Outlook for Titanium in the Commercial Airplane Market

Will Shaffer
Director, Raw Materials and Standards Supplier Management
Boeing Commercial Airplanes

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The statements contained herein are based on good faith assumptions and are to be used for general information purposes only. These statements do not constitute an offer, promise, warranty or guarantee of performance.
Airlines will need 38,000 new airplanes by 2034

Airplane deliveries: 38,050

<table>
<thead>
<tr>
<th>Region</th>
<th>Airplanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>14,330</td>
</tr>
<tr>
<td>North America</td>
<td>7,890</td>
</tr>
<tr>
<td>Europe</td>
<td>7,310</td>
</tr>
<tr>
<td>Middle East</td>
<td>3,180</td>
</tr>
<tr>
<td>Latin America</td>
<td>3,020</td>
</tr>
<tr>
<td>Africa</td>
<td>1,170</td>
</tr>
<tr>
<td>C.I.S.</td>
<td>1,150</td>
</tr>
<tr>
<td><strong>World Total</strong></td>
<td><strong>38,050</strong></td>
</tr>
</tbody>
</table>

New airplane deliveries by region

- **Regional jets** 2,490 (7%)
- Single-aisle 26,730 (70%)
- Small wide-body 4,770 (13%)
- Medium wide-body 3,520 (9%)
- Large wide-body 540 (1%)

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787 Dreamliner opening new markets
More than 42 new nonstop markets now connected with the 787

Announced routes in-service, pending commencement, or approval
As of January 2015

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Global fleet will double

Units

- 2014: 21,600 units
- 2034: 43,560 units

- 5,510 retained fleet
- 16,090 replacement
- 21,960 growth

Growth 58%
Replacement 42%
Retained fleet

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# BCA production rates outlook

Anticipate ~60% rate increase from 2011 through 2017

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<tr>
<td></td>
<td>44</td>
<td>63.3</td>
<td>70.6</td>
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Aggregate of all airplane programs

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<tbody>
<tr>
<td>747</td>
<td>1.3/month</td>
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<tr>
<td>767</td>
<td>2/month</td>
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<tr>
<td>787</td>
<td>12/month</td>
<td></td>
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<tr>
<td>737</td>
<td>47/month</td>
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<tr>
<td>737</td>
<td>52/month</td>
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<td>787</td>
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*Updated As of: 2/10/15*
Competition and customer expectations

Aggressive competition

- Traditional
- Emerging

Customers’ “more-for-less” expectations

- Affordable and mission-capable
- Low operating cost
- Environmentally progressive
- In-service reliability
- Standardization, first-time quality

*Aggressive competition; customers demanding more for less*
Boeing Commercial Airplanes supply chain

1 billion parts procured per year

- 737: 400 thousand parts
- 767: 3.1 million parts
- 787: 2.3 million parts
- 777: 3 million parts
- 747-8: 6 million parts

$43 billion spend • 5,400 factories • 500,000 people

Commercial Airplanes data only
Raw Materials Supply Chain

Challenges
- Supporting rates
- Consolidating industry
- Affordability

Opportunities
- Information management
- Reducing waste
- Improving value

Affordability is the new market differentiator
Summary

- Growing market
- Quality and Delivery are required
- Operational execution
  - Current production
  - New programs
- Transparency
- Creating value

Relentless focus on quality, affordability and flawless execution