October 2022 Issue

Meet the Team

This new column will provide our readers with an opportunity to "meet the team" by highlighting a different member of our team each month and telling you a bit about their backgrounds and connections to the autonomous systems and advanced mobility space.

Susan H. Lent

Head of the firm's infrastructure and transportation practice

Member of government contracts, autonomous systems and advanced mobility, and technology groups

What led you to a career at the intersection of law and technology?

I was trained as a government contracts lawyer and at a previous firm had the opportunity to represent a public transit agency client. I became interested in transportation and pursued an opportunity to become a legal counsel to the House of Representatives Committee on Transportation and Infrastructure. From there I joined Akin Gump and developed a transportation regulatory practice. With the advent of autonomous vehicles and broader transportation technology, I have increasingly looked for and found opportunities to represent clients on the cutting edge of transportation technology, and we have strived to provide one-stop representation to clients advising on how to operate in an area where the law and regulations have not caught up with the technology, recommending changes to laws and regulations and advising clients on how to manage liability (through insurance and indemnification clauses) as well as advising government entities in the U.S. and other parts of the world regarding how to adopt their infrastructure and regulate new technologies.

What are some emerging issues that you are seeing in the advanced mobility space?

I have a unique view of trends in this space as my practice tends to cross regulation, policy and funding opportunities, and litigation. From the policy perspective, and with the new incoming Congress, we may see movement on federal autonomous vehicle legislation. We also are likely to see legislation in the advanced aviation space with Congress poised to reauthorize the Federal Aviation Administration next year. Also, the recent passage of the Infrastructure Investment and Jobs Act and the Inflation Reduction Act provide funding opportunities for clients in the advanced mobility sector, in particular in the electric vehicle (and related infrastructure such as charging stations and batteries). We are advising a number of clients on these issues, and expect that to continue over the next few years. On the regulatory side, I think we'll continue to see autonomous vehicle companies push forward on testing their vehicles in cities around the world, in particular as we see more and more smart cities. This comes with a host of compliance issues at the federal, state and local levels. I am also keeping a close eye on how this testing can lead to accidents, or failure in autonomous driving systems, which can lead to investigations by the Department of Transportation and National Highway Traffic Safety Administration, and the potential for related litigation and class actions. It's an exciting time in this space with a host of issues for clients to look out for and be aware of. I recently talked about some of these issues in a podcast we held with Nuro AI in our TechTalk with Akin Gump series, which can be viewed here.

IN THIS ISSUE

UNMANNED AIRCRAFT SYSTEMS (UAS)

Drones Set to Transport Mater Hospital Pathology Samples Across Southeast Queensland in 'Australian First'

Brisbane's Mater Hospital announced a partnership program with drone company Swoop Aero that will see a fleet of drones used to shuttle patient pathology samples from areas across Moreton Bay to the hospital's testing labs at Springfield in Ipswich. Mater Pathology general manager Deb Hornsby said the initiative was an "Australian first" and would slash waiting times for test results, particularly blood samples and COVID-19 swabs.

"It is a game-changer, it will take pathology services to a different level – we're the first pathology service in Australia to offer this," Ms. Hornsby said. "Right now, we are reliant on ferry terminals and courier pick-ups to get samples back to Mater for testing from Stradbroke Island and the other islands. Depending on ferry services, it can take up to six hours. Pathology is a time-sensitive service … turnaround times are really critical to get those results back to GPs [general practitioners] and specialists."

It is estimated the drone system will pick up and deliver about 80,000 pathology samples a year from Aboriginal and Torres Strait Islander Community Health Service patients on Stradbroke Island, as well as other patients across Russell Island, Macleay Island, the Redlands and Hope Island on the Gold Coast.

Swoop Aero chief commercial officer Sabrina Ravail said the Mater Hospital approached the company last year when there was a huge increase in COVID-19 testing. Mater Pathology conducted three million pathology tests last year and did more than 2,500 COVID-19 tests a day. "The pressures on the health system were … high and pathology samples took a long time to be delivered," Ms. Ravail said.

Read Article

ADVANCED AIR MOBILITY

Delta Airlines Will Invest Up to $200 Million in Joby Aviation to Create a 'Home-To-Airport' Air Taxi Service

Delta Airlines will invest $60 million in Joby Aviation, a leading electric air taxi startup, to create a "home-to-airport" service using the startup's five-seat electric vertical takeoff and landing (eVTOL) aircraft, the companies announced Tuesday. Delta said its investment in Joby could go as high as $200 million if the company hits certain milestones.

The service, which will launch first in New York City and Los Angeles with other cities to follow, will be "mutually exclusive" across the United States and United Kingdom for five years, with the option to extend that exclusivity for longer, the companies said. The home-to-airport service will exist in parallel to Joby's currently nonexistent airport service, transporting passengers from cities to airports.

In a briefing with reporters, Joby CEO JoeBen Bevirt said that a trip from Manhattan to JFK Airport, which can take as long as 50 minutes to an hour when traveling by car or subway, would take as little as 10 minutes when flying in one of the company's five-passenger aircraft—"along with a really spectacular view," he added. It's a nice thought, but the truth of the matter is that the type of aircraft that Joby is developing—electric, low noise profile,

cross between helicopter and drone—is not yet approved for any commercial service anywhere in the world.

Delta CEO Ed Bastian said his company's investment was distinct from other similar funding announcements because the airline wasn't seeking to purchase Joby's aircraft or operate the service itself. "We're not looking to be an operator; we're going to be working with Joby, who's going to be our operator," Bastian said during a briefing with reporters. "And so all of our attention and focus is really on delivering a great customer experience and providing the airport infrastructure."

As previously noted, electric air taxis aren't a real thing yet. They face a host of technical and regulatory challenges before they can scale up into a meaningful service. So far, those projects have proven costly to implement, requiring the construction of a vast network of rooftop or ground-level "vertiports" and regulatory approval from a host of federal, state and local agencies.

Delta isn't the only funder to put conditions on its investments. Earlier this year, United Airlines announced it would invest $15 million in Eve Air Mobility, provided the Embraer-owned startup could hit certain technical and regulatory benchmarks. United also invested in Archer Aviation, while Boeing is backing Wisk Aero.

Read Article

Boeing and Wisk Unveil Concept of Operations for Urban Air Mobility

Boeing and its joint venture partner Wisk released a roadmap for transitioning to a future where automated and uncrewed aircraft can safely carry passengers and cargo in urban and suburban areas. The concept of operations lays out the technology, regulatory and social recommendations needed to deploy Urban Air Mobility (UAM) in the United States and integrate it into the national airspace system.

"We're working to enable a future of aerospace that is safe, sustainable and at scale. Uncrewed operations will be fundamental to realizing that vision, and we have to exceed the current safety standards for the air transportation system," said Brian Yutko, Boeing Vice President and Chief Engineer of Sustainability & Future Mobility.

"The important work we're sharing today provides a stepping stone in the advancement of UAM in the U.S. and the world," said Gary Gysin, CEO of Wisk, which has been working to bring to market the first all-electric, self-flying air taxi in the U.S. "The vision we have outlined is the result of many years of collaboration with Boeing, the FAA, NASA and key industry stakeholders. As a result, this document offers the most comprehensive framework proposed to date with a vision for enabling UAM in the national airspace. Wisk is committed to deliver, with its partners, on this vision," said Gysin.

Boeing and Wisk say that evolutionary and pragmatic methods will be needed to make the vision of UAM a reality. This includes the creation of new infrastructure such as "vertiports," locations where UAM aircraft can take off and land, load and unload passengers, and receive services. Additionally, while the aircraft will be automated, Boeing and Wisk recommend the creation of "fleet operations centers" where "multi-vehicle supervisors" will monitor flights, implement air traffic control instructions to maintain aircraft separation, and ensure safe operation of the flight.

"The work we've done with our partners at Wisk demonstrates how this shared vision can become reality, and we're excited to share these CONOPS with public, government, policy and regulatory stakeholders to engage across industry to shape that future," said Yutko.

Read Article

Archer Aviation Offers a Glimpse of Air Taxi Operations

Although developers of eVTOL air taxis have yet to receive certification of their aircraft, a few industry leaders have been thinking ahead to operations and what the experience will look like for passengers as well as pilots.

Tom Anderson, Archer Aviation COO of UAM, spoke with FLYING several weeks ago to offer his thoughts about top-line goals, including obtaining a Part 135 certificate, vertiports for maintenance, landings and takeoffs, as well as training for pilots and technicians.

Anderson came to Archer earlier this summer after more than three decades working in the traditional airline sector, including stints at Airbus, Boeing, Virgin America and Breeze Airways. He's also a certificated pilot who holds an A&P as well as an IA. If Anderson can find the time, he tries to enjoy the beautiful California weather and go flying.

Read Article

Larry Page's Electric Air Taxi Startup Is Winding Down

Kittyhawk, the electric air taxi startup backed by Google co-founder Larry Page, announced Wednesday that it plans to "wind down" operations. "We have made the decision to wind down Kittyhawk. We're still working on the details of what's next," the company wrote in a brief statement shared on its LinkedIn and Twitter pages. Kittyhawk did not immediately respond to a request for further comment.

Kittyhawk had the lofty mission of "building autonomous, affordable, ubiquitous and eco-conscious air taxis," according to its website. It was founded by Sebastian Thrun, a former Google executive who led the company's self-driving car efforts.

The startup operated in secret until 2017, when it publicly unveiled its first aircraft—an ultralight electric plane dubbed Flyer that was designed to fly over water. Page, one of the world's richest men, was said to have invested $100 million in flying car startups, including Kittyhawk.

Flyer was ultimately retired in 2020, after more than 25,000 successful test flights, according to the company, and it reportedly laid off many of those who had been working on Flyer at the time. The company launched other electric aircraft prototypes and announced a partnership with Boeing in 2019.

The shuttering of Kittyhawk will not impact its joint venture with Boeing, which has been dubbed Wisk. In a tweet, Wisk said that it remains "in a strong financial position," with both Boeing and Kittyhawk as investors.

Like Kittyhawk, Wisk is developing an "all-electric, self-flying air taxi" that it says "rises like a helicopter and flies like a plane," according to its website. This "aircraft will remove the need for a runway and allow you to land where you need to be," according to the company.

Read Article

Rome Plans Electric Air-Taxi Service Ahead of 2025 Vatican Jubilee

Rome plans to offer travelers the chance to bypass its famously crippling traffic by flying in air taxis directly from the city center. The goal is to have the service up and running in 2024, ahead of a year-long Vatican celebration the following year known as Jubilee. A ride from the central Termini rail station, where the air taxi terminal could be located, to Fiumicino airport would take around 20 minutes, compared with as much as an hour by road.

"We expect millions of visitors to come from all over the world," Marco Troncone, chief executive officer of airport operator Aeroporti di Roma SpA, said in an interview on Thursday. "This will be an opportunity to offer alternative mobility services and to accelerate the development of our infrastructure."

Aeroporti di Roma and Atlantia SpA announced last October a partnership with electric air-taxi company Volocopter GmbH, with the goal of bringing UAM to the Eternal City. On Thursday, a two-seater, electric Volocity vehicle took off from the Fiumicino area for first public test flight with a crew onboard. The Italian venture adds to a growing list of electric air taxis being tested around the world, with France planning to have two dedicated flight paths to ferry passengers in time for the 2024 summer Olympics.

While the Italian project is still waiting for the final authorization from the Italian and European authorities, Volocopter Chief Commercial Officer Christian Bauer said that the company is committed "to get the commercial certification by 2024."

Read Article

Boeing's Wisk Reveals World's First Self-Flying, Four Seat, 6th Generation Air Taxi

Wisk has unveiled the latest incarnation of its air taxi, which is self-flying and can seat up to four passengers. The sixth-generation eVTOL vehicle has been dubbed the most advanced air taxi in the world. Some key features include a simplified design with fewer moving parts, human oversight of every flight, and industry-leading autopilot technology.

Wisk's latest design is expected to be the first vehicle of its type to be put forward for certification from the Federal Aviation Administration (FAA), although a timescale is yet to be provided.

President and CEO of Wisk, Gary Gysin, presented the air taxi at the company's flight test center in California on Monday, saying, "We're introducing the most technically advanced aircraft system in this marketplace. It's self-flying, it's all-electric, it's four-passenger. We think this is going to change transportation. Our 6th Generation aircraft is the culmination of years of hard work from our industry-leading team, learnings from our previous generations of aircraft, commitment from our investors, and the evolution and advancement of technology."

Wisk's sixth-generation eVTOL vehicle has a range of up to 90 miles (144 km) and a cruising speed of up to 138 mph (222 kph). It is expected to fly at an altitude of 2,500–4,000 feet and have a charge time of just 15 minutes.

Read Article

Eve Announces Collaboration with Skyway Technologies

Eve Air Mobility has signed a letter of intent with Skyway Technologies Corp. to provide Eve's Urban Air Traffic Management (UATM) software solution, ensuring the traffic management for future UAM solutions supports the needs and growth of the industry.

"Integrating Eve's UATM solution into Skyway's air traffic vertiport operation service offerings, further increases industry support for eVTOL sales and pushes Skyway's services to new heights," said Clifford Cruz, CEO of Skyway. "This enables airline investments into this sector the ability to close the loop when it comes to operating these aircraft at digitally driven vertiports being developed. It's an important step forward in bringing UAM to life and we look forward to all the great innovation to come."

"The partnership with Skyway will help drive market awareness for Eve as a software supplier to Providers of Services for UAM and help ourselves and others understand how to improve and advance UAM operations," said Andre Stein, co-CEO of Eve.

"We will study the use of Eve's UATM software solutions for Skyway's operations and develop an operational model for use in certain missions and regions."

Read Article

EVTOL Air Taxi Developer Archer to Unveil Its Production Craft November

Next-generation eVTOL aircraft developer Archer Aviation has announced it will be presenting the version of the air taxi it will take into production at an event in November.

Archer made the announcement, saying the unveiling would allow attendees to get a first look at the eVTOL, which the company is calling Midnight, when the production air taxi is introduced on November 16. In addition to discussing various details about the craft, Archer executives will host breakout sessions focusing on the company's work toward obtaining its certification from the FAA. Similar talks will be conducted explaining Midnight's powertrain.

In the two days following presentation of the production eVTOL, guests will also be able to view continuing trials of Archer's demonstrator Maker air taxi as it makes transition flights at the company's testing facility. The event will mark another milestone in Archer's work to create its sustainable, battery-powered next-generation eVTOL, which after FAA certification and production launch is expected to go into air taxi service toward the middle of the decade.

It will also give the company an opportunity to provide participants with full information about its near-term timetable, as well as its developing business plans for advanced air mobility activities.

Read Article

Joby Applies for Japan Aircraft Certification

Joby Aviation, Inc. confirmed it has formally applied for its revolutionary aircraft design to be certified for use in Japan. The news comes as Japanese and U.S. regulatory authorities confirmed earlier today that they have reached an agreement to deliver a streamlined approval process for U.S. applicants who wish to validate their eVTOL aircraft designs in Japan.

Joby's application to the Japan Civil Aviation Bureau for the validation of an FAA type certification is believed to be the first of its type and is a necessary step to launching aerial ridesharing services in Japan. Joby plans to use its five-seat, piloted eVTOL aircraft to connect people and cities through fast, quiet and emissions-free flight.

Commenting on the application, JoeBen Bevirt, founder and CEO of Joby Aviation, said: "We're incredibly excited about the potential for electric aerial ridesharing to offer a new form of clean and affordable urban and regional connectivity across Japan. With 92% of residents living in urban areas, we have a spectacular opportunity to save people time in congested cities like Tokyo, Yokohama, and Osaka while also reducing their impact on the environment."

Joby has long-standing ties with Japan, having welcomed Toyota as a strategic partner in 2018. As well as lending their expertise on manufacturing process development and high-volume production, Toyota is also Joby's largest outside investor, with nearly $400 million invested to date. Earlier this year, Joby also entered into a partnership with ANA Holdings Inc., Japan's largest airline, to bring aerial ridesharing services to the Japanese market. Joby is a member of Japan's Public-Private Conference for the Future Air Mobility Revolution, established by the Ministry of Economy, Trade and Industry to accelerate the adoption of aerial ridesharing in the country.

Read Article

TECHNOLOGY, ENVIRONMENT AND LEGISLATION

Akin Gump TechSpeak Alert: FAA Releases Infrastructure Guidelines for Creating Vertiports

The FAA released new design guidelines for vertiports, the latest type of landing facility for eVTOL aircraft for AAM operations. Vertiports, similar to heliports, can be created on the rooftops of shopping malls, parking structures and commercial buildings; they can also be built as stand-alone structures.

The FAA guidelines include critical information that designers and builders need to create vertiports that allow for safe takeoffs and landings of eVTOL aircraft. The guidelines also provide strategic information for real estate developers, airports, AAM operators and infrastructure designers and developers to begin planning and ultimately constructing the infrastructure ecosystem that will support safe AAM operations.

The guidelines include:

- Vertiport dimensions
- Elevated vertiports requirements and guidelines, including load bearing capacity for vertiports that may be on top of existing structures
- Guidelines on markings, lighting and visual aids that identify the facility as a vertiport
- Charging and electric infrastructure requirements for vertiports
- On-airport vertiports requirements for adding vertiports to an existing commercial airport, including the required distance of a vertiport from a current runway.

The FAA's design guidelines come at a critical time as eVTOL aircraft are currently in the queue for FAA type and production certification. Several AAM original equipment operators (OEMs) have announced timelines for operations of the four or larger passenger eVTOL

aircraft with pilots onboard as soon as 2025. The vertiports and related infrastructure must be in place and certified before AAM operations begin.

One early entrant to create vertiports is Reef Technology, the large parking management company that owns more than 5,000 sites in the United States, which has partnered with Archer Aviation and Joby to create vertiports and mobility hubs at its existing parking garages.

Read Alert

UN Nations Reach Long-Term Aviation Climate Goal

A United Nations body agreed to a long-term aspirational goal for net-zero aviation emissions by 2050, despite challenges from China and other countries aligned largely with airlines amid pressure to curb air pollution.

The decision, described as a “milestone” by industry and a “compromise” by European countries that wanted a more ambitious target, was applauded by members at the 193-nation International Civil Aviation Organization’s (ICAO) assembly, held every three years.

China, backed by Russia and Eritrea, questioned the feasibility of the goal, and argued developed countries must provide financial support to developing nations with faster-growing aviation markets. Some delegates in Montreal shrugged off Beijing’s refusal to back the deal wholeheartedly but analysts have said China’s climate stance is important as it is poised to overtake the U.S. as the largest aviation market this decade.

ICAO cannot impose rules, but countries that approve decisions usually abide by them. Airlines want global action to avoid countries imposing different rules and fees to curb emissions.

Transportation Secretary Pete Buttigieg said “it’s time for aviation to move towards net zero carbon emissions by 2050. We’re working with our international partners to make this a reality, and today’s historic agreement is an important step forward.”

Officials hope the goal will go beyond industry announcements to boost supplies of new sustainable aviation fuel (SAF) and encourage private investment.

Dan Rutherford, aviation director of the U.S.-based International Council on Clean Transportation (ICCT), said richer countries will need to curb their emissions since developing countries are still growing their markets.

Read Article

AAM Coordination and Leadership Law Signed to Orchestrate Next-Generation Air Mobility

Stakeholders in next-generation aircraft development and their future activity have hailed the signing of the Advanced Air Mobility Coordination and Leadership Act into law by President Biden, calling it a milestone in the effort to launch and expand AAM services across the U.S. The bill cleared both houses of Congress earlier this year, and had been awaiting Biden’s signature to come into force. According to the White House announcement on it becoming law, the measure “requires the Secretary of Transportation to establish an AAM interagency working group to: review and examine factors that will allow the maturation of the AAM ecosystem within the U.S.; and develop an AAM National Strategy.”

There has been some concern that while much attention has been turned to the futuristic, emission-free craft that companies like Joby, Archer, Wisk and others have been working toward certification and later launch, not enough effort has been made at the federal level to define and orchestrate the way AAM will function once tech is ready to enable it.

The new law aims to facilitate collaboration between federal agencies and civil aviation industry officials in their overlapping efforts to define and apply policies governing AAM. To do that, the Department of Transportation is to lead a group made up of staffers from nine government agencies to interface and collaborate with representatives of companies and organizations across the U.S. aviation sector.

As part of that, the working group will both recommend and review policies framing AAM development and activity, and help guide decisions on safety, security and government investment required to permit the growth and expansion of new, sustainable urban aerial transportation.

Read Article

Advanced Aviation Advisory Committee (AAAC); Notice of Public Meeting

The meeting will be held at the Hilton Garden Inn, Arlington, Virginia. In-person attendance is limited to AAAC members and selected FAA support staff. Members of the public who wish to observe the meeting through virtual means can access the livestream on the following FAA social media platforms on the day of the event, *https://www.facebook.com/FAA* or *https://www.youtube.com/FAAnews*. For copies of meeting minutes along with all other information please visit the AAAC website at *https://www.faa.gov/uas/programs_partnerships/advanced_aviation_advisory_committee/*.

Read Federal Register Notice

AUTONOMY & ELECTRIC VEHICLES

Hertz Plans to Buy 175,000 Electric Vehicles from GM over Five Years

Hertz Global Holdings Inc. plans to buy as many as 175,000 electric vehicles (EVs) from General Motors Co. over the next five years, the latest major step by the rental giant to embrace plug-in cars. The deal includes the Chevrolet, Buick, GMC, Cadillac and BrightDrop brands spanning categories such as pickups and luxury automobiles, according to a statement Tuesday. Deliveries will begin with Chevrolet Bolt EV and Bolt EUV models in the first quarter of next year.

The agreement “will dramatically expand our EV offering to Hertz customers, including leisure and business travelers, rideshare drivers and corporates,” Hertz Chief Executive Officer Stephen Scherr said in the statement.

The move comes as the auto industry accelerates a shift toward production of more EVs, with GM making a bold pledge to fully electrify its lineup by 2035. For Hertz, the deal will deepen its push to electrify its rental fleet after announcing a plan to buy 100,000 Tesla Inc. EVs a year ago.

GM will get an influx of sales just as the company starts building a total of five electric models using its Ultium battery this year and next. The Detroit automaker has been selling its Hummer electric pickup and started production of the Cadillac Lyriq SUV recently, but the big push comes in 2023 when GM starts building electric versions of its Chevrolet Silverado pickup, and Chevy Blazer and Equinox SUVs.

Read Article

Tesla Plans to Deliver Semis to Pepsi

Tesla Inc. will deliver its first semi-trucks to PepsiCo Inc. five years after Elon Musk showed off prototypes and began taking deposits for the electric big rigs. The carmaker will hand over semis to PepsiCo on December 1, Musk tweeted. The food and beverage giant has said it’s reserved 100 of the trucks and expects to deploy an initial 15 by the end of the year.

PepsiCo confirmed in its own tweet that it will take delivery of its first Tesla trucks in early December to serve a Frito-Lay plant in Modesto, California, and beverage plant in Sacramento.

Read Article

Volvo Cars Venture Says Automakers Should Pool Combustion Tech

Carmakers should consolidate their legacy businesses as electric cars take off with combustion engines set to be in demand for years to come, according to powertrain unit Aurobay. Bundling non-electric assets would help to improve hybrid-combustion technology

and add scale to save costs, said Michael Fleiss, chief executive officer of Aurobay's Swedish branch, Powertrain Engineering Sweden AB. Volvo Car AB and parent Zhejiang Geely Holding Group Co. this summer finalized their Aurobay venture, comprising two powertrain plants in Sweden and China, with plans to win outside customers.

"The worst thing that can happen to the climate and the world, is that there's no further development of these technologies," Fleiss said in an interview. Combining different assets "would absolutely make sense economically -- it's quite an expensive product."

Carmakers are increasingly taking steps to address the balancing act between an electric-only future and legacy combustion assets. Volvo Cars last year said it will cease making combustion models by 2030, while Ford Motor Co. in March said it's separating its fast-growing EV operations and software development from the rest of the business. Renault SA is set to detail plans for a carve-out of its EV assets in November, while Mercedes-Benz AG has said it will only sell electric cars by the end of the decade, where possible.

Read Article

GM's Solar Power and Energy Storage System

General Motors Co. plans to offer its own sun-generated power and storage system starting late next year.

The company announced in a statement that a new business unit, called GM Energy, is working with SunPower Corp. to provide solar panels and home energy storage for residential and commercial users. It's similar to Tesla's energy business, in which panels built by the automaker charge a battery that supplies homes with electricity at night or during blackouts.

The home-energy system will be available alongside GM's electric version of the Chevrolet Silverado, production of which is expected to start next year.

For GM, it's a way to get into the energy-storage business while serving EV owners and giving them a cheaper way to charge their vehicles. As part of the initiative, GM is also cutting deals with utilities to enable buyers of its EVs to use their vehicle's battery to power the home if there is a blackout.

Read Article

Delta, MIT Partner to Erase Planet-Warming Contrails from Skies

The aviation sector's burning of fossil fuels isn't the only way it contributes to climate change: contrails, the white clouds that trail behind airplanes, are known by researchers to trap heat from the Earth's surface in the atmosphere. They are formed when water vapor from engine exhaust mixes with cold air, and their environmental impact is significant.

Delta Air Lines Inc. and the Massachusetts Institute of Technology's (MIT) Department of Aeronautics and Astronautics announced a partnership to discover new ways to eliminate persistent contrails—that is, the roughly 10 percent of contrails that stay in the sky for longer than usual and have a more pronounced heating effect. The group will use an algorithm developed by MIT that predicts altitudes and locations where contrails are likely to form.

The joint research group has already completed more than 40 testing flights and has plans for live experiment flights and simulations. Past trials and simulations by MIT and Delta showed that 70 to 90 percent of all contrails could be avoided through flight and altitude adjustments. The tools and technology developed during the study will be created under an open-source license. Delta declined to comment on how much it's investing in the partnership or how long it would last, adding the collaboration would leverage the airline's flight data, operations and more.

"Much of the focus on climate within the aviation field is understandably on carbon, but contrail avoidance has the potential to greatly reduce the environmental impact of air travel quickly and at low cost," said Steven Barrett, director of MIT's Laboratory for Aviation and the Environment. "This collaboration will help us better understand, predict and ultimately avoid persistent contrails. Working with airline partners gives us the needed access to flights and operational expertise to conduct successful flight trials."

Pam Fletcher, Delta's chief sustainability officer, said if the study can identify where in the atmosphere persistent contrails will form, pilots can avoid flying in those areas, the same way they try to avoid flying in areas where there's turbulence.

Read Article

China's EV Brands Could Hit Speed Bumps in Europe

A wave of Chinese car brands is about to wash up in Europe in one of the first big tests of Western appetite for advanced technology from the country. Getting buy-in from both consumers and politicians could take a while.

China's EV star BYD gave crucial details of the full-scale European launch it has planned for this fall, notably pricing its new compact sport-utility vehicle, the Atto 3, will have a base price of €38,000, equivalent to roughly $36,000, before any country-specific subsidies. This will make it among the most affordable products in a benchmark EV category that also includes Volkswagen's ID4 and Tesla's Model Y.

BYD is also bringing a luxury sedan and full-size SUV to the market, both with much higher base prices of €72,000. All three products are 100 percent battery electric vehicles (BEVs), which have long been seen as the disruptive new technology that might allow China's car industry to break into the west.

There is already a Chinese presence in Europe, but it is small and discreet. Polestar and MG, two originally European brands now owned by China's Geely and SAIC, respectively, sell the most of China-made BEVs in Europe today. Others such as BYD and luxury brand NIO have used Norway, a small but highly BEV-centric market, as a testing ground. Having entered Norway last year, NIO is just gearing up to launch in Germany, Denmark, Sweden and the Netherlands. It will push into the U.K. and other countries in a second wave next year.

Such expansion strategies mean many more European consumers and governments are about to see cars that aren't just made in China by Chinese companies but also explicitly badged as Chinese. At Wednesday's launch event, BYD made much of design features such as a "dragon face" and "Chinese knot" LED lights.

For Chinese manufacturers, the U.S. is a hostile environment: President Biden's Inflation Reduction Act could exclude brands with virtually any Chinese content from EV tax credits. That has made Europe even more attractive to China's BEV brands, but the feeling isn't yet mutual. Mr. Qin emphasized NIO's "great patience and long-term thinking." The company and its peers will likely need it.

Read Article

Even After $100 Billion, Self-Driving Cars Are Going Nowhere

The first car woke Jennifer King at 2 a.m. with a loud, high-pitched hum. "It sounded like a hovercraft," she says, and that wasn't the weird part. King lives on a dead-end street at the edge of the Presidio, a 1,500-acre park in San Francisco where through traffic isn't a thing. Outside she saw a white Jaguar SUV backing out of her driveway. It had what looked like a giant fan on its roof—a laser sensor—and bore the logo of Google's driverless car division, Waymo.

She was observing what looked like a glitch in the self-driving software—the car seemed to be using her property to execute a three-point turn. This would've been no biggie, she says, if it had happened once. But dozens of Google cars began doing the exact thing, many times, every single day.

King complained to Google that the cars were driving her nuts, but the K-turns kept coming. Sometimes a few of the SUVs would show up at the same time and form a little line, like an army of zombie driver's-ed students. The whole thing went on for weeks until last October, when King called the local CBS affiliate and a news crew broadcast the scene. "It is kind of funny when you watch it," the report began. "And the neighbors are certainly noticing." Soon after, King's driveway was hers again.

Waymo disputes that its tech failed and said in a statement that its vehicles had been "obeying the same road rules that any car is required to follow." The company, like its peers

in Silicon Valley and Detroit, has characterized incidents like this as isolated, potholes on the road to a steering-wheel-free future. Over the course of more than a decade, flashy demos from companies including Google, GM, Ford, Tesla and Zoox have promised cars capable of piloting themselves through chaotic urban landscapes, on highways and in extreme weather without any human input or oversight. The companies have suggested they're on the verge of eliminating road fatalities, rush-hour traffic and parking lots, and of upending the $2 trillion global automotive industry.

"You'd be hard-pressed to find another industry that's invested so many dollars in R&D and that has delivered so little," Levandowski says in an interview. "Forget about profits—what's the combined revenue of all the robo-taxi, robo-truck, robo-whatever companies? Is it a million dollars? Maybe. I think it's more like zero."

Read Article

Ford Supply-Chain Leadership Overhaul Reflects EV Ramp Up

Ford Motor Co.'s moves to overhaul its supply-chain leadership reflect the increasingly crucial role technology is playing as the development of EVs is transforming the way cars are produced.

The Dearborn, Michigan-based auto maker recently disclosed a series of leadership changes, including putting finance chief John Lawler in charge of its supply chain on an interim basis. Ford said the company is seeking to align operations from sourcing and assembly to distribution with a goal of transitioning to EVs. Ford also plans to name its first chief supply-chain officer.

"We're seeing much more of a technology-centered vehicle, where the parts require a different skill-set," said Terry Esper, associate professor of logistics at the Ohio State University's Fisher College of Business. "It's not about knowing how to, if you will, put pipes and screws and hoses together, as much as it's going to be about understanding technology, coding, technology integration, servers and all these other tech components."

The other new appointments include executives with Silicon Valley resumes that reflect a new approach to developing and producing vehicles. Roz Ho, who joined Ford from HP Inc., will become chief connected vehicle software officer. Others hired onto the team have worked at Alphabet Inc.'s Google, Amazon.com Inc., Intel Corp. and Apple Inc.

Ford, one of the largest U.S. auto makers, has seen sales increase as it has pivoted toward EVs. It had sold more than 36,500 EVs year-to-date through August. Its all-electric F-150 Lightning truck, which launched in the spring, has seen particularly high demand, Ford has said. The company plans to spend $50 billion over the next four years with a goal of producing two million EVs a year by the end of 2026.

Read Article

Hertz Partners with BP to Build Out Electric Car Charging Network

Hertz Global Holdings Inc. is linking up with oil giant BP Plc to build out a network of charging stations in the U.S., a move to help bolster the country's EV infrastructure. The two companies' memorandum of understanding, announced Tuesday, aligns Hertz with BP's goal of operating more than 100,000 chargers by 2030, 90 percent of which it says will be fast-charging.

Hertz plans to electrify a quarter of its rental car fleet by the end of 2024. The deal with BP comes a week after it agreed to buy 175,000 EVs from General Motors Co. following similar purchases of battery-powered models from Tesla Inc. and Polestar. Hertz hopes to spur EV rentals by making it easier to find a charging station.

"We want to be part of the solution to building out a nationwide infrastructure," Jeff Nieman, senior vice president of operations initiatives at Hertz, said in an interview. "We're looking at locations that will have the biggest fleets."

The agreement with BP is part of a growing network of some 3,000 charging stations available to Hertz vehicles by the end of 2022. BP got into the charging business by acquiring Amply Power. The newly acquired company, rebranded as BP Pulse, started installing chargers at 25 Hertz locations in the U.S. this year.

Read Article

How a Mini Electric Hatchback Became One of China's Hottest EVs

Zhejiang Leapmotor Technologies Ltd. has more than last week's disastrous trading debut in Hong Kong to worry about. While the EV maker's T03 mini car is outselling the likes of Nio Inc. and Xpeng Inc. in China, it isn't making a profit.

Sales of the compact four-seater EV are central to Leapmotor's success, accounting for almost three-quarters of the startup's total deliveries since inception. In September, Hangzhou-based Leapmotor delivered 11,039 vehicles, a 200 percent jump from a year earlier, to rank third among China's homegrown EV startups, behind Hozon New Energy Automobile Co. and Li Auto Inc.

But despite its popularity, the affordable T03, which starts from 79,500 yuan ($11,200), is a loss leader, with Leapmotor's gross margin for the second quarter coming in at negative 25.6 percent, versus around 11 to 21.5 percent for peers.

Leapmotor is trying to move up the value chain. Its C11 SUV and new C01 sedan have prices ranging from 180,000 yuan to 290,000 yuan and that larger, high-end EV market is the segment forecast to show the fastest growth in 2023, according to Frost & Sullivan.

Read Article

Vehicle Technologies Office Request for Information Regarding Prevalence of and Solutions to Electric Vehicle No-Charge Events

The U.S. Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) Vehicle Technologies Office (VTO) is announcing a Request for Information (RFI) regarding the prevalence of and solutions to EV no-charge events. VTO is developing plans to implement the Vehicle Grid Integration (VGI) Research, Development and Demonstration Program as directed by the Energy Act of 2020 and one of the barriers to VGI to be addressed is the issue of some EVs failing to charge satisfactorily when connected to electric vehicle supply equipment (EVSE or chargers). These no-charge events either fail to start charging or fail to complete the charge without interruption.

The purpose of this RFI is to solicit input from industry (e.g., EV manufacturers, EVSE manufacturers and charge network operators), academia, research laboratories, government agencies and other stakeholders on issues related to EVs failing to charge properly when connected to chargers. This is solely an RFI and not a Funding Opportunity Announcement (FOA). EERE is not accepting applications at this time. EERE may issue a FOA in the future based on or related to the content and responses to this RFI; however, EERE may also elect not to issue a FOA. Responses to this RFI must be submitted no later than 5:00 pm (ET) on November 1, 2022.

Read Article

There's a Billion-Dollar Bidding War for EV Plants Across the U.S.

Michigan Gov. Gretchen Whitmer wasn't happy. Ford Motor Co., a company whose very name is synonymous with Detroit, had just announced it had chosen two southern states, Tennessee and Kentucky, as sites for an $11 billion EV project.

They had won Ford over by dangling huge incentives, and Whitmer knew Michigan needed to do more to compete. So she pleaded with lawmakers in a letter last October to put "more tools in our economic toolbox to attract private investment." Two months later, they delivered, handing her a $1 billion fund for corporate subsidies. And a month after that, Whitmer dipped into the fund to net a giant deal from General Motors Co.: a $6.6 billion electric-truck factory and battery plant.

Michigan's largesse—and Tennessee's and Kentucky's—was made possible in part by hundreds of billions in federal aid pumped into U.S. states as part of President Biden's American Rescue Plan. The money was meant to soften the blow of a pandemic-induced fiscal apocalypse that never happened. Instead, it's left states flush with cash, supercharging competition to win the automotive jobs of the future and cushioning the

bottom lines of companies like Ford, GM and Panasonic Holdings Corp., a battery supplier to Tesla Inc.

To counter that risk, state and local officials helping to fund this EV boom say they built in protections to keep taxpayers from getting fleeced. But the stakes are getting bigger: the cost per permanent job for some projects is now eight times the average seen less than a decade ago.

Ford's Tennessee hub will cost about $414,000 for each direct job, Michigan is contributing $450,000 per GM job, while Georgia committed to forgo revenue that amounts to $212,000 per job to win megaprojects from Rivian Automotive Inc. and Hyundai Motor Co. in the past two years, according to data compiled by Bloomberg. The average per-job cost of economic incentives in the U.S. was about $52,000 in 2015, measured in today's dollars, according to a study by Tim Bartik, an economist at the W.E. Upjohn Institute for Employment Research in Kalamazoo, Michigan.

Georgia, which has emerged as a big winner in the current investment surge, landed two $5 billion EV deals from Rivian and Hyundai that promise to create more than 15,000 jobs. The state offered incentives worth $3.3 billion to win the projects. State economic commissioner Pat Wilson said Georgia competes by helping companies move fast with shovel-ready sites and limited red tape, rather than putting the most cash on the table. He called Bloomberg's per-job incentives calculation "terribly misleading" because it includes tax breaks written into state law that aren't discretionary.

Read Article

EVENTS

ICAO RPAS Symposium – Unmanned Aviation 2022
November 7-9, 2022
Montreal, CA

ICAO DRONE ENABLE SYMPOSIUM 2022
November 14-16, 2022
Montreal, CA

Annual Aviation Issues Conference
January 8-12, 2023
Maui, HI

2023 Autonomous VTOL Technical Meeting and Electric VTOL Symposium
January 24-26, 2023
Mesa, AZ

If you would like further information, please contact:

Jennifer Richter
Cliff Sweatte
Christian Davis
Susan Lent
Rubén Muñoz