Mission Critical Metallics®

Titanium Demand and Trends in the Jet Engine Market

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October 7, 2013

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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, 2012.
### Commercial Aerospace Market Drivers

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<thead>
<tr>
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<th>Change</th>
<th>Specialty Metals Market Impact</th>
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<tbody>
<tr>
<td>Traffic (RPMs)</td>
<td>↑</td>
<td>+</td>
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<tr>
<td>Capacity (ASMs)</td>
<td>↑</td>
<td>+</td>
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<tr>
<td>Airline Profitability</td>
<td>↑</td>
<td>+</td>
</tr>
<tr>
<td>Fuel Costs</td>
<td></td>
<td>+</td>
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<tr>
<td>International Carriers</td>
<td>↑</td>
<td>+</td>
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<tr>
<td>Growth of Low-Cost Carriers</td>
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<td>+</td>
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(Source: Airline Monitor, IATA press releases)
New Commercial & Military Jet Aircraft Build Rate

History and Forecast

Secular Growth Trends
Titanium intensive airplanes
Fuel efficient hotter burning engines

Sources: Airline Monitor, Forecast International
New Commercial Airplane Engine Builds

History and Forecast

Source: Airline Monitor
The larger the fleet, the greater the demand for spare parts.

Source: Airline Monitor
Jet Engine Materials

- **Low Pressure Compressor**
  - Titanium
- **Fan**
  - Titanium/Composites
- **Combustor**
  - Superalloys
- **Low Pressure Turbine**
  - Superalloys, Gamma Ti Aluminides
- **High Pressure Turbine**
  - Superalloys/Powder Alloys
- **High Pressure Compressor**
  - Titanium/Superalloys
- **Engine Shaft**
  - High Strength Steels, Superalloys
ATI Alloys in Jet Engines

Fasteners
Titanium
• ATI 6-4™
Stainless & Specialty Steel
• ATI A286™
Nickel & Cobalt-Based & Superalloys
• ATI 718™
• ATI 718Plus®
Niobium
• ATI Ti45Nb™

Bellows, Honeycomb, Insulation & Tubing
Titanium
• ATI 3-2.5™
• ATI 425®
• ATI 6-2-4-2™
• ATI 6-4™
• ATI 6-4 ELI™
 Stainless & Specialty Steel
• AM 350®
• ATI 15-7™
• ATI 219® (21-6-9)
• ATI A286™
Nickel & Cobalt-Based & Superalloys
• ATI 600™
• ATI 625™
• ATI 718™
• ATI 718Plus®
• ATI HX™

APU Disks
Nickel & Cobalt-Based & Superalloys
• ATI 720 PM™
• Low Carbon Astroloy

Bearings, Gears & Shafts
Stainless & Specialty Steel
• ATI 1014™
• ATI HC53™
• ATI HC55™
• ATI RBD™
• ATI Vascomax® C-250™
Nickel & Cobalt-Based & Superalloys
• ATI 718™

Fan: Blades & Casings, Disks, Rotor
Titanium
• ATI 6-2-4-2™
• ATI 6-4™
• ATI 17™

Pan: Blades & Casings, Disks, Rotor
Titanium
• ATI 6-2-4-2™
• ATI 6-4™
• ATI 17™

Combustors & Liners
Nickel & Cobalt-Based
• ATI 188™
• ATI 718™
• ATI 718Plus®
• ATI HX™
• ATI C-103™

Casings & Rings
Stainless & Specialty Steel
• ATI A286™ Steel
Nickel & Cobalt-Based
• ATI 263™ Nickel
• ATI 625™ Nickel
• ATI 718™ Nickel
• ATI 718Plus® Nickel
• ATI GTD-222™ Nickel
• ATI HX™ Nickel
• ATI Waspaloy® Nickel
• ATI X-750™ Nickel

Exhaust Cones, Mufflers & Thrust Reversers
Nickel & Cobalt-Based & Superalloys
• ATI 617™
• ATI 625™
• ATI 718™
• ATI 718Plus®
• ATI HX™
Niobium
• ATI C-103™

Nickel & Cobalt-Based & Superalloys
• ATI 718™
• ATI 718Plus®
• ATI 901™
• ATI HX™
• ATI Powder Superalloys
• Rene 65™
• ATI Rene 95™
• ATI Waspaloy®

SPF/DB Casing Components
Titanium
• ATI 425®

1 Trademark of Pratt & Whitney

Compressor & Turbine: Disks, Rotors, Blades & Vanes
Titanium
• ATI 6-2-4-2™
• ATI 6-2-4-6™
• ATI 6-4™
• ATI 8-1-1™
• ATI 17™
• Gamma Ti Aluminide
Stainless & Specialty Steel
• ATI A286™
• ATI FV448™
• ATI FV535™
• ATI Jetheet™ M152

Nickel & Cobalt-Based & Superalloys
• ATI A286™
• ATI FV448™
• ATI FV535™
• ATI Jetheet™ M152
• ATI Rene 95™
• ATI Waspaloy®

1 Trademark of Pratt & Whitney
Titanium Applications in Jet Engines

Fan & compressor cases, disks, blisks, impellers, blades, vanes, and fasteners

- Fan Frame
- Intermediate Case
- Forged Case
- Compressor rotor
- Titanium Forged Compressor Blades
- Fan Disc
- Fan Disc w/ blades
Titanium Demand for New Engine Builds

History and Forecast

- Fundamental drivers & backlogs remain strong.
- Large commercial engines driving titanium demand.
- Near-term shipments impacted by lower demand for spares and inventory reduction throughout supply chain in 2012 and 1H 2013.

Source: Airline Monitor; ATI Estimates
Engine Development Trends

- Demand for “Green” engines
  - Reduced noise
  - Reduced emissions \((\text{SO}_2, \text{CO}_2, \text{NO}_2)\)
- Improved fuel efficiency
  - Higher operating temperatures
    - Higher temperature capable materials
  - Lighter materials
- Lower operating costs for airlines
  - Reduced maintenance intervals
  - Reduced part count

New Designs and Materials
Changes in Jet Engine Design

- Limited introduction of composites
- Larger thrust engines
  - Consume more nickel-based and titanium alloys per engine
- Higher engine temperatures
  - Nickel-based alloy content in compressor growing
  - High temp powder/cast & wrought alloys
- New titanium-based materials
  - Gamma TiAl
- Additive Manufacturing
Titanium in Jet Engines

Demand Drivers

• Higher build rates
• Larger engines
• Larger global fleet for spare parts
• New engine designs
• Fuel efficient hotter burning engines