



**XXIV<sup>th</sup> WORLD  
ROAD CONGRESS**  
Mexico City 2011

# AIRFIELD PAVEMENT WORKSHOP

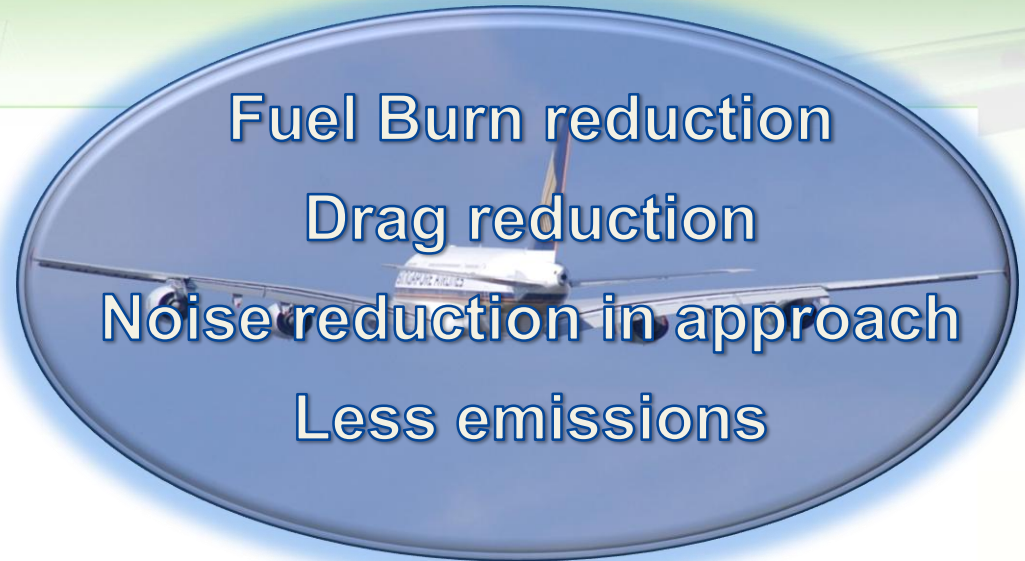
## WELCOME

Cyril FABRE, AIRBUS, France  
Head of Airfield Pavement  
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**AIRBUS**

# AIRLINES DEMAND, NEW GENERATION AIRCRAFT



- MTOW Increase
- Fuselage length increase
- Wing-span increase (& shape) for drag reduction
- Fewer wheels for:
  - ✓ Weight saving, noise & drag reduction (approach)
  - ✓ Better maneuverability
- but, larger wheels and tires (higher load capabilities  
higher braking capabilities)

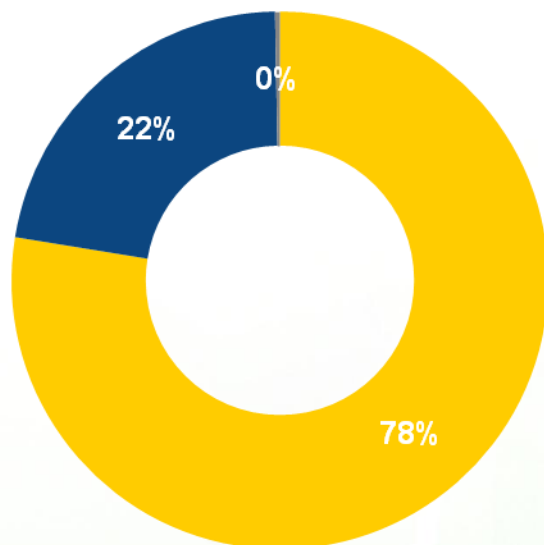
**Higher wheel  
load  
&  
Tire pressure**



# WORLDWIDE FLEET DEVELOPMENTS

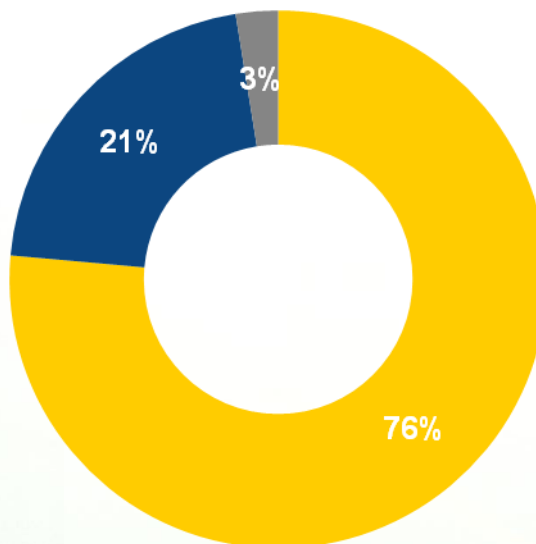
Aircraft in service over 100 seats

Start 2010



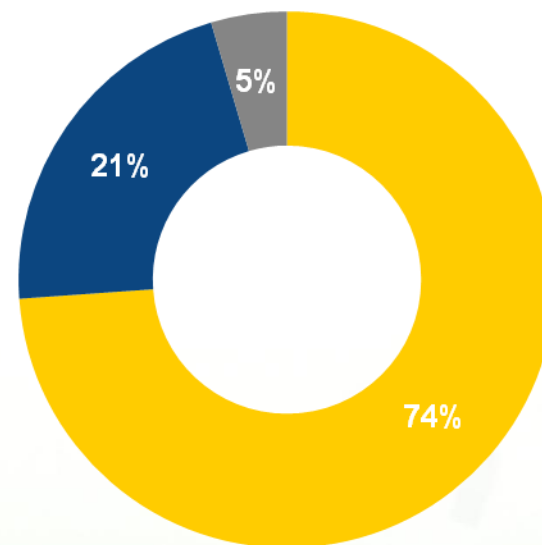
~14,240 a/c

End 2019



~21,590 a/c

End 2029



~29,050 a/c

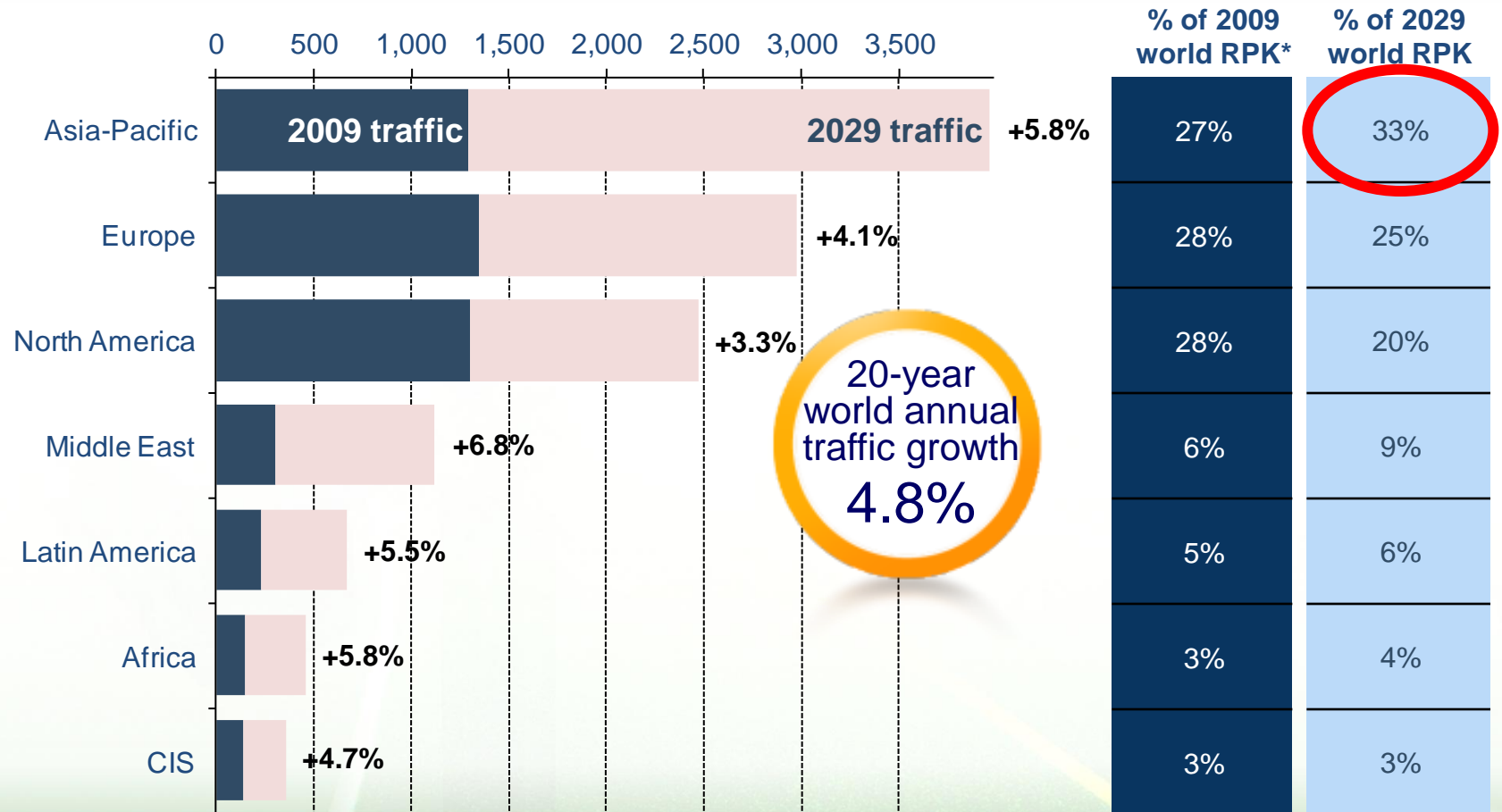
■ Single-aisle ■ Twin-aisle ■ VLA



# ASIA-PACIFIC AIRLINES WILL LEAD WORLD TRAFFIC BY 2029

2009 and 2029 traffic volume per airline domicile region

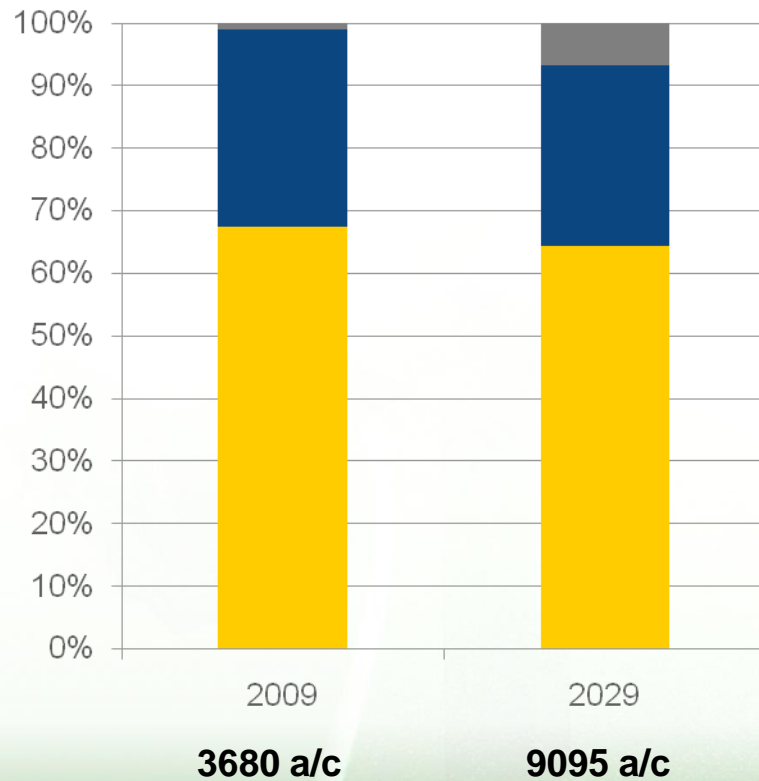
\*RPK: REVENUE PASSENGER KILOMETERS



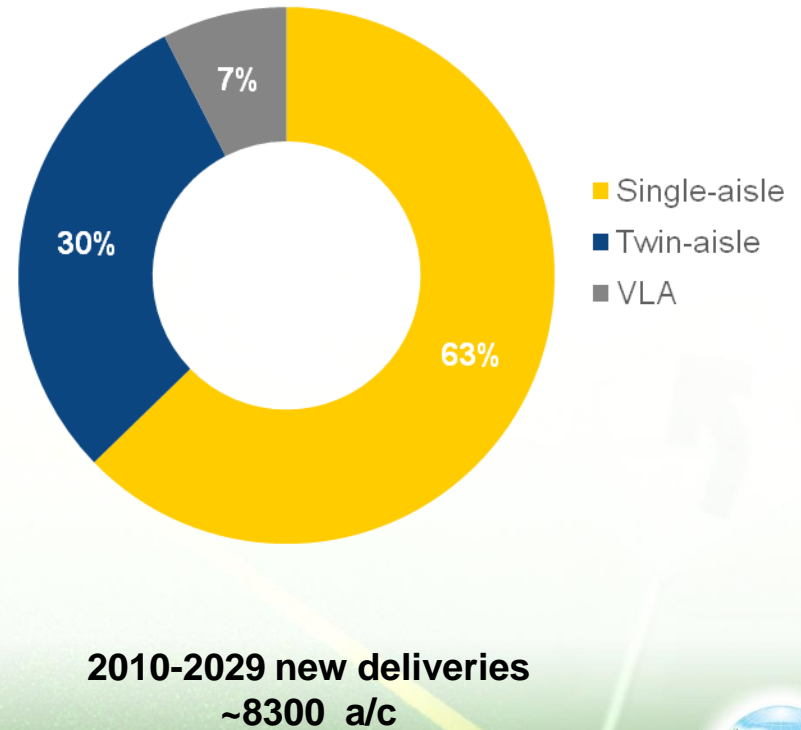
# FUTURE FLEET FORECAST – ASIA PACIFIC REGION

Asia Pacific, aircraft over 100 seats

### Share of fleet



### New aircraft deliveries



# WHAT PAVEMENT REQUIREMENTS FOR AVIATION'S FUTURE

- Combined new generation aircraft and traffic growth require to think about the ways to improve airport pavement by using the most advanced technologies but also the lessons learnt from the past experience in the following area:
  - Conception, Design and analysis
  - Materials (performances, characteristics, testing)
  - Construction (procedure and acceptance)
  - Operational characteristics, performances
  - Maintenance, inspection, PMS...,
  - ACN/PCN system
  - Testing and evaluation
  - Planning and financing
  - Regulation



# AGENDA

## Program - Day 1

Title	<b>SEMINAR ON AIRFIELD PAVEMENTS</b>
Time	Sep. 28, Wed(15:00-18:30) - Sep. 29, Thu(09:00-12:30)
Venue	Palacio de la canal 11
Chair	<i>FABRE Cyril, AIRBUS, France</i>
Co-Chair	<i>Hans Christian, KORSGAARD, Denmark</i>
15:00-15:15	Welcome and Seminar Overview – <i>FABRE Cyril, AIRBUS, France / Hans-Christian Korsgaard</i>
15:15-15:30	ICAO Perspectives, AP-AOSWG-Pavement Subgroup Working programme – <i>Lia Ricalde, ICAO Regional Office, Lima, Peru</i>
<b>AP1</b>	<b><i>Session 1. Functional Requirement / Surface Characteristics of Airfield Pavements (Chair:Lia Ricalde, ICAO Regional Office, Lima, Peru)</i></b>
15:30-16:00	Balancing Asphalt Rut Resistance with Durability and Safety Requirements on Runway Rehabilitations – <i>Emile Horak, Kubu Consultancy(Pty) Ltd., South Africa</i>
16:00-16:30	Slippery Asphalt Runways After Rejuvenation – <i>Stephen Emery, University of Witwatersrand, South Africa</i>
16:30-17:00	<b><i>Break</i></b>
17:00-17:30	A Dynamical Time-Domain Analysis for HWD(Heavy Weight Deflectometers) BackcalculationS – <i>Michaël Broutin, French CAA, France</i>
<b>AP2.1</b>	<b><i>Session 2. (Part 1) Airfield Design / Full-scale Testing / Modeling (Chair: Michael Roginski, Boeing)</i></b>
17:30-18:00	Aircraft Cockpit Ride Quality in Ground Maneuvers – <i>Gordon Hayhoe, FAA Airport Technology R&amp;D, USA</i>
18:00-18:30	Full-scale Traffic Tests on Flexible Pavements with 6- and 10-Wheel Gear Configurations – <i>Gordon Hayhoe, FAA Airport Technology R&amp;D, USA</i>
END D1	<b><i>Day 1 Close</i></b>



# AGENDA Cont.

## Program - Day 2

<b>AP2.2</b>	<b>Session 2. (Part 2) Airfield Design / Full-scale Testing / Modeling</b>
9:00-9:30	Quantification of the Effect of Tire Contact Stresses on Runway Pavement Responses – <i>Hao Wang</i> , University of Illinois at Urbana-Champaign, USA
9:30-10:00	Top-down and Bottom-up Cracking Mechanism in Failure Stage Two – <i>Edward Guo</i> , FAA's Consultant, USA
<b>AP3</b>	<b>Session 3. Construction of Airfield Pavement, including PCN Calculation (Chair: Gordon Hayhoe FAA, To be confirmed)</b>
10:00-10:30	PCN Determination - Case Studies and Observations of the FAA PCN Methodology – <i>M. Roginski</i> , The Boeing Company, USA
10:30-11:00	<b>Break</b>
11:00-11:30	The New Test Technology for Evaluating the Anti-Cracking Performance of Concrete Runway of the Airport under Construction – <i>Y. Liu</i> , China Airport Construction Group Corporation of CAAC, China
<b>AP4</b>	<b>Session 4. Maintenance, Restoration and Pavement Management System for Airfield Pavements (Chair: Imad Al-Qadi, University of Illinois)</b>
11:30-11:50	Maintaining Operational Efficiency When Resurfacing the Runway at Billund Airport with a New Overlay in Three Days – <i>Hans Christian</i> , KORSGAARD, Denmark
11:50-12:10	Pavement Sustainability and Performance Improvement: Case Studies – <i>Iswandaru Widyatmoko</i> , URS/Scott Wilson, UK
12:10-12:30	<b>Seminar Conclusion &amp; Close: Cyril FABRE &amp; Hans-Christian Korsgaard</b>

