To be a leading Eco-friendly Airline

11. October, 2012
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All Nippon Airways
1-0 Agenda

1. Outline of ANA
2. IATA Vision for the Future
3. ANA’s Initiatives for less Fuel
4. ANA’s Bio-fuel Demonstration
5. Conclusion
1-1 Outline of ANA

- Passengers 39.020 (FY2011: million)
- Operating Revenue 1,411,504 JPY*
- Operating Income 97,022 JPY
- Recurring Income 68,455 JPY
- Net Income 28,181 JPY

*approx. 18,032 mill. USD

<table>
<thead>
<tr>
<th>July 2012</th>
<th>Domestic</th>
<th>International</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Passenger</td>
<td>Cargo</td>
</tr>
<tr>
<td>Routes</td>
<td>106</td>
<td>4</td>
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<tr>
<td>Flights</td>
<td>797 /day</td>
<td>5 /day</td>
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ANA’s Network

2010年7月1日現在

国内線
路線数 127路線
運航便数 945便／日
提供座席数 100,484／日

国際線
路線数 22路線
運航便数 485便／日
提供座席数 14,215／日

ANAグループ便運航都市
新宿・渋谷・三田

fuel

*燃油

We Fly 1st. ANA
1-2 Outline of ANA

**Fleet: 13 types / 230 aircrafts**  
As of September 2012

- **B787-8**
  - 15 (most in the world)
- **B747-400**
  - 7 (domestic only)
- **B777-300**
  - 26
- **B777-200**
  - 25
- **B767-300F**
  - 9
- **B767-300**
  - 54
- **A320-200**
  - 21
- **B737-800**
  - 18 (domestic only)
- **B737-700**
  - 16 (domestic only)
- **B737-700ER**
  - 2 (int’l only)
- **B737-500**
  - 16 (domestic only)
- **DHC8-400**
  - 19 (domestic only)
- **DHC8-300**
  - 2 (domestic only)
2. IATA Vision for the Future

- A cap on aviation CO2 emissions from 2020 (Carbon Neutral Growth)
- An average improvement in fuel efficiency of 1.5% per year from 2009 to 2020
- A reduction in CO2 emissions of 50% by 2050, relative to 2005 levels
3. ANA’s Initiatives for less Fuel

1. New Aircrafts

Introducing the most advanced aircraft Boeing 787 first in the world.

ANA succeeded in reducing fuel consumption and CO2 emissions ▲21% less than former same size airplanes on Tokyo ⇔ Frankfurt route.

2. Advanced Flight Operations

Shortening Flight Distance ~ RNAV ~

Shortening flight distance and time by selecting and planning flight routes using GPS and other advanced systems.

Saving Energy ~ CDO ~

Continuous Decent Operation with Minimum Power

Ordinary Approach Operation with Power UP and DOWN
3. ANA’s Initiatives for less Fuel

3. Less Weight

Light Weight Container with CFRP

▲30% reduced weight than traditional aluminum container

4. Water Wash of Engines

5. Other example

Intensive Use of GPU (Ground Power Unit) at Airports to reduce 90,000 ton CO2/year (approx. 1.1% of total)
4. ANA’s Bio-fuel Demonstration


ANA’s 7th B787 Dreamliner delivery flight from Boeing’s Everett airfield to Tokyo Haneda Airport was powered partially (15%) by Bio-fuel. This endeavor was a collaborated project with the Boeing and the first experience for ANA and B787. Feedstock of the fuel was Used cooking oil and mixed with Kerosene diluted to 15%. As for feedstock, ANA has invested in a Japanese Venture farm of Algae made fuel to fly its second one with it in the very near future.
5. Conclusion

- Aviation emits CO2 to fly without any option.
- Many initiatives to mitigate the impact on Environment taken.
- Complements for technology, infrastructure and advanced operations are necessary.
- Bio-jet fuels seem to be the answer.
- Already certified technology. (ASTM D7566 July, 2011)
- Needs further steps to scale-up and commercialize.
- Airlines like to procure Bio-fuels if they are of good quality, quantitative for vast supply and reasonable enough to afford,
Think Globally, Act Locally

Thank you very much for listening!

ANA painted some planes green.