

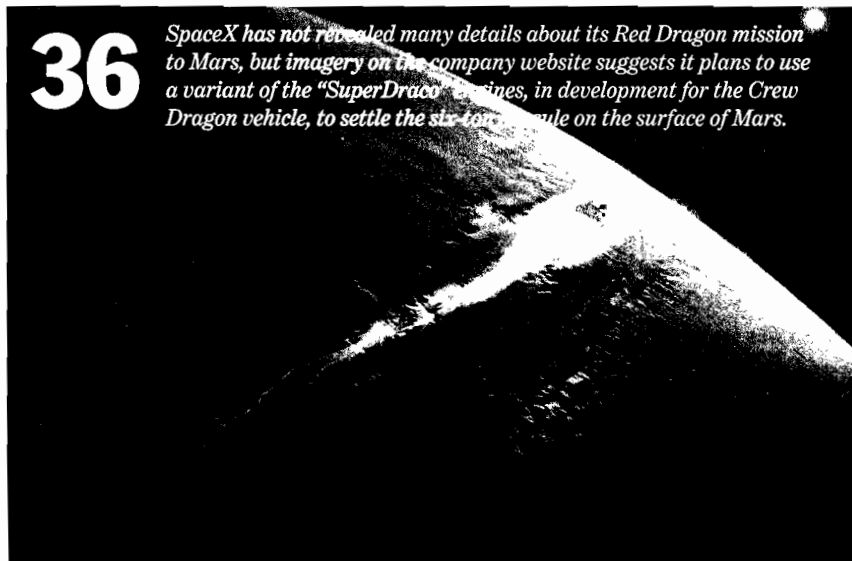
**AVIATIONWEEK**  
& SPACE TECHNOLOGY

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- 7 Feedback
- 8 Who's Where
- 9-10 First Take
- 11 Up Front
- 12 Going Concerns
- 13 Inside Business Aviation
- 14 Airline Intel
- 16 Leading Edge
- 17 In Orbit
- 18 Washington Outlook
- 63 Classified
- 64 Contact Us
- 65 Aerospace Calendar

**COMMERCIAL AVIATION**

- 20 **Bombardier**, confident of C Series' service readiness, faces rapid production ramp-up challenge
- 24 **With orders for C Series and Airbus A321s**, Delta is both opportunistic and strategic
- 28 **Turmoil in key markets** jeopardizes aggressive growth plans of Emirates and Turkish Airlines
- 30 **Regional airlines** implement new programs and increase pay to attract and retain pilots
- 44 **Next airline merger** market will be focus of discussion at IATA annual general meeting
- 46 **FAA considers** mitigations for radio frequency congestion beyond 2020 as ADS-B nears implementation



*SpaceX has not revealed many details about its Red Dragon mission to Mars, but imagery on the company website suggests it plans to use a variant of the "SuperDraco" engines, in development for the Crew Dragon vehicle, to settle the six-ton module on the surface of Mars.*

- 47 **New CEO** of Air France-KLM must work to improve relations with powerful Air France pilot unions
- 48 **Lufthansa delays** acceptance of third Airbus A320neo as Pratt preps fixes for PW1100G engine

**DEFENSE**

- 25 **As Gripen E rolls out**, Saab sees interest in the fighter family from several tiers of customers



- 26 **Australia works** on over-the-horizon ocean-surveillance radar that can detect ships
- 39 **Saudi Arabia's** military industrial effort could yield risks, rewards for Western weapons providers
- 40 **Switzerland's ALR** reveals a multimission aircraft concept for lightweight advanced trainers

**SAFETY**

- 32 **High-altitude** "upset recovery" certification renews interest in ice crystals on pitot tubes

**SPACE**

- 34 **NASA taps data** collected from Mars orbit and Martian surface in search of "exploration zones"
- 36 **Deal with SpaceX** for Mars Dragon vehicle may give NASA entry/landing data at a bargain price

- 38 **Aiming to spin off** satellite servicing, NASA will brief U.S. companies on techniques it develops

**UNMANNED AVIATION**

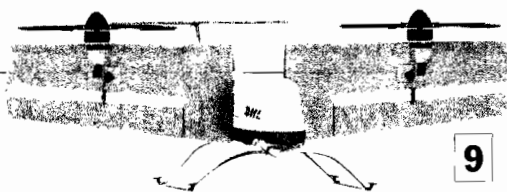
- 41 **Startup Echodyne** launches compact detect-and-avoid sensor for small unmanned aircraft systems

**ON THE COVER**

Newly assembled PW1100G geared turbofans destined for Airbus move along Pratt & Whitney's assembly line in Middletown, Connecticut, part of a huge ramp-up across product lines (see page 51). Pratt & Whitney photo. Meanwhile, General Electric and Boeing are moving to test the mighty GE9X for the 777X, and Rolls-Royce is progressing with the Trent 1000 TEN for the 787 and Trent XWB-97 for the A350-1000. Elsewhere in this issue are reports on the C Series (page 20), Gripen fighters (page 25) and SpaceX's Mars plans (page 34).

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9

**42 Blood and organ** delivery by unmanned aircraft systems is eyed for Africa, India and the U.S.

**BUSINESS AVIATION**

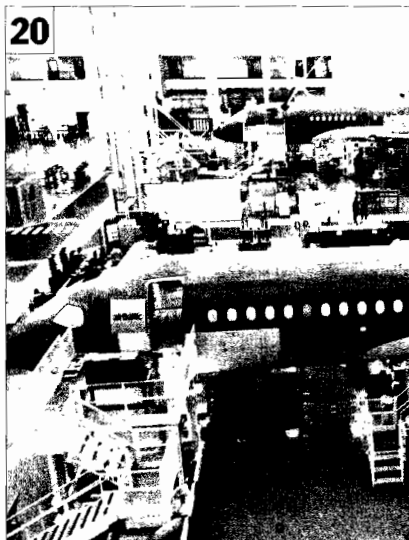
**43 Despite small** European Union GDP growth, business aviation in Europe has been struggling

**TECHNOLOGY**

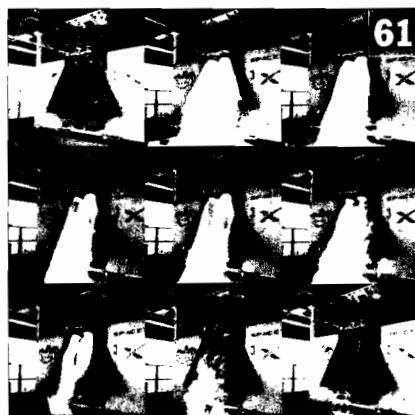
**50 NASA's instrumented** Prandtl-D3 testbed attempts to prove viability of high-efficiency wing

**PROPULSION**

**51 Pratt & Whitney** uses latest supply-chain methodologies, assembly design to meet production goals



20



61

**54 Boeing and GE** prepare to test huge GE9X engine on the 747, an aircraft for which it was not designed

**56 Rolls-Royce** overcomes challenges to deliver first flight-compliant Trent 1000 TEN for Boeing 787

**COMMERCIAL SPACE**

**58 NASA's** post-space-shuttle Commercial Crew Program moves into test phase

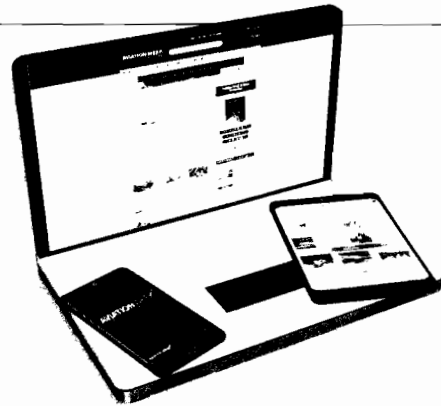
**58 Initial astronaut** group to fly commercial missions provides engineers human-factors input

**60 Boeing handles** setbacks as it works to complete CST-100 commercial crew vehicle

**61 SpaceX** speeds preparations for Crew Dragon demo flights to the International Space Station

**VIEWPOINT**

**66 ICAO's market-based** mechanism plan may end up covering only half of emissions in 2021-25



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**BEHIND THE SCENES**

For our special report on propulsion, Los Angeles Bureau Chief Guy Norris flew in widely differing aircraft ranging from General Electric's Boeing 747-400 testbed and UTC's Dassault 2000EX business jet to a Flight Design CTSW light sport airplane. Norris is pictured on the flight deck of GE's 747-400 with the company's chief test pilot, Steve Crane. The 747 is advancing GE and Boeing's work toward testing the GE9X, the world's largest jet engine, on the 777X. The Falcon 2000EX enabled Norris's whistle-stop tour of new Pratt & Whitney fa-



cilities engaged in a massive civil and military engine production ramp-up, while the CTSW provided transport to Rolls-Royce for updates on the Trent, Advance and UltraFan projects.