Look where RNP can get you!

Over three billion gallons of fuel saved worldwide

**LIMA** - The emblematic Lima-Cusco route to the world famous Inca site Machu Picchu was chosen to perform the first Latin American flight using a satellite navigation system called RNP (Required Navigation Performance) from landing to take-off. This is milestone in commercial aviation was made possible thanks to The Green Skies of Peru project, driven by LAN, GE Aviation, DGAC of Peru and COPAC.

The RNP system utilizes the ability of the advanced avionics of modern aircraft supported by a satellite guide. This allows for more precise navigation, operating safely in low visibility conditions, avoiding delays and flight cancellations; defining shorter paths and more efficient approaches; which results ultimately in less fuel consumption and remarkably reduced CO2 emissions and noise.

In the case of the Cusco-Lima flight, it was possible to shorten the route by 30.5 km, which meant a reduction of 6.3 minutes of flight time, saving 67.5 gallons of fuel and 644 kilograms of CO2. It is estimated that when fully implemented, it will bring savings to all operators at Lima Airport 1,700 flight hours and a reduction of 11,000 tonnes of CO2 a year.

RNP operations have been used by LAN Peru since 2009 on flights to Cusco and since 2011, on flights to Caimarca, Arequipa and Juliaca, but in all cases, only for landings. February’s flight was the first time the technology has been applied to a complete flight from take-off to landing.

The Green Skies of Peru project will contribute to the urgent restructuring of airspace at Jorge Chavez International Airport, offering new routes and making approaches that will increase air traffic capacity, which is reaching its limit.

Benefits beyond borders – aviation launches global sustainability analysis

**GENEVA** – Over 56 million jobs worldwide and $2.2 trillion in GDP are supported by aviation, according to a new report released at the Aviation & Environment Summit in Geneva. The report, Aviation: benefits beyond borders, was produced by the Air Transport Action Group (ATA) and Oxford Economics. It outlines an industry that plays a larger role in the global economy than many would expect.

“It’s a fascinating look at the scope of the aviation industry and our role in the world,” says Paul Steel, Executive Director of ATAG, “when you realise that aviation, if it were a country, would be the 19th largest economy in the world, supporting 56.6 million jobs and over two trillion dollars in economic impact, you really see the scale of air transport.

“Of course, aviation’s economic benefits spread far beyond the monetary aspects outlined here. When you take into account the further benefits gained through the speed and reliability of air travel, the businesses that exist because air freight makes them possible and the intrinsic value to the economy of improved connectivity, the economic impact would be several times larger.

“While the numbers relating to passengers are impressive enough, with nearly 2.7 billion passengers carried in 2010, the figures for air freight emphasize the importance of this mode of transporting valuable and perishable goods. The $3.3 trillion worth of freight carried by air transport in 2010 represents some 35% of the value of global trade, despite it representing 0.5% of the volume. Air transport is invaluable for the shipment of lightweight but valuable goods.”

Steel adds, “The report also expands the economic data to include a view of aviation’s social benefits and environmental progress. Aviation is an invaluable part of the lives of modern people and will prove even more so as emerging economies continue to develop. It can also provide more immediate and vital links to remote communities, many island states and important disaster relief.

“With the sustainable development of economies and the creation of jobs comes the responsibility to carefully manage the resources we are using and the impact that we have on the world. All parts of the commercial aviation industry are engaged in ways we can reduce environmental impact - from new technology and operational efficiencies to infrastructure development. The amount of work occurring across the industry is an impressive sign of our commitment to sustainable development.”

**SEATTLE** - Aviation Partners announced on Sunday, January 15, 2012 its blended winglet for the 737-300, 737-400, 737-500, 737-700, 737-800, 737-900, 777-200ER and 787-8/9 fleet of airplanes. Aviation Partners’ winglets are now flying on more than 5,000 individual airplanes, and more than 20 aircraft types worldwide.

Aside from corporate jet winglets, the company has products certified and in service on Boeing 727-300, -500, 757, 767 and -900, 777-200 and -300 and 787-8/9 ER/F series aircraft.

API expects the amount of fuel saved to grow exponentially to more than seven billion gallons in the next 4-5 years.

Joe Clark, CEO of API and Chairman of APB, said, “We are proud to be the world leader in the field of fuel savings for the airlines and private aviation. We look forward to adapting our new technology to both existing airplanes and new production designs in the near future.”

56.6 million Jobs supported by aviation worldwide

$2.2 trillion Aviation’s global economic impact

19th If aviation were a country, it would rank 19th in size by GDP

3,846 Airports with scheduled services

1,568 Commercial airplanes

192 Air navigation service providers

23,844 Commercial aircraft in service

WWW.AVIA TIONBENEFITSBEYONDBORDERS.ORG
Southwest LUVs its new eco-friendly seats

Southwest is retrofitting its current fleet of 372 Boeing 737s with the Foxtail interior, a new seat cover made using E-Leather, an eco-friendly, breathable and biodegradable leather. Each of the aircraft's auxiliary power units (APU) is equipped with an electric motor, and the pilots are trained to use this mechanism when the aircraft is on the ground. The system integrates electric wheels into the main landing gear. Modifications included the installation of an intercept pipe as well as further modifications to the power supply through the APU and a cooling system.

Hawaiian earns engine wash carbon credits

HONOLULU — Hawaiian Airlines has earned aviation-based carbon credits. Hawaiian has undertaken a demonstration flight carrying the UAE Delegation to the 2011 United Nations Framework Convention on Climate Change (COP17) in Durban, South Africa. Through close coordination with air navigation service providers in seven countries between the UAE and South Africa, Emirates was able to use techni- cal in-air and on the ground emissions reduction methods, reducing emissions of CO2 by five tonnes per aircraft.

Emirates stresses environmental responsibility with INSPIRE flight

DUBAI and DURBAN — As part of its ongoing efforts towards reducing greenhouse gas emissions, Emirates has undertaken a demonstration flight over the Indian Ocean, Emirates was able to use technical in-air and on the ground emissions reduction methods, reducing emissions of CO2 by five tonnes per aircraft.

Hawaiian’s engine washing pro- gram is expected to start in 2013. Honeywell UOP to supply the engine washing technology developed by Pratt & Whitney.

The new cabin interior features these sustainable products: (1) carpet: made using E-Leather, an eco-friendly, breathable and biodegradable leather. Each of the aircraft’s auxiliary power units (APU), (2) seat cover: made using E-Leather, an eco-friendly, breathable and biodegradable leather. Each of the aircraft’s auxiliary power units (APU), (3) carpet: made using E-Leather, an eco-friendly, breathable and biodegradable leather. Each of the aircraft’s auxiliary power units (APU), (4) life vest pouch: made using E-Leather, an eco-friendly, breathable and biodegradable leather. Each of the aircraft’s auxiliary power units (APU), (5) durable reusable aluminum: by switching from plastic to a recyclable aluminum, Southwest is increasing durability, and reducing waste on the runway. Southwest is increasing durability, and reducing waste on the runway.

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Airport Carbon Accreditation reaches 52% of EU travellers

BRUSSELS – Following the inclusion of the airline industry into the EU’s Emissions Trading Scheme as of January 2012, ACI Europe released an update on its flagship climate change initiative, Airport Carbon Accreditation, detailing the progress made by airports in lowering their own CO2 emissions.

As of January, some 58 airports in Europe welcoming 52% of European passenger traffic each year are now Airport Carbon Accredited at one of the five stages of certification ('Mapping', 'Reduction', 'Optimisation' and 'Neutralisation').

Oliver Langen, Director General ACI Europe commented: "With Helsinki airport, Düsseldorf airport, Warsaw airport and the six airports of Finnair’s Lapland Group now accredited, joining 46 others, our industry continues to make tangible progress in addressing its carbon footprint and become more carbon efficient. More than 750 million passengers a year are travelling through European airports that are now Airport Carbon Accredited!"

Sini Kallas, European Commission Vice-President responsible for Transport, said: "We are delighted with the result. Düsseldorf is a fine example of an industry taking the initiative in this regard. I am delighted to see so many airports are now participating in the programme - it is clearly helping to move European aviation onto a more sustainable footing."

Connie Hedegaard, European Commissioner for Climate Action said: “I am of course very happy to see that more than half of European passenger traffic is now passing through carbon accredited airports, congratulations! It is important that all parts of the industry and society join in our efforts against climate change, and examples like yours are inspiring.”

Initiated in Europe in June 2009, Airport Carbon Accreditation has moved up several gears in the past year. By November 2011, the programme expanded to include the Asia-Pacific region of ACI.

Final results of the CO2 reduction achieved for Year 3 of the programme will be announced at the 22nd ACI Europe annual congress in Madrid, 20-22 June 2012.

Düsseldorf - Travellers flying in or out of DUS can enjoy a new sight: a field of 4,409 solar panels on an area as big as six soccer fields. The installation of all panels is complete, and solar energy production is scheduled to begin before the end of the year. The plant will generate two megawatts of sustainable energy per year, enough to power 600 four-person households in Düsseldorf. A large monitor in the airport’s departure hall will display actual production and carbon dioxide saved.

Production of the plant – which is the largest ground mounted system within the secure zone of a German airport – started in October and was completed after only eight weeks.

The plant is a joint project of Düsseldorf International and a subsidiary of the city’s public services, Gründerwerke, in an effort to rapidly increase the use of sources for local renewable energy.

The unusual location for a solar power plant represents a shift in the way public and private enterprises set priorities in energy management says Düsseldorf’s mayor, Dirk Elbers, “A PV plant of this magnitude within the airfield of one of the country’s largest passenger airports reflects a new way of thinking about renewable energy, and we welcome it as another contribution of our city in the service of environment.”

Christoph Blume, the airport’s CEO, said: “Generating energy in a way that is environmentally sound is a priority for Düsseldorf International. We are very excited about working on this future-oriented project with our city’s public services. We also employ combining our own photovoltaic technology in a block heating station, and keep carbon dioxide emissions even lower this way.”

For further information on developments across the aviation industry: www.enviro.aero
Aviation: global action on climate change.

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The aviation sector has myriad projects already underway around the world to reduce emissions. Here we present a small selection from the past few years, showcasing the breadth and the scope of this work. As you can see, it truly is a worldwide effort.

58 Honeywell and Safran launch green aircraft taxiing system

59 Stockholm-Arlanda Airport aquifer cooling and heating

59 Rolls-Royce undertakes environmentally-friendly engine research

68 Air Transat head office becomes first building in Canada

73 Rolls-Royce undertakes environmentally-friendly engine research

74 Alice Springs Airport solar power station

75 Schiphol Airport’s research projects

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78 Boeing 787 testing programme

83 Volaris Airlines’ “Por un cielo azul” programme

85 Iberia takes part in SESAR trails

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102 Alternative jet fuels sprouting at Detroit’s airports

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157 Air France / KLM hub operations streamlining

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163 Finnair to buy first Airbus A321’s with “sharklet”

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to improve air-conditioning in the new building. More than 75% of

45 Heathrow Airport use of fixed electrical ground power

49 Air India to offer EcoPower engine wash solution

52 Green aircraft taxiing and pre-conditioned air

53 Aircraft operates at reduced altitude; reducing fuel burn and exhausting

55 Boeing 787 testing programme

56 Bombardier teams design environmentally-efficient CSeries

59 Stockholm-Arlanda Airport aquifer cooling and heating

61 Fujitsu, Hitachi, NEC and Toshiba successfully

62 Boeing Logistic Support

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BOULOUSE — Airbus has completed the first flight of the ‘Sharklet’ wingtip devices on the company’s A320 development aircraft (MSN 001). This milestone marks the start of the early flight-test campaign to capture data for fine-tuning the flight laws, as well as for certification and validation purposes.

Sharklets are around 2.5 metres tall and will replace the aircraft’s current wingtip fences. Offered as an option on new-build aircraft, Sharklets have been specially designed for the Airbus A320 Family to reduce fuel burn by up to an additional 3.5%, corresponding to an annual CO2 reduction of around 700 tonnes per aircraft. This reduction is equivalent to the CO2 produced by around 200 cars annually. The wingtip devices will also enhance the aircraft’s performance.

“The hunt is underway for Airbus to take another bite out of airlines’ fuel bills and CO2 emissions,” says Airbus’ Chief Operating Officer Customers, John Leach. “With this start of Sharklet flight-testing today, actions speak louder than words as we take another definitive step towards a greener aviation.”

A standard fit on the A320neo Family, which on its first anniversary after launch has attracted almost 1,500 orders and commitments from 26 customers, the Sharklets will come together with the new engines to 15% in fuel savings.

PurePower gearing up for certification

SINGAPORE — Pratt & Whitney has initiated certification testing for its PurePower PW1524G engine that will power the Bombardier Cseries aircraft. The firm’s testing programme is completing engine certification by the end of 2016.

To date the PW1524G engine test programme has run more than 1,200 hours of full-engine testing, including more than 200 flight hours on its 747 test flight airplane. In September 2013, the PW1524G engine on Bombardier’s Cseries aircraft completed its first flight test programme on Pratt & Whitney’s Flying Test Bed, logging 25 flights with 115 flight hours. A second PW1524G flight test engine has since completed more than 100 hours and 20 flights.

“The combination of its gear system and advanced core allows PurePower engines to deliver double digit improvements in fuel efficiency and emissions with a 50% reduction in noise over today’s engines. “The PurePower engine has been selected as exclusive power for the Bombardier Cseries aircraft and Mitsubishi Regional Jet. It will also power the Cseries aircraft for Bombardier and as well as the Inok MC-21 narrow-body jet.

Boeing updates 737 MAX engine configuration status and customer commitments

SEATTLE — Boeing has announced that the 737 MAX programme has selected a 68-inch fan diameter for the optimised engine design that will provide the lowest fuel burn and operating costs, this optimised 68-inch fan design will offer a smaller, lighter and more fuel-efficient engine to ensure we maintain the current advantage we have over the competition.

The new 737 family will be powered by CFM International LEAP-1B engines. The new engine variant will have 10-12% lower fuel burn than current 737s. The aircraft will have the capability to operate with both lower fuel burn for today’s fleet or providing better fuel efficiency than today’s already efficient 737.

When compared to a fleet of 100 of today’s most fuel-efficient aircraft, this new engine model will emit 1% less CO2 and save nearly 175 million pounds of CO2 as well as 8 million pounds of CO2 in 2012 as well as less community noise and emissions.

The team also improved flight planing and design of the new 737 for the new generation of engines.

“Delivering green 777’s” has a new meaning

EVERETT — The 777 programme is implementing ten initiatives that will eliminate 5.5 million pounds of CO2 emitted annually during the 777 delivery process. The first customer to benefit from all of the initiatives is Air New Zealand, which took delivery of a 777-300ER (extended range) jetliner in November 2013.

“From our first 777 delivery, we have a list of operational and environmental initiatives under way across the business. Being able to find ways to lessen the environmental impact of building and delivering an airplane is another excellent step on our journey to becoming the world’s most environmentally sustainable airline.”

During the 7-day paint and delivery process, Boeing workers incorporated new processes including reducing the number of times potable water and hydraulic fluids are changed, using chromate-free primer in the paint process, and enhancing recycling.

With airlines facing rising fuel costs and weight-based costs equating to nearly 30% of an airline’s operating costs, this optimised 68-inch fan design will offer a smaller, lighter and more fuel-efficient engine to ensure we maintain the current advantage we have over the competition.

The center will be located at COMAC’s Beijing Civil Aircraft Technology Research Center. The companies will collaborate with Chinese-based universities and research companies to expand knowledge of technologies such as sustainable aviation biofuels, aviation connectivity infrastructure and other areas that improve commercial aviation’s environmental impact or reduce the industry’s carbon emissions. The companies will jointly select and fund each research project.

For further information on developments across the aviation industry: www.enviro.aero

Manufacturer briefs

Boeing South Carolina in top 15 green power buyers

Boeing’s South Carolina 787 fabrication and assembly facility ranks 14th on the US Environmental Protection Agency’s (EPA’s) Fortune 500 list of the largest renewable power purchasers in its Green Power Partnership.

Boeing South Carolina purchases nearly 130 million kilowatt-hours (kWh) of renewable power annually from South Carolina Electric & Gas (SCE&G), enough to meet 100% of the site’s energy needs. A percent age of that power will be generated onsite by a thin-film solar laminate installation on the roof of the Boeing South Carolina 787 final assembly building.

“This helps our commitment to drive environmental thinking into the way we operate our company,” said Mary Armstrong, Boeing vice president of Environment, Health and Safety. “Boeing South Carolina’s commitment to renewable energy, coupled with its zero waste to landfill programme and LEED certification targets for all new construction, demonstrates that what’s good for the environment is also good for business.”

Boeing updates 737 MAX engine configuration status and customer commitments

SEATTLE — Boeing has announced that the 737 MAX programme has selected a 68-inch fan diameter for the optimised engine design that will provide the lowest fuel burn and operating costs, this optimised 68-inch fan design will offer a smaller, lighter and more fuel-efficient engine to ensure we maintain the current advantage we have over the competition.

The new 737 family will be powered by CFM International LEAP-1B engines. The new engine variant will have 10-12% lower fuel burn than current 737s. The aircraft will have the capability to operate with both lower fuel burn for today’s fleet or providing better fuel efficiency than today’s already efficient 737.

When compared to a fleet of 100 of today’s most fuel-efficient aircraft, this new model will emit 1% less CO2 and save nearly 175 million pounds of CO2 as well as translate into $85 million in cost savings.

“Delivering green 777’s” has a new meaning

EVERETT — The 777 programme is implementing ten initiatives that will eliminate 5.5 million pounds of CO2 emitted annually during the 777 delivery process. The first customer to benefit from all of the initiatives is Air New Zealand, which took delivery of a 777-300ER (extended range) jetliner in November 2013.

“From our first 777 delivery, we have a list of operational and environmental initiatives under way across the business. Being able to find ways to lessen the environmental impact of building and delivering an airplane is another excellent step on our journey to becoming the world’s most environmentally sustainable airline.”

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Airbus ProSky offers airport surface tool to reduce emissions

TOULOUSE – The world’s first flight using a four dimensional optimised and upgraded Air Traffic Management (ATM) technology has taken place with Airbus’ dedicated A320 test aircraft flying from Toulouse to Copenhagen and Stockholm. The project is called I-4D (Initial-4D).

The main benefits of I-4D are a significant reduction of fuel burn and CO2 emissions, in line with SESAR’s target to reduce the environmental impact per flight by 10%, a decrease of delays and therefore shorter and smoother flights for passengers.

This flight test offers a concrete solution towards improving the existing European system which is reaching its capacity limit. It is a world premiere in the ongoing transformation of today’s air traffic management system.

Once proven and industrialised, it will allow aircraft to plan and fly an optimised and efficient profile without any need for the controllers to provide any vectoring instruction. This will bring better predictability of the traffic flows and facilitate continuous descent operations into airports. As a result, aircraft flying in a holding pattern will be notably reduced.

I-4D trajectory management relies on an aircraft function that predicts and transmits data to the ground enabling the aircraft to accurately fly a trajectory after coordination with the ground systems. This is called a 4D-trajectory as it is described in three dimensions (lateral, longitudinal and vertical) and it includes one target time at a specific merging point (time as the fourth dimension).

I-4D is the first step in developing one of the essential pillars of the SESAR programme: conciliating the increasing traffic density with the efficiency of one target time at a specific merging point (time as the fourth dimension).

The new development of the air traffic management system in the FABEC airspace.

New arrival management message implemented

NETHERLANDS – After a one-week trial period Air Traffic Control the Netherlands (LVNL) and the Maastricht Upper Area Control Centre (MUAC) implemented the Arrival Management Message – AMA, an extension of LVNL’s Arrival Manager into MUAC’s Upper Airspace. This is an innovative milestone for the further development of the air traffic management system in the FABEC airspace.

An AMA message is sent electronically from Amsterdam to the Maastricht ATU and contains essential information for managing aircraft into Schiphol. The data received enables air traffic controllers to issue speed instructions at an early stage during the descent to destination.

This results in a streamlined amount of traffic, improves flight efficiency, and can result in savings up to 10 kg of fuel per flight affected.

The introduction of AMA is an essential step in the implementation of a function in the air traffic management system that advises air traffic controllers about aircraft speed and the use of routes for aircraft inbound to Schiphol while they are still flying in the upper airspace.

This function is being developed in the Speed And Route Advisor (SARA) project, one of the projects which are carried out at European level, as part of the strategy of the European Commission, with the aim to modernise the air traffic management system in the period until 2020.

The implementation of this function makes traffic flows more predictable and stable, reduces the workload of air traffic controllers and cockpit crew and brings environmental and economical benefits.

For FABEC, the new data exchange between Amsterdam and Maastricht is an initial step to implement cross-border arrival management (SMAN) for the five major airports Paris, Frankfurt, Amsterdam, Munich and due to its effect on FABEC operations - London.

The objective is to improve flight efficiency by enhancing the scope of continuous descent operations (CDCO).

Instead of the limited range of existing centre-internal arrival management systems FMAN will allow the planning of arrivals across centre boundaries within a range of approximatley 200 nautical miles.

The third and fourth phases are already being planned. Additionally, further Free Route Airspace structures will be introduced in cooperation with the Maastricht Upper Area Control Centre and other FABEC partners and the Single European Sky ATM Research Programme.

Trajectory-based systems are the core of the Single European Sky. “The Free Route Airspace system is not just a significant step forward, it is a quantum leap. And from a technologi-cal point of view, it is the way to SESAR,” commented Ralph Riedle, Managing Director Operations at DFS.

“The system is key for restructuring airspace. This is why we are going to develop one of the upper airspace above Bavaria to Karlsruhe next year.”

ProSky offers airport surface tool to reduce emissions

COPENHAGEN – A ‘Free Route Airspace’ (FRA) concept is being implemented by Danish Naviair and Swedish LFV Air Navigations Service providers. The concept is a direct result of the air traffic management cooperation during the establishment of the Swedish airspace that was declared in October 2009.

With Free Route Airspace, the airliners and pilots will be able to plan a direct flight route through the Danish and Swedish airspace. Estimations based on Eurocontrol’s standard models shows that the concept will give a total fuel saving of approximately 13,800 tonnes a year thus reducing CO2 emissions by approximately 42,600 tonnes.

The free route airspace concept is also contributing to a more efficient air traffic management system in the FABEC region.

“Free route airspace” reduces fuel burn and CO2

TOULOUSE – Airlines strive for ever more eco-efficient ground operations including safe taxiway routing for pilots, all-weather guidance between the terminal gate and the runway, and control of aircraft and vehicles.

Airbus ProSky is responding to this demand by its Air Traffic Management (ATM) offerings with a powerful airport surface management system (SMAN) for Air Traffic Control centres worldwide.

SMAN was designed for environmental efficiency by the German company ATRiCS and is now offered through Airbus ProSky. A unique feature of this airport surface management system is that it automatically switches on the green taxiway lights in front of the aircraft as it moves forward, to illuminate the correct route ahead for the pilot to follow.

The system reduces taxi time and maximises airport capacity and aircraft throughput, while its intelligent predictive guidance also prevents runway incursions and ‘wrong-turn’. SMAN smooths overall traffic flow and eliminates a continuous taxi speed, resulting in less queuing, less stop and go and lower emissions.

“Airbus ProSky and ATRiCS share a common goal for improving the efficiency of the global aviation industry,” said Wolfgang Hatzack, Chief Executive Officer of ATRiCS.

“Our aim is to improve operations in Incheon, Kuala Lumpur, Dubai, Frankfurt, Zurich and Düsseldorf demonstrate the safety and cost benefits for the global aviation industry with Airbus ProSky.”

Eric Stenchev, Chief Executive Officer of Airbus ProSky said: “We are bringing together intelligent ATM components which offer the highest level of performance improvements.”

“New arrival management message implemented”

Green Flight Times

The Green Flight Times is published by the Air Transport Action Group.

Commercial aviation, speaking with one voice
Getting a flight off the ground is a complex business. It takes hundreds of people and very good coordination. That spirit of cooperation is also being used in reducing emissions. All parts of the industry are involved, including the makers of wheel assemblies who are working on a system to allow aircraft to taxi using power from fuel cells, rather than jet engines.

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Commercial aviation, speaking with one voice