Green Flight Times
Environmental news from across the aviation industry

Edition #6
May - October 2011
Produced by ATAG

 twenties

Emissions-reducing iFlex flight route trial a success

MONTREAL - The International Air Transport Association (IATA) has announced the successful completion of the first iFlex trial between Johannesburg and Atlanta.

The iFlex concept provides for a more flexible choice of routes on long-haul operations which cross multiple flight information regions to deliver shorter flight times, reduced fuel consumption and lower emissions.

The innovation that iFlex brings is the flexibility to extend this practice consistently across the entire journey.

Delta Air Lines reported that the implementation of the iFlex concept between Johannesburg and Atlanta resulted in average savings of around 80% over current fuel, with 12% of flights saving 14% or more.

The fuel savings also translate into carbon reductions.

According to Delta, the iFlex trial brought 3% emissions reductions per flight, and of the 500 employees who walked alongside the all-new jet, 80% said the iFlex trial had been a great success.

This publication is a digest of press releases and other announcements issued by partners across the aviation industry from May - October 2011. It is not fully comprehensive, but provides a snapshot of the work being undertaken around the world by all parts of the aviation industry. Readers are encouraged to visit www.enviro.aero for the latest environmental news.
**Honeywell and Safran joint venture to launch potential new green taxying system**

PARIS – Honeywell and French aerospace leader Safran have signed a memorandum of understanding to create a joint venture company to deliver an advanced green taxying system for new and existing aircraft. Honeywell and Safran expect it to be installed on new aircraft and retrofitted on to existing planes, beginning in 2016.

The new taxying system will significantly improve airline operational efficiency and provide environmental benefits by slashing the carbon and other emissions created during runway taxi operations.

Taxying burns a significant amount of fuel – current industry analysis indicates that the world’s short-haul aircraft consume five million tonnes of fuel per year during taxi operations. The new electric green taxying system offered by the Honeywell-Safran joint venture company will save customers up to 4% of the total fuel consumption – all while providing significant reductions in the carbon and other emissions produced by taxiing at ground level.

Honeywell and Safran will leverage the plane’s auxiliary Power Unit (APU) generator to power electrical motors in the aircraft’s main engines which will stop the engines during airport ground operations, thereby cutting the aircraft’s emissions and reliance on fossil fuels.

The new partnership capitalises on the two companies’ complementary product strengths – Honeywell’s auxiliary power experience and Safran’s world-class landing gear systems. Both companies will contribute expertise in electric power, mechanical systems and systems integration, as well as their combined well-established credibility for innovation.

Airbus and DLR test autonomous taxiing

TOULOUSE – Airbus is strongly engaged in developing greener aircraft and increasing the eco-efficiency of its products. One of the most promising contributors to emissions free ground operation is fuel cell technology. Together with its research partner DLR, Airbus is currently conducting a demonstration project into the aircraft and has already successfully performed the first flight test on a civil aircraft in 2008, where a fuel cell system provided power for the aircraft’s back-up systems.

In order to gain more insights on the potential of fuel cell technology as supply for electric power in aircraft, Airbus performed a test operation in 2011 with a fully electric, all-electric powered airport taxi at the Airbus site in Hamburg. The test demonstrator consists of a fuel cell powering an electric motor which drives the nose landing gear wheels allowing the aircraft to taxy autonomously. The objective of this test is to further investigate the potential of fuel cell technology for future aircraft functionalities such as autonomous taxiing.

The data collected in the test was later analysed by Airbus and the DLR to further develop the overall integration of this technology and potential further optimisation possibilities.

**GE Aviation study shows potential new green taxying system**

WASHINGTON – Airlines could save at least $1 billion a year by improving carbon emissions and cutting flight times by implementing new flying paths at airports, according to a new study released today by GE Aviation. GE’s “Highways in the Sky” study illustrates the potential for significant economic and environmental benefits.

The study, conducted by ICF International under an explicit request to study results released by GE Aviation. The findings of “Highways in the Sky,” come at a critical time in the debate on the future of our growing national air traffic control infrastructure, where additional investment is increas-ingly measured against proven benefits to the economy, environment and the public.

“GE’s Highways in the Sky study illustrates the potential for significant economic and environmental benefits,” said Royce, speaking at the Aircraft Fleet Recycling Association annual meeting in Washington, stressed the importance of continuously improved the products, features and services that provide increasing value to customers. “Next-Generation 737s are up to 7% more fuel-efficient than the first aircraft delivered in 1998. Boeing forecasts global demand for more than 23,000 airplanes in the 737’s market segment over the next 20 years at a value of nearly $2 trillion.

When compared to a fleet of 100 of today’s most fuel-efficient airplanes, this new model will burn 277,000 fewer tonnes of CO2 and save nearly 157 million pounds of fuel per year, while reducing carbon emissions by 760,000 pounds per year. In addition, the new 737 family will be powered by CFM International LEAP-1B engines optimised for the 737. Deliveries are scheduled to begin in 2017.

“Customers tell us they want to improve profitability and fuel efficiency while reducing their overall carbon footprint,” said Boeing Commercial Airlines President and CEO Jim Albaugh. “This solution meets all of those needs.”

Dr Clifton told the conference: “In considering the end-of-life of aerospace products the key issue is not simply reducing waste but ensuring that the maximum amount of strategic materials possible is retained in the supply chains and continues to contribute to the sustainability of the aerospace industry.”

**Boeing launches efficient 737 MAX**

SEATTLE – The Boeing Company has launched the new engine variant of the market-leading 737, based on order commitments for 496 airplanes from five airlines and a strong business case.

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Airbus advances A320neo date

TOULOUSE – In December 2010, Airbus announced a decision that had been a talking point in industry circles for 18 months – the go-ahead to offer new fuel saving engines as an option for its best-selling A320 Family.

Airbus has received a total of 1,245 orders and commitments for A320neo Family aircraft from 22 different customers, and has responded to this market reception by bringing forward the entry-into-service date from 2016 to 2015.

As new engine technologies become available in the middle of this decade, Airbus is committed to providing its customers with the latest and most eco-efficient technologies to reduce environmental impact while improving aircraft performance.

**Embraer and GE Aviation in biofuel trials**

SÃO JOSE DOS CAMPOS – Embraer and GE held a series of biofuel flight tests with an Embraer aircraft powered by a GE CF34-8B engine at Calafate Potrero facilities. The purpose of the tests was to benchmark the operational characteristics of the aircraft and its GE CF34-8B engines when powered by IHEA (Hydro-processed Esters and Fatty Acids) fuel under a broad range of unique flight conditions. The flight tests powered one of the two GE engines with a mix of 50% HEFA (derived from camelina) with Jet-A.

Following the recent approval of domestic biofuel facilities by ASTM, Embraer and GE have stepped up their efforts with the objective of supporting the development of a broader range of sustainable biofuels for aviation. With these tests, both companies confirmed that technical plans and procedures for future fuels testing are robust, enabling value-added and timely testing of additional fuels.

“We have a strong and longstanding commitment to developing efficient and environmentally responsible products. This series of tests, and their very positive results, gives us a lot of new information to continue our sustainability program as it relates to future products,” said Marnn Kern, Embraer Executive Vice President of Engineering and Technology. “Supporting the development and deployment of sustainable aviation biofuels is one of the industry’s top priorities, and we are firmly engaged in that effort.”

The series of flights, which happened in August 2011, set the stage for further biofuel development programmes that Embraer and GE will undertake with fuel produced from additional feedstocks and production pathways under consideration by the industry. These fuels are currently under study by fuel producers worldwide, including many in Brazil.

**Aircraft end-of-life design discussed at AFRA annual meeting**

WASHINGTON – Dr Andy Clifton, Sustainable Development Manager at Rolls-Royce, speaking at the Aircraft Fleet Recycling Association (AFRA) annual meeting in Washington, stressed the importance of continuously improved the products, features and services that provide increasing value to customers. “Next-Generation 737s are up to 7% more fuel-efficient than the first aircraft delivered in 1998. Boeing forecasts global demand for more than 23,000 airplanes in the 737’s market segment over the next 20 years at a value of nearly $2 trillion.

**Dates announced for Aviation & Environment Summit 2012**

GENEVA – The Air Transport Action Group has announced that the next global Aviation & Environment Summit will take place in Geneva on 21 and 22 March 2012. The event, which focuses on the aviation industry’s environmental leadership, will take place just a few months before the United Nations Biss-20 Earth Summit. For more information, visit www.ravino.aero/summit.
Thai Airways and Aerothai join Asia-Pacific flight efficiency initiative

Captain Kitiwaraj Mongkolprathuang, Chief Test Pilot and Flight Officer Naray Komalarajun, VP of Operations Support Department pilot Thai’s first ASPIRE flight. Captain Kittivaj Mongkonpruthangkoon, Chief Test Pilot and Flight Officer Naruj.

As the ASPIRE flight was a good opportunity to ‘perfect flight’, aiming to reorganize aircraft operations more efficiently in order to meet demands (ASPIRE), which is designed to make aviation more efficient and South Pacific Initiative to Reduce Emissions (APRIS). The airline reported that the best practices deployed allowed the flight to decrease fuel consumption by about 2%.

The ASPIRE flight will support flight operation standards that generate effective fuel consumption and reduce carbon dioxide emissions.

Virgin Australia to develop unique Australian biofuel

PERTH – Virgin Australia has announced that it has partnered with Renewable Oil Corporation, Dynamic Energy Systems Corporation and Future Farms. The consortium plans for a demonstration unit that will make bio-fuels for use by Virgin Australia and building this new business.

Nanotechnology - an easy route to improved fuel efficiency?

LUFTHANSA - The first prize of €30,000 in the Fly Your Ideas 2011 competition was awarded to Team Wings of Phoenix from Nanjing University of Aeronautics and Astronautics (China) at a ceremony held at the International Paris Air Show – Le Bourget. The winning team, along with all the finalists, will also be offered an internship at Lufthansa. “I am excited about the potential of this consortium. It offers world-class biofuel technology, and Lufthansa is the perfect partner to develop biofuels projects in Asia.” CEO Colin Shultz summed up: “We are excited about the potential of this consortium. It offers world-class biofuel technology, and Lufthansa is the perfect partner to develop biofuels projects in Asia.” CEO Colin Shultz summed up: “We are excited about the potential of this consortium. It offers world-class biofuel technology, and Lufthansa is the perfect partner to develop biofuels projects in Asia.”

Wings of Phoenix win Airbus Your Ideas Fly Your Ideas

Captain Kittiwattanaprasit, Chief Test Pilot and Flight Officer Naray Komalarajun said that the ASPIRE flight was a good opportunity to demonstrate Thai Airways’ fuel management best practices, which the airline has been implementing since 2008, reducing unnecessary fuel consumption and creating sustainable tourism for the future.

BANGKOK - Thai Airways International and Thailand’s national air traffic control provider Aerothai have recently joined the Asia and South Pacific Initiative to Reduce Emissions (ASPIRE), which is designed to make aviation operations more efficient in order to reduce aviation greenhouse gas emissions. A demonstration roundtrip flight from Bangkok to Auckland took place in early May in the form of a ‘perfect flight’, aiming to reduce fuel consumption and be environmentally friendly by utilizing the most efficient, advanced technologies and procedures.

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Aviation’s energy revolution takes off

Projects to explore the chain value and sustainability criteria of biofuels for aviation are taking place worldwide.

Here is a small selection of some of the many projects underway.

1. Sealair with Cranfield University: algae biofuels grown in sea water
2. Solena and algae biotech: biofuel for aviation produced from municipal waste
3. EU E-Flyht for Biofuels: 2 million tonnes by 2020
4. AIREG: German biol for aviation project: airlines and government working together
5. Romanian camelina value chain project
6. Spanish camellia value chain project
7. Algae production trial at Madrid Airport with financial and legal expertise
8. Detroit Airport will devote space around its terminal for growth of aviation biofuel crops
9. Sustainable Aviation Fuels Northwest project: biofuels for flight and ground vehicles
10. Solena and 10 US airlines, through ARA, sign an agreement for a new biofuel plant
11. Farm to fly: airlines, government and farmers work together for a value chain opportunities
12. Plan de Vuelo for aviation biofuels
13. Jatropha Value Chain project in Brazil
14. AIBA, Aviation stakeholders, farmers and fuel suppliers work together for biofuel sustainability
15. Masdar and the aviation industry launch the Sustainable Bioenergy Research Centre in the United Arab Emirates
16. Aviation industry work with other stakeholders to launch the Qatar Advanced Biofuel Research Platform
17. Aviation stakeholders and fuel supplier PetroChina work on a project for sustainable aviation biofuels
18. Chinese Government and aviation stakeholders launch Joint Laboratory for Sustainable Aviation Biofuels
19. Virgin Australia initiative develops biofuel from native eucalyptus
20. Solena and Quantas sign agreement for biofuels made from municipal waste
21. Airlines and researchers in Australia and New Zealand develop biofuels roadmap

Airlines and airports are working closely with governments and aviation industry stakeholders to establish sustainability standards that will provide suppliers, investors and customers with clear guidelines as to what is considered a sustainable biofuel. Some key sustainability criteria for aviation fuels could include the following elements:

- Will not displace, or compete with, food crops or cause deforestation;
- Reduce the risk of eroding biodiversity;
- Will not displace, or compete with, food crops or cause deforestation;
- Reduce the risk of eroding biodiversity;
- A stable and sustainable source of fuel can be developed; and
- Will not displace, or compete with, food crops or cause deforestation.

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Municipal waste gets a new life... as jet fuel in Northern California

WASHINGTON – The Air Transport Association of America (ATA), announced that a core group of airlines has signed letters of intent with Solena Fuels for a future supply of jet fuel derived exclusively from biomass to be produced in northern California.

Solena’s “Cerrito California” biomass-to-liquids facility in Northern California will utilize existing landfills, industrial and agro-waste streams to produce up to 16 million gallons of next jet fuel per year by 2015 to support airlines and airports in Oakland, San Francisco and San Jose. The project will divert approximately 350,000 tons of waste that otherwise would go to a landfill while producing jet fuel with lower emissions of greenhouse gases and conventional jet fuel.

Airlines and the US Federal Aviation Administration have opened the door to alternative jet fuels, offering airlines and airports the opportunity to support the development of “drop-in” Aviation biofuels.

Airbus and Tarom launch Europe’s first biofuel ‘value-chain’

Airbus and Tarom airlines together with a number of industry stakeholders including Honeywell’s UOP and CCE (Camelina Company Europe), have begun a project to establish sustainable local biofuel production and processing. The Romanian based project aims to provide a biofuel made from the camellia plant, as a renewable, sustainable, subsidiary to fossil based jet fuel. The project is being overseen by a Romanian-based non governmental organisation and is part of the EU’s research and innovation in the area of climate-friendly aviation biofuels.

Research and industry in Germany launch initiative for aviation biofuels

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Commercial airline biofuel flights (as of October 2011)

<table>
<thead>
<tr>
<th>Airline</th>
<th>Date</th>
<th>Destination</th>
<th>Feedstock</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLM</td>
<td>22 June</td>
<td>Amsterdam – Charles de Gaulle</td>
<td>Used cooking oil</td>
<td>200 city pair flights to take place from September 2011</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>15 July</td>
<td>Frankfurt</td>
<td>Mill of feedstocks</td>
<td>1200 flights over a six-month period</td>
</tr>
<tr>
<td>Finnair</td>
<td>18 July</td>
<td>Helsinki – Stockholm</td>
<td>Used cooking oil</td>
<td>Flights to continue throughout 2011</td>
</tr>
<tr>
<td>Interjet</td>
<td>21 July</td>
<td>Mexico City – Guadalajara</td>
<td>Used cooking oil</td>
<td>Flights to continue throughout 2011</td>
</tr>
<tr>
<td>AeroMexico</td>
<td>1 August</td>
<td>Mexico City – Madrid</td>
<td>Jatropha</td>
<td>The longest flight so far and only trans-continental flight</td>
</tr>
<tr>
<td>Thomson</td>
<td>6 October</td>
<td>Birmingham – Amman</td>
<td>Used cooking oil</td>
<td>Daily operations from 2012.</td>
</tr>
</tbody>
</table>

Spanish Government, Iberia Airlines and Airbus launch local aviation biofuel initiative

**Madrid** – The Spanish government, Iberia Airlines and Airbus have signed an agreement to develop a complete Spanish “value chain” for sustainable and renewable aviation biofuel for commercial use. Other key members are expected to join the agreement shortly.

Signatories to the agreement, including María Isabel Táboas, Spain’s Transport Secretary of State, Suárez, Antoni Vázquez, Iberia Airlines Chairman, and Tom Enders, Airbus President and CEO. The agreement promotes and backs initiatives to develop a complete biofuel production chain for Spanish aviation, using sustainable resources from production to consumption in commercial aviation, with special consideration on economic and technical analysis.

“The implementation of biofuels by the Spanish aviation industry for the development of a complete Spanish “value chain” is a goal that will reduce our dependency on fossil fuel,” said Luis Táboas. “We are fully confident that both, the public and private sector can cooperate in the development and implementation of this initiative.”

**Climate change is a major challenge for our industry. The aviation sector’s ambitious CO2 reduction target is only possible if biofuels become a reality. Under this initiative, Iberia brings extensive flight experience in commercial operations and in aircraft maintenance to perform the necessary tests that will make this a reality”, said Antoni Vázquez.

Airbus is bringing its technical expertise, research and knowledge on government regulations and management of the feasibility, lifecycle and sustainability analysis.

“Biofuels are a must for aviation to achieve our industry’s ambitious CO2 reduction targets. In fact, we believe that biofuels should primarily be reserved for aviation as our industry has no other viable alternative energy source,” said Tom Enders. “All industry players including governments have a role in helping to reduce global CO2 emissions levels. Airbus is supporting value chains to accelerate the commercialisation of aviation biofuels.”

The value chain brings together farmers, oil- refiners and airlines to spearhead the commercialisation of sustainable biofuel production. Phase one of the project will be the feasibility study. Phase two, will narrow down the most promising solutions to a demonstration level, and phase three from 2014 onwards will look at implementation and scaling up of the production process.

European Commission, Airbus, airlines and biofuel producers launch biofuel initiative

**TOCOLO** – The European Commission’s Aviation, leading European airlines and European biofuel producers, have launched an exciting new industry wide initiative to try and improve the competitiveness of aviation biofuels in Europe.

The initiative called “Biofuel Flightpath” is a round-up with clear milestones that targets an annual production of two million tonnes of sustainable jet fuel by 2020 and aviation by 2020. The biofuel will be produced in Europe from European feedstock material and has the backing of European Commissioners for Energy, Günter Oettinger, and Aviation, Mr Tom Enders, major European airlines, and a number of advanced biofuel producers.

The Biofuel Flightpath commits members to support and promote the production, storage, transport, distribution and sustainable drop-in biofuels for use in aviation to and from two million tonnes production and consumption by 2020. It also targets establishing a technical framework to support the commercialisation of “first of a kind” advanced biofuel production plants.

“The Biofuel Flightpath is a unique opportunity to create the first industrial venture ever establishing sustainable and economically competitive operations. The Commission therefore fully supports all efforts in this direction and will actively contribute to their success. This is fully in line with our European Strategic Energy Programme.”

“Airbus supports the speeding up of the commercialisation of sustainable biofuels for use in aviation and together with stakeholders such as advanced biofuel producers, airlines and lawmakers in value chains, in order to achieve this common goal more quickly. Only by working together can we meet our ambitious targets to make air transportation truly sustainable,” said Haris Georgiou, CEO France-KLM.

“Sustainability of biofuels for aviation has been proven, opening an outstanding opportunity to drastically reduce air transport’s carbon footprint. Deployment of sustainable biofuels will only be possible through a shared vision and common objectives from producers, end users and policy makers. With the Biofuel Flightpath, we hope to give the right signal for the emergence of a single European market,” said Haris Georgiou.

The technological platform will be supplied with distilled water from the Iberia purification plant in its industrial site in the airport complex, and with CO2 from: AENA and recovered at Iberia’s aircraft engine bench test facility. Airbus is committing to research, experimentation and, in improving technologies for sequestering carbon dioxide and for the cultivation of microalgae. The purpose is to reduce the production costs of biofuels and to achieve profitable biofuel production.

Spain’s airport and air traffic control agency AENA granted the site for the platform which will be managed by AlgalEnergy. Helping to design the platform were scientists from the Plant Biochemistry and Photosynthesis Institute and from the universities of Sevilla and Almería.

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The project targets AENA and Iberia at the vanguard of research into the biological processing of microalgae-based biofuels, whereby they contribute to sustainable development and environmental protection. Through photosynthesis, the microalgae transforms the CO2: it captures as a nutrient for its own subsistence into an energy source. In addition, some of the 40,000 estimated to exist on earth contain fatty acids that can be converted into biofuel. Research into the cultivation and production of microalgae biofuels at the facility, which needs no soil nor large amounts of water (recovered waste water can be used) will be aimed at improving essential aspects of algae-basate biofuel that is rich in fats, from which second-generation biofuel can be made.

The new research facility will also supply biomass to partners in the CENIT-VIDA programme (Comprehensive Evaluation of Microalgae) headed by the utility company Endesa, also a shareholder in AlgalEnergy.

The facility will also be designed to develop the production of biofuels for other sectors. AlgalEnergy has acquired from Spain’s CSIC national scientific research institute. The universities of Sevilla and Almería, will benefit from this field, will contribute to the achievement of Spain’s goals set in the decades of research into microalgae.

Algae fuel farm established at Madrid Airport

**Madrid** – Iberia airlines, Spanish airport and air traffic control organisation AENA and AlgalEnergy have unveiled a milestone, the establishment of a microalgae-based biofuel production project that will be based at Iberia’s in-house research and development laboratory.

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Sustainability and value chains projects build momentum around the world: show an industry committed to doing it right from the start

**Seatttle, Butte & RIO De Janeiro**

Sustainability and value chains projects build momentum around the world: show an industry committed to doing it right from the start

**Butte, Montana**

Biomass Consortium, a research initiative focusing on increased collaboration between voluntary standards and regulatory requirements for biomass used to create jet fuel and bioenergy for other sectors. The consortium will also seek to lower overall sustainability certification costs and barriers.

Currently, there are a number of sustainabilitiy criteria being developed for biofuels. This project is a promise or commitment to use every available resource to determine the differences in criteria, to make them more compatible with each other and make life easier for airlines wishing to use sustainable aviation biofuels.

Research projects commenced in April and the scope of work over the next two years will include projects in China, Africa, the EU, Latin America, North America and Australia. Specifics will be announced as projects are launched, and more than 40 are currently in development.

Meanwhile, at the ATAG Latin America Sustainable Aviation Biofuels Initiative in Brazil, Butte, Montana-based partners AlgalEnergy has announced that they will jointly fund a sustainability analysis of producing renewable jet fuel from Brazilian sugarcane. The ground-breaking project aims to set up pilot scale processing in Brazil, and market conditions associated with the use of renewable jet fuel produced by Amery, Environmental NGO WWF will serve as an independent reviewer and advisor. "This study will examine the overall potential for sustainable, large-scale production of biofuels and bioenergy from microalgae," said Arnoldo Vieira de Carvalho, leader of the IDB Sustainable Aviation Biofuels Initiative.

**RIO De Janeiro**

The project situates AENA and Iberia at the vanguard of research into the biological processing of microalgae-based biofuels, whereby they contribute to sustainable development and environmental protection. Through photosynthesis, the microalgae transforms the CO2: it captures as a nutrient for its own subsistence into an energy source. In addition, some of the 40,000 estimated to exist on earth contain fatty acids that can be converted into biofuel. Research into the cultivation and production of microalgae biofuels at the facility, which needs no soil nor large amounts of water (recovered waste water can be used) will be aimed at improving essential aspects of algae-basate biofuel that is rich in fats, from which second-generation biofuel can be made.

The new research facility will also supply biomass to partners in the CENIT-VIDA programme (Comprehensive Evaluation of Microalgae) headed by the utility company Endesa, also a shareholder in AlgalEnergy.

The facility will also be designed to develop the production of biofuels for other sectors. AlgalEnergy has acquired from Spain’s CSIC national scientific research institute. The universities of Sevilla and Almería, will benefit from this field, will contribute to the achievement of Spain’s goals set in the decades of research into microalgae.
AeroMexico operates 'green flight' trial, saves 555kgs CO2

Aviation Partners Boeing blended winglets

Japan Airlines instrumental in developing

Avianca educates staff on environmental responsibility

Biofuel testing programme

Delta Airlines uses automated flight tracking

In 2009, UK air navigation service provider NATS air traffic

Air India to offer EcoPower engine wash solution

Aer Lingus to deploy RNP at Knock Airport

KLM installs winglets on its 737 aircraft

Comprehensive emissions

Air Transat head office becomes first building in Canada

Aviation Authority of Singapore green flight

Improvement in the integrated air traffic management system

The initiative labelled "Biofuel Flightpath" is a roadmap with clear

The Pratt & Whitney system will help Air New Zealand reduce

Georgia Institute of Technology to improve sea-level

Johannesburg Airport Authority introduces a biofuel

Dielectric exhibits smart waste treatments

The Pratt & Whitney system will help Air New Zealand reduce

echo 4 taxiway at Paris Charles de Gaulle Airport

Southwest Airlines' "Green Plane"

Independent assessment and recognition of airports efforts

Aviation Authority of Singapore green flight

The Pratt & Whitney system will help Air New Zealand reduce

London-based smart energy management firm

The Pratt & Whitney system will help Air New Zealand reduce

Air New Zealand has signed an agreement with Pratt & Whitney's engine wash service, which will help the airline reduce fuel burn by an additional 50,000 gallons per day.

The Pratt & Whitney system will help Air New Zealand reduce

Copenhagen Airports introduces a biofuel

London-based smart energy management firm

The Pratt & Whitney system will help Air New Zealand reduce

The Pratt & Whitney system will help Air New Zealand reduce
on climate change.

By now, there is a consensus that climate change is one of the greatest challenges facing humanity. The Intergovernmental Panel on Climate Change (IPCC) has repeatedly warned that global temperatures are rising, sea levels are rising, and extreme weather events are becoming more frequent and intense. The effects of climate change are felt around the world, from rising sea levels in coastal areas to more frequent droughts in arid regions.

The IPCC has identified human activities as the primary drivers of climate change. These activities include the burning of fossil fuels for energy, deforestation, and industrial processes. The main greenhouse gas emissions driving climate change are carbon dioxide (CO2), methane, and nitrous oxide. These gases trap heat in the Earth's atmosphere, leading to a warmer planet.

Climate change has many consequences, including sea level rise, glacier melting, ocean acidification, and changes in precipitation patterns. These changes are affecting ecosystems, agriculture, and human societies around the world. Some of the most vulnerable populations are those living in coastal areas, indigenous communities, and people living in low-income countries.

To address climate change, it is necessary to reduce greenhouse gas emissions and transition to a low-carbon economy. This can be achieved through a combination of measures, including

- Increasing energy efficiency in buildings, transportation, and industry
- Increasing the use of renewable energy sources, such as wind, solar, and hydro power
- Conserving water and reducing waste
- Protecting and restoring forests and other ecosystems
- Adapting to the impacts of climate change, such as sea level rise and more frequent extreme weather events

Many countries and organizations are taking steps to address climate change. Some examples include

- The Paris Agreement, which sets a goal of limiting global temperature rise to well below 2 degrees Celsius compared to pre-industrial levels
- The United Nations Framework Convention on Climate Change (UNFCCC), which provides a platform for countries to negotiate and implement climate action plans
- The Clean Development Mechanism (CDM), which allows developed countries to invest in emissions reduction projects in developing countries
- The Intergovernmental Panel on Climate Change (IPCC), which provides scientific assessments of climate change and its impacts

Climate change is a complex and challenging issue, but it is not too late to take action. By working together, we can reduce greenhouse gas emissions and build a more sustainable future for ourselves and future generations.
United Airlines launches paperless flight deck with iPad

CHICAGO – United Continental Holdings, Inc., today launched a paperless flight deck and deployed 11,000 iPads, all United and Continental pilots. This electronic flight bags (EFBs) replace paper flight manuals, and as a first for major network carriers, gives pilots access to continually updated, automated navigational charts through an iPad app. Distribution of iPads began in August, and all pilots will have them by the end of the year.

The paperless flight deck represents the next generation of “flying,” said Captain Fred Abbott, United's senior vice president of flight operations. “The introduction of iPads on our pilots' electronic flight bag (EFB) will further help us manage our environmental footprint by reducing greenhouse gas emissions, improving fuel efficiency, and reducing paper use and printing.”

In addition to the carbon dioxide emissions efficiency figure, other significant improvements include:

• An airline fuel efficiency figure of 4.12 liters per 100 passenger-kilometers (PK).
• 3.3 million kilograms of on-board waste recycled by dnata and Emirates Flight Catering.
• United Airlines‘ first carbon neutral flight was achieved using fuel from sustainable palm oil and is recognized as such by the Roundtable on Sustainable Palm Oil. United was also recognized as the first airline in Spain to perform this kind of approach, and participated in the initial phase of the Hydrogen Highway Project.

The two INSPIRE flights are only the latest example of Emirates‘ continuous efforts to reduce environmental impact and our commitment to a sustainable future.

“Emirates has completed its 3rd year of participation in such initiatives. Emirates conducted its first reduced-emissions test flights back in 2003, and has worked with other industry stakeholders to establish the ‘flexible tracks’ initiative over the past few years,” said HH Sheikh Ahmad bin Saeed Al Maktoum, Emirates Group Chairman and CEO. “As part of our continuous efforts to reduce our environmental impact and our commitment to a sustainable future, we are excited to participate in such initiatives.”

Iberia tests save fuel

MADRID – Spanish airline Iberia has undertaken the first flight test in the DORIS project in the world, which helps to reduce CO2 emissions by 1%.

The “DORIS” project is the first of its kind in the world, and it is aimed at reducing CO2 emissions by 1% with the help of improvements to air traffic management procedures including new flight procedures and on-board decision support systems.

The main objective of the project is to reduce CO2 emissions by 1% with the help of improvements to air traffic management procedures. This is achieved through the use of new flight procedures and on-board decision support systems.

The project is being carried out in three phases: preparation, implementation, and evaluation. In the preparation phase, the project team develops the necessary procedures and systems to enable the implementation phase. In the implementation phase, the new procedures and systems are put into practice in real-world operations. In the evaluation phase, the effectiveness of the project is assessed through a combination of performance metrics and stakeholder feedback.

The project is carried out in collaboration with key stakeholders in the aviation industry, including airlines, air traffic control authorities, and air traffic management organizations.

The project is expected to be completed in 2022.
Optimising carbon reduction at Manchester Airport

MANCHESTER – Manchester Airport has been officially certified by Airport Carbon Accreditation, the European carbon standard for airports, to the ‘Optimisation’ level for its strong environmental performance.

Environmental focus has been part of the airport’s history for many years and in 2006, the airport recognised the importance further by committing to make ground operations carbon-neutral by 2015. The airport has made good progress in reducing carbon emissions to date and has already started to implement many projects that will further reduce emissions in the coming years.

Neil Robinson, Director of Sustainability said: “We have an array of projects in place to reduce emissions and we are extremely proud of our progress so far. Over the next four years, we will be looking to entirely cut the remaining emissions and we hope to be announcing some innovative projects in the near future.”

To achieve the Optimisation level in Airport Carbon Accreditation, the airport must show that it will cut a year on year reduction in the carbon emissions under its direct control and an accurate carbon footprint, which is independently audited. In addition to this, the airport must show that it has engaged and influenced carbon reduction from other airport sources, which are not out of the airport’s direct control, including public travelling to the site, aircraft emissions and businesses based on site.

At the recent launch of our Carbon Challenge, a significant number of aircraft and businesses based on site to reduce their carbon footprint, the airport exceeded seven on site companies on their work.

Brian Simpson MEP officially presented the Airport Carbon Accreditation certificate to Manchester Airport Managing Directors Andrew Harrison and the airport’s dedicated sustainability team. “It’s great to see Manchester Airport’s famously friendly, proactive attitude and dynamic approach in evidence as its environmental activities. Their increased performance within Airport Carbon Accreditation speaks volumes about their commitment to sustainable airport operations, with a host of on-site initiatives that make a real difference not just to its footprint, but to the airport’s offering of services on the airport site as well.”

Since its launch, 43 airports have become Airport Carbon Accredited in this Airports Council International-Europe programme. These airports account for over 45% of European passenger traffic welcoming more than 600 million passengers each year. Their actions to reduce CO2s have resulted in a reduction of more than 729,689 tonnes of CO2s in the past year.

Stockholm's taxi system wins another environmental award

Stockholm – Stockholm-Arlanda Airport won the “Environmental Initiative of the Year” prize at Wednesday evening’s Grand Travel Award 2011 for its work to reduce carbon emissions from taxi travel to the airport. By giving precedence to cars that run on green fuel, Stockholm-Arlanda has reduced carbon dioxide emissions by thousands of tonnes since the taxi system was introduced in March last year. The taxi dispatch system at Stockholm-Arlanda is the only one in the world that automatically gives the shortest waiting times to cars with the lowest environmental impact. Taxi emissions are calculated based on the vehicle’s registration certificate, but since net emissions are lower with green fuel, a 50% reduction in emissions is made for cars that run on ethanol and an 85% deduction is made for those that run on biogas, in line with the Swedish Environmental Protection Agency’s emissions model.

Plan to be in Geneva, for the 2012 Aviation & Environment Summit

The 6th Aviation & Environment Summit will be held in Geneva, Switzerland on 21 and 22 March 2012. The Summit is the premier industry-led aviation environment event worldwide. It provides leaders of the aviation industry with a platform to discuss the latest environmental projects, develop collaborative efforts and attract new collaborative initiatives.

The results speak for themselves: 27% of ADM employees are participating in the Eco-réseau-ÉcoPratique programme.

ADM honoured for environmental commitment

Aéroports de Montréal (ADM) is proud to be named winner, in the “Enterpris” category, at the Gala de reconnaissance en environnement et développement durable de Montréal, held in Montreal. This award honours outstanding efforts to reduce its dependence on the automobile through its Eco-réseau-ÉcoPratique programme.

The company has made continuous efforts to reduce its greenhouse gas emissions and its dependence on the automobile. In 2009, ADM enlisted the services of the Centre de gestion des déplacements écono-écolo-pratiques of Schipol Group. “We’re proud that our efforts have been rewarded with this internationally renowned certificate. We’re also delighted that transaviac.com and Montrealair were highly rated with their new sustainable local office.”

Wind turbines land at East Midlands

NOTTINGHAM – As part of the commitment to make ground operations carbon-neutral by 2012, East Midlands Airport has installed two wind turbines on the airport property.

Producing an estimated 5% of the airport’s electricity, which is the equivalent power of some 150 homes, the two turbines will approximately 300 tonnes of carbon each year. Located on site, next to the airport’s main entrance, the measurement is 35 metres high, including the rotor blades, which will have a radius of around 14 metres.

The airport has worked closely with the Civil Aviation Authority and North West Leicestershire District Council to ensure that all permissions and approvals were implemented ahead of their arrival. Planning consent was confirmed in 2008 and since, the airport has worked in partnership with local based companies and suppliers from across the world to source the most suitable product for the airport environment and to guarantee the most effective installation.

With plans to install a further two turbines, the electricity generated will significantly add to the airport’s existing suite of environmental measures reducing energy consumption and carbon emissions.

Neil Robinson, Director of Sustainability, East Midlands Airport said: “We will be the first UK airport to install turbines on this scale and we are very excited to see how this has been challenged, but we are confident that we have found the right solution. We are working with the very best partners and now the foundation holes have been dug, we can really see them taking shape.”

“The turbines will be installed for 20 years and we see it as a significant investment for the airport and the environment. Throughout the process, we have been careful to ensure that they will have no effect on our operations or be obtrusive for neighbours.”

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Where will you be on 21 and 22 March next year?

Plan to be in Geneva, for the 2012 Aviation & Environment Summit

The 6th Aviation & Environment Summit will be held in Geneva, Switzerland on 21 and 22 March 2012. The Summit is the premier industry-led aviation environment event worldwide. It provides leaders of the aviation industry with a platform to discuss the latest environmental projects, develop collaborative efforts and attract new collaborative initiatives that are underway across the globe. The 2012 event importantly comes just a few months ahead of the United Nations Conference on Sustainable Development (the Rio+20 Earth Summit).

For further information on www.enviro.aero/summit

Maldives Airports Company supports green air traffic management initiative

MALÉ – On 17th July 2011, Maldives Airports Company Ltd under green air traffic management initiative operated the first flights via Maldives air space. Abu Dhabi based airline Etihad flew an Airbus A319 from Abu Dhabi to Sydney via the Maldives and Dubai based Emirates Airline operated a Boeing 777 from Dubai to Brisbane on 17th July via Maldives airspace.

Maldives Airports Company Ltd (the national air-navigation service provider) is taking part in the Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE) project. INSPIRE Project was unanimously approved in a meeting held in Abu Dhabi in May 2011 by Air Navigation Services Providers, Airlines and Regulators.

INSPIRE project aims to reduce carbon emissions to the atmosphere by helping the aircraft to use the most efficient and optimum gate-to-gate routes. This project has shown promising results as South African Airways’ first flight on the Perth-Johannesburg route saved 40kg of fuel compared to a normal flight and reduced 120kg of carbon emissions.

INSPIRE project is supported by Maldives Airports Company Ltd, Air Service Australia, Airport Authority of India, Abu Dhabi Airports, Abu Dhabi Department of Transport, United Arab Emirates General Civil Aviation Authority, Dubai Air Navigation Services, Airport and Aviation Services (Sri Lanka) and the Sultanate of Oman Civil Aviation Authority.
Navcanada advances initiatives and domestic efforts to cut emissions

OTTAWA – Navcanada has made further gains and has announced a new project in its efforts to reduce aviation-related greenhouse gas emissions through safe and more efficient air traffic flow.

The ENGAGE Corridor Project is a collaborative initiative involving the European Community, the US and Canada, aimed at improving the efficiency of the 350,000 flights per year that cross the North Atlantic. It is one of many projects under the Atlantic Interoperability Initiative to Reduce Emissions (AIRE) Programme. The SESAR programme is a prime contractor on System Engineer –ing 2020, the FAA’s strategic programme for automation, which will maximise capacity and bring better opportunities into the SESAR JU’s day-to-day activities. Airports and SESAR together to modernise European air traffic management

WASHINGTON – The US Federal Aviation Administration (FAA) announced today that it signed a NextGen agreement with JetBlue Airways that will allow the airline to participate in the expansion of arrival optimisation (AO) to Boston and New York to the Caribbean. NextGen is the transformation of the US national airspace system from a ground-based system to one that is managed by satellites, which will enable safety and reduced fuel burn.

The FAA/NextGen agreement will improve the merging and spacing of arriving aircraft, resulting in the most appropriate time in order to fuel the aircraft to move between gates and runways and effectively report the industry’s progress in day-to-day operations, saving airlines several million dollars.

LISBON – The SESAR Joint Undertaking announced today that it signed a contract and cooperation agreement with ACI Europe – Europe's airports' trade body – to engage its technical expertise in the SESAR programmes in order to modernise the future of our transportation system, one that will maximise capacity and bring better opportunities into the SESAR JU’s day-to-day activities. Airports and SESAR together to modernise European air traffic management

PARIS – Air traffic service providers, as represented by the ATM Centre of Excellence (ACE), has chosen MAESTRO, the software tool called MAESTRO Departure Manager by Metron Aviation, as provider of ADS-B only routes to the Caribbean from Los Angeles. It is one of the many projects outlined in the updated CIFER Report.

TOULOUSE – Airbus has entered into a definitive agreement to acquire Metron Aviation, a leading provider of advanced Air Traffic Management (ATM) products and services for the global aviation industry. This acquisition strengthens Airbus’ position in ATM, an industry with a critical role to play in the implementation of the European Commission’s Single European Sky Air Traffic Management (SES) vision and targets.

Airbus’ Executive Officer of Airbus ProSky, Eric Stefanello, said: “Together, we will be able to offer a world-class ATM service to our customers in Europe and around the globe, enabling the aviation industry to reap the benefits of ATM modernisation.”

The acquisition of Metron Aviation by Airbus will strengthen the technical teams of Metron Aviation managed to transpose the DMAN concept to an operational system in the Caribbean region. This is a significant breakthrough in terms of sustainable air transport.

BANGKOK – Aéroport is in the process of the implementation of Performance-Based Navigation (PBN) at Bangkok’s Suvarnabhumi Airport. Aéroport has also introduced Continuous Descent Operations (CDO) which will be beneficial to airlines in financial and fuel savings, reduction of carbon dioxide emissions and environmental nuisance through lower emissions, and noise and fuel consumption than to notable cuts in taxiing and waiting time (two minutes less for each aircraft on average).

The agreement will also allow JetBlue to use more fuel-efficient routes and will allow JetBlue to take advantage of these routes at all times since the schedule and system tracks the precise position of the aircraft.

The introduction of PBN coincides with the implementation of CDO. This technology allows the arriving flights descending to the airport in a continuous speed with minimum engine thrust. Most importantly, it helps reduce the on-going problem of global warming.

Green flights from LA to Singapore

The Asia and Pacific Association to Reduce Emissions (ASPIRE) is moving beyond the demonstration stage with the launch of ASPIRE-Daily service in the Asia-Pacific region.

The launch of ASPIRE-Daily service will be a milestone for aviation emissions reduction. The airline industry will be one of the first to use new carbon offsetting schemes developed by the new airline operating environment. ASPIRE-Daily flights will be the first to use new carbon offsetting schemes developed by the new airline operating environment.

New routes to save carbon high over Europe

142 new direct routes have been implemented this year, bringing the total number of flights, according to the Eurocontrol Masterplan Upper Area Control Centre. These new direct routes will substantially contribute to reducing flight delays, reducing both delay and carbon emissions. It will thus reduce flight delay by 3.5 hours and means airlines can fly the same distance in 2.5 hours.

To ensure maximum safety, the routes will be initially used during the low busy hours. In 2012, they will be used during peak times.

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Bombardier regional aircraft surpass fuel economy estimates

GLAMOUR – EADS Innovation Works continues its partnership with leading universities to develop new fuel cells for hydrogen. This technology would make it possible to use hydrogen as a clean alternative to traditional fossil fuels. Hydrogen is a clean fuel which produces no carbon dioxide when burned with oxygen in a fuel cell to produce electrical power. However, it can be expensive and difficult to transport and store as a gas. “Using hydrogen as a gas demands high volumes, which in turn leads to increased weight and the energy requirement (to compress it). Storage of hydrogen in a solid is, therefore, an attractive solution,” says Philips. Efficiency and volume of the store is challenging and the rate of transfer into the tank to a fuel cell or to another critical path such as batteries are currently holding back the use of hydrogen on an industrial scale in fuel cells to provide power for aircraft.

Chemists at the University of Glasgow are working closely with colleagues from AVL and EADS Innovation Works to alter the design and material composition of hydrogen storage. The team has demonstrated, with sufficient efficiency that it will be feasible to use solid state hydrogen on an industrial scale for aerospace applications. “The team is confident that the tank structure is successful,” EADS is planning to fly an un-manned hydrogen powered aircraft in 2014 in a longer term vision of introducing commercial airplanes powered by hydrogen. Duncan Gregory, Professor of Inorganic Materials at the School of Chemistry at the University of Glasgow explained, “It is an exciting opportunity to contribute to the research. We are using nanotechnology to alter the material properties and composition of hydrogen storage, a new design under development by Hydrogen Horizons.”

Gregory concluded: “Using new active nanomaterials in combination with novel stor- age technologies, we hope to develop hydrogen storage systems that are safe and excelling opportunity to address the critical when designing hydrogen as a future fuel. Our research team is seeking funding from the European Commission, the private sector, acade- mic and industrial partners to examine the wider issues relating to using hydrogen on an industrial scale to power aircraft engines.

EADSS: Nanotech could pave way for hydrogen power

Boeing and AA speed up quieter, greener aviation technologies

Boeing South Carolina achieves zero waste to landfill status

EADSS: Nanotech could pave way for hydrogen power

Embraer recognised as sustainability leader

SEATTLE – Aviation Partners and Boeing announced that as of 9 February 2011, their blended winglet technol- ogy has saved the world’s airlines and private operators more than $125 million, or about $5 billion. This represents a global saving of 28 million tonnes of fuel, or about 28 million tonnes of CO2 emissions. Aviation Partners Winglet technology is now flying on more than 4,000 different aircraft models.

Joe Clark, Chairman and CEO of Aviation Partners, and John Renner, CEO of Aviation Partners Boeing, also agreed to further reduce the emissions of air travel.

Airbus and Parker join forces to further improve eco-efficiency in aviation

Embraer becomes ambassador for Global Restoration Council and Coalition

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Toronto – Bombardier Aerospace confirmed that the CRJ1000 NextGen regional jet and Q400 turboprop aircraft are both achieving better than expected fuel burn, rewarding operators with additional cost savings.

The CRJ1000 NextGen aircraft is achieving a mission fuel consumption rate that is 4% better than estimated. The additional savings in fuel burn results in an annual average savings of approximately $220,000 per aircraft. The improved fuel burn also directly results in a 4% reduction in carbon dioxide emissions, equivalent to an average reduction of nearly 700 tonnes of greenhouse gases per aircraft, each year.

For operators of the Q400 turboprop, there is also good news. Bombardier is on target to deliver up to 1.5% in additional fuel burn improvements, along with the 2% improvement already achieved during high-speed cruise. The better fuel burn comes at no additional expense to operators.

“The Q400 turboprop continues to deliver the best overall operating economics in its mar- ket segment, and Bombardier is providing continuous improvements to the aircraft’s product offering, including a new business-class configuration, enhanced navigation systems and a down-draught system engine to further extend the operational capabilities of the aircraft,” said Mr. Scott.

To give operators more flexibility, Bombardier confirmed today that it is offering a new dual-class configuration for the Q400 NextGen aircraft. Later this year, Bombardier will deliver the first Q400 NextGen aircraft with a business-class section, featuring three abreast seating for premium service and comfort. “It’s a very exciting new configuration,” Mr. Scott added.

In addition, Bombardier and Airbus announced at a later date that this new dual-class cabin configuration will also be available for a retrofit-in-service aircraft.

The objective of the cooperation is the development of a technology aimed as an alternative energy source for on-ground and in-flight electric power supply. Based on its ongoing collaboration with public and private partners, Airbus is extending its new fuel cell research activities by partnering with Parker Aerospace, a long- time Airbus supplier with special competencies in multifunctional fuel cells.

Within this partnership Airbus will be responsible for the overall aircraft system architecture and technology integration into the air- craft, and Parker will supply the multifunctional fuel cell system and manage different subsystem suppliers.

“During the development of a technology demonstrator followed by a joint flight test campaign for the middle of the decade, including operational and infrastructural tests. With Parker Aerospace involved in the project from this early phase, industrialisation can be considered throughout the development of the process, guaranteeing a cost efficient and competitive solution for operators.”

Aircraft manufacturers can use the new technology as a key component to meet- ing the ACARE 2050 goals, which forecast the reduction of CO2 emis- sions by 50%, NOx emissions by 80% and noise by 50% with their research partners, Airbus successfully performed the first flight test campaign in civil transport in 2008, where a full system provided power for the aircraft’s back-up systems.

As a next step, Airbus is currently investigating the application of multifunctional fuel cells as a replacement for the Auxiliary Power Unit (APU) to power any electrically powered aircraft of the 2040s generation. The company plans to introduce the Alternative Fuels and Advanced Technologies Demonstrator Program. A Boeing NextGen aircraft will be used to develop a technology for a flight test flight and accelerate the market readiness of emerging technologies.

“China is just one of the many carriers taking advantage of the fuel – and emissions – savings made possible by retrofitted winglets, such as on this Boeing 737.1

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Seah and Clark are confident that the Q400 turboprop will continue to exceed our expectations,” said Bob Johnson, Head of the Portfolio Management Team at Boeing. “The aircraft has completed nearly 200 hours of ground tests at the company’s test facility and the first flight tests are scheduled for later in this year.”

CLARK: “We are very proud of this achievement. It demonstrates the potential of the Q400 turboprop to help the company’s first major commercial airbus is an industry leader, with a clean fuel cell technology as a key component to meeting- ing the ACARE 2050 goals, which forecast the reduction of CO2 emis- sions by 50%, NOx emissions by 80% and noise by 50% with their research partners, Airbus successfully performed the first flight test campaign in civil transport in 2008, where a full system provided power for the aircraft’s back-up systems.

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Boeing and AA speed up quieter, greener aviation technologies

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EADSS: Nanotech could pave way for hydrogen power

Embraer recognised as sustainability leader

Seah and Clark are confident that the Q400 turboprop will continue to exceed our expectations,” said Bob Johnson, Head of the Portfolio Management Team at Boeing. “The aircraft has completed nearly 200 hours of ground tests at the company’s test facility and the first flight tests are scheduled for later in this year.”

CLARK: “We are very proud of this achievement. It demonstrates the potential of the Q400 turboprop to help the company’s first major commercial airbus is an industry leader, with a clean fuel cell technology as a key component to meeting- ing the ACARE 2050 goals, which forecast the reduction of CO2 emis- sions by 50%, NOx emissions by 80% and noise by 50% with their research partners, Airbus successfully performed the first flight test campaign in civil transport in 2008, where a full system provided power for the aircraft’s back-up systems.

As a next step, Airbus is currently investigating the application of multifunctional fuel cells as a replacement for the Auxiliary Power Unit (APU) to power any electrically powered aircraft of the 2040s generation. The company plans to introduce the Alternative Fuels and Advanced Technologies Demonstrator Program. A Boeing NextGen aircraft will be used to develop a technology for a flight test flight and accelerate the market readiness of emerging technologies.

“China is just one of the many carriers taking advantage of the fuel – and emissions – savings made possible by retrofitted winglets, such as on this Boeing 737.

Airbus and Parker join forces to further improve eco-efficiency in aviation

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AIRFRAME & ENGINE

Embraer becomes ambassador for Global Restoration Council and Coalition

Airbus becomes ambassador for Global Restoration Council and Coalition
Globally, humans produced over 34 billion tonnes of CO₂.

**2%**
The global aviation industry produces around 2% of all human-induced carbon dioxide (CO₂) emissions.

**12%**
Aviation is responsible for 12% of CO₂ emissions from all transport sources, compared to 74% from road transport.

**70%**
A jet aircraft coming off the production line today is over 70% more fuel efficient per seat km than one delivered in the 1960s.

**1,715** airlines operate a fleet of 23,000 aircraft serving 3,750 airports through a route network of millions of kms managed by 160 air navigation service providers.

Nearly a third of the operating costs of airlines is spent on fuel: 30%, which is up from 13% in 2001. The proportion is likely to rise further as fuel prices go up. So this alone is a major incentive for the industry to focus on fuel efficiency.

**$1.3 trillion**
In order for the aviation industry to reach its target of 1.5% average fleet fuel efficiency per annum from now until 2020, the world’s airlines will have to purchase 12,000 new aircraft at a cost of $1.3 trillion.

Since 2005, IATA’s Green Teams have saved some 39 million tonnes of CO₂ by advising airlines on fuel efficiency methods.

**77%**
Globally, the average occupancy of aircraft is around 77%, greater than other forms of transport.

**Our climate targets:**

**1.5%**
We will improve our fleet fuel efficiency by 1.5% per annum between now and 2020.

**Stabilise**
From 2020, net carbon emissions from aviation will be capped through carbon-neutral growth.

**50%**
By 2050, net aviation carbon emissions will be half of what they were in 2005.

**80%**
Alternative fuels, particularly sustainable biofuels, have been identified as excellent candidates for helping achieve the industry targets. Biofuels derived from biomass such as algae, jatropha and camelina have been shown to reduce the carbon footprint of aviation fuel by up to 80% over their full lifecycle. If commercial aviation were to get 6% of its fuel supply from biofuel by 2020, this would reduce its overall carbon footprint by 5%.

**2.6 billion**
In 2010, around 2.6 billion passengers were carried by the world’s airlines.

If aviation were a country, it would rank 21st in the world in terms of gross domestic product (GDP), generating $425 billion of GDP per year, considerably larger than some members of the G20 (and around the same size as Switzerland).

By 2026, it is forecast that aviation will contribute $1 trillion to world GDP.

**35%**
While air transport carries around 0.5% of the volume of world trade shipments, it is over 35% by value – meaning that goods shipped by air are very high value commodities, often times perishable or time-sensitive.

Deliveries of fresh produce from Africa to the UK alone supports the livelihoods of 1.5 million people, while producing less CO₂ than similar produce grown in the UK, despite the energy used in transport.

**80%**
Around 80% of aviation CO₂ emissions are emitted from flights of over 1,500 kilometres, for which there is no practical alternative mode of transport.

**3 litres**
The new Airbus A380, Boeing 787 and Bombardier CSeries aircraft use less than 3 litres of jet fuel per 100 passenger kilometres. This matches the efficiency of most modern compact cars.

**In 1945, it took 130 weeks for a person earning the average Australian wage to earn enough for the lowest Sydney to London return fare. In 2009, it took just 1.7 weeks.**

The South African horn made infamous at the 2010 World Cup, the vuvuzela, at full blast is rated at 127 decibels. An A380 on the other hand takes off with a relative whisper at 82dB.

**33 million** people are employed worldwide in aviation activities and related tourism. Of this, 5.5 million people work directly in the aviation industry.

**Worldwide, flights produced 649 million tonnes of CO₂ last year. Globally, humans produced over 34 billion tonnes of CO₂.**

**649,000,000 tonnes**

The new Airbus A380, Boeing 787 and Bombardier CSeries aircraft use less than 3 litres of jet fuel per 100 passenger kilometres. This matches the efficiency of most modern compact cars.