factors are described from time to time in the Company’s filings with the Securities and Exchange Commission, including its Annual Report on Form 10-K for the year ended December 31, 2015.
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Traffic (RPMs)

Commercial Aerospace Market Forecast

Revenue Passenger Miles (Billions)

Freight Ton Miles (Billions)

Source: Airline Monitor, IATA, ICAO
Market Drivers

Traffic (RPMs)

Capacity (ASMs)

Available Seat Miles (ASMs)

Market Forecast

History

Forecast

Source: Airline Monitor
Market Drivers

Traffic (RPMs)

Capacity (ASMs)

Airline Profitability

Global Commercial Airline Profitability

Source: IATA Economics
Market Drivers

- Traffic (RPMs)
- Capacity (ASMs)
- Airline Profitability
- Fuel Costs

Jet Fuel Price and Crude Oil Price

Source: U.S. Energy Information Administration
Market Drivers

- Traffic (RPMs)
- Capacity (ASMs)
- Airline Profitability
- Fuel Costs
- Economic Turmoil

Air Travel Grows Even With Major Global Events

**World Traffic RPMs (Billions)**

- Asian Crisis
- 911
- SARS
- Financial Crisis
- Oil Crisis

Source: Airline Monitor

98% Growth Since 9/11
Market Drivers

- Traffic (RPMs)
- Capacity (ASMs)
- Airline Profitability
- Fuel Costs
- Economic Turmoil

World Private Consumption in Emerging Economies

- Advanced Economies, 78%
- Emerging Markets, 23%

Source: IHS Economics, Airbus GMF 2015
Market Drivers

- Traffic (RPMs)
- Capacity (ASMs)
- Airline Profitability
- Fuel Costs
- Economic Turmoil
Aircraft Build Rates – Feb-2016

Source: Airline Monitor and Forecast International

2010-2020 CAGR = 2.9%
Next Generation Titanium Usage in Commercial Aircraft

Source: Roskill Economics of Titanium, Goldman Sachs

Note: Titanium content per Airframe (engine not included)
Commercial Aircraft Active Fleet

Aircraft Fleet to double in the next 20 years

Past 20 years
CAGR = 4%

Next 20 years
CAGR = 3.9%

Source: Airline Monitor
Why Titanium?

Titanium Advantages:

- Weight Savings
- Heat Resistance
- Space Limitation
- Corrosion Resistance
Rise of Composite & Titanium Airframes

- Increased Operating Efficiency
- Improved Maintenance
- Passenger Comfort
How is the industry answering the challenge?

- Globalization of supply chain
  - Expanding capacity
  - Vertical integration

- Engineering new alloys
  - Cast and Atomized

- Near-net products that improve buy-to-fly ratios
  - Forgings and Castings
  - Additive Manufacturing