TAKING SUSTAINABILITY AND SAFETY TO NEW HEIGHTS

Textron Activities

Environment

Building a Sustainable Future

At Textron, we understand our responsibility to contribute meaningfully toward ensuring a sustainable future for the planet. Our responsibility to the environment starts with our compliance with regulatory requirements and is supported by our Textron Global EHS Policies and Standards which we follow in all countries where we operate. Beyond compliance, we are focused on reducing the energy and natural resource intensity of both our operations and products.

TEXTRON'S 2022 SUSTAINABILITY HIGHLIGHTS: **REDUCING OUR ENVIRONMENTAL FOOTPRINT**

Surpassed our Achieve 2025 greenhouse gas emissions and waste minimization goals, **reducing ghg emissions intensity by 21% and waste generation intensity by 17% (compared to 2019 baseline year)**

GHG ↓21%

↓17%

40%+

Over 40% electricity use in 2022 sourced from renewable energy

$2 Million+

Completed **140** sustainability projects aimed at energy, waste or water use reduction **saving over $2 million**

Pipistrel

Acquired Pipistrel, manufacturer of the world's **first electric aircraft** to receive full EASA type certification

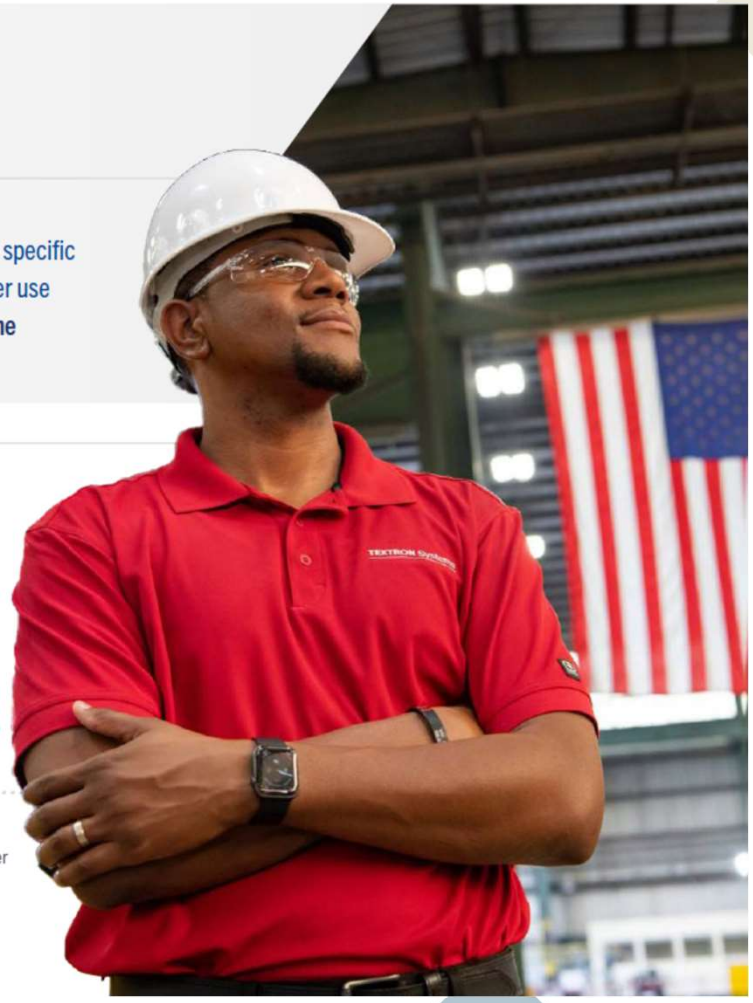
Textron Goals

Achieve 2025:
Sustainable Operations Goals

In 2020, as part of our Achieve 2025 initiative, we established a new set of sustainability goals to reduce the environmental footprint of our operations specific to the following areas of focus: greenhouse gas emissions, energy use, water use and waste generation. **By the end of 2025, Textron will strive to achieve the following goals compared to the 2019 baseline year:**

↓20%	↓10%	↓10%	↓10%
Reduce **greenhouse gas emission** intensity by 20%	Reduce **energy use** intensity by 10%	Reduce **water use** intensity by 10%	Reduce **waste generation** intensity by 10%

These goals were developed with the intent for Textron to become more efficient in its use of natural resources to meet the expectations of our customers, shareholders, employees and other stakeholders and to better the communities in which our businesses operate.



Sustainability & Safety – Business Objectives

- Together, sustainability and safety inspire a culture of awareness and accountability in the workplace to achieve the following:
  - **Improved product safety**: By designing products with safety in mind, the risk of harm to consumers and the environment can be minimized.
  - **Reduced environmental impact**: By reducing the use of hazardous chemicals and greenhouse gas emissions, the environmental impact of products can be reduced.
  - **Increased resource efficiency**: Fostering the reuse and recycling of materials, of waste generated can be minimized, and resources used more efficiently.
  - **Enhanced innovation**: By incorporating sustainability into product design, create new products and services that meet the needs of consumers while also addressing environmental and social challenges.

Sustainability & Safety – Product Achievements

- Building Sustainability Into Our Products and Operations
  - As we forge new paths with innovative products, technologies and solutions, we're focused on sustainability of our products and operations.

Pipistrel Velis Electro
World's first, and currently only, electric aircraft to receive full type certification from EASA.

Textron Specialized Vehicles
Adding to our electric lineup with new zero-emission vehicles.

Beechcraft King Air
A more environmentally friendly way to keep aircraft cool with an electric air conditioning system.

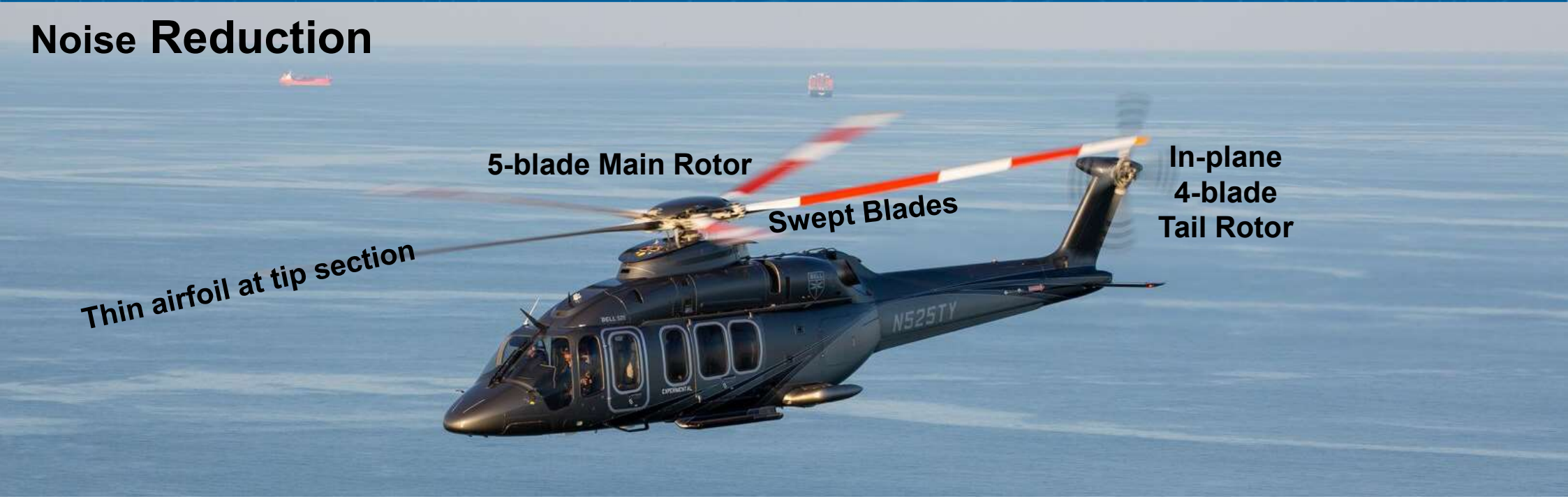
BELL TEXTRON FOCUS

Sustainable Aviation Fuel

- Using SAF at the Bell Training Academy
- HAI @ Work: Sustainable Aviation Fuel: The OEM Perspective
- Bell 525 first flight with SAF announcement
- First SAF-fueled helicopter flight in Southeast Asia
- Safran collaboration agreement announcement at HAI Heli-Expo 2022

Developing a GREEN Rotorcraft

Noise Reduction



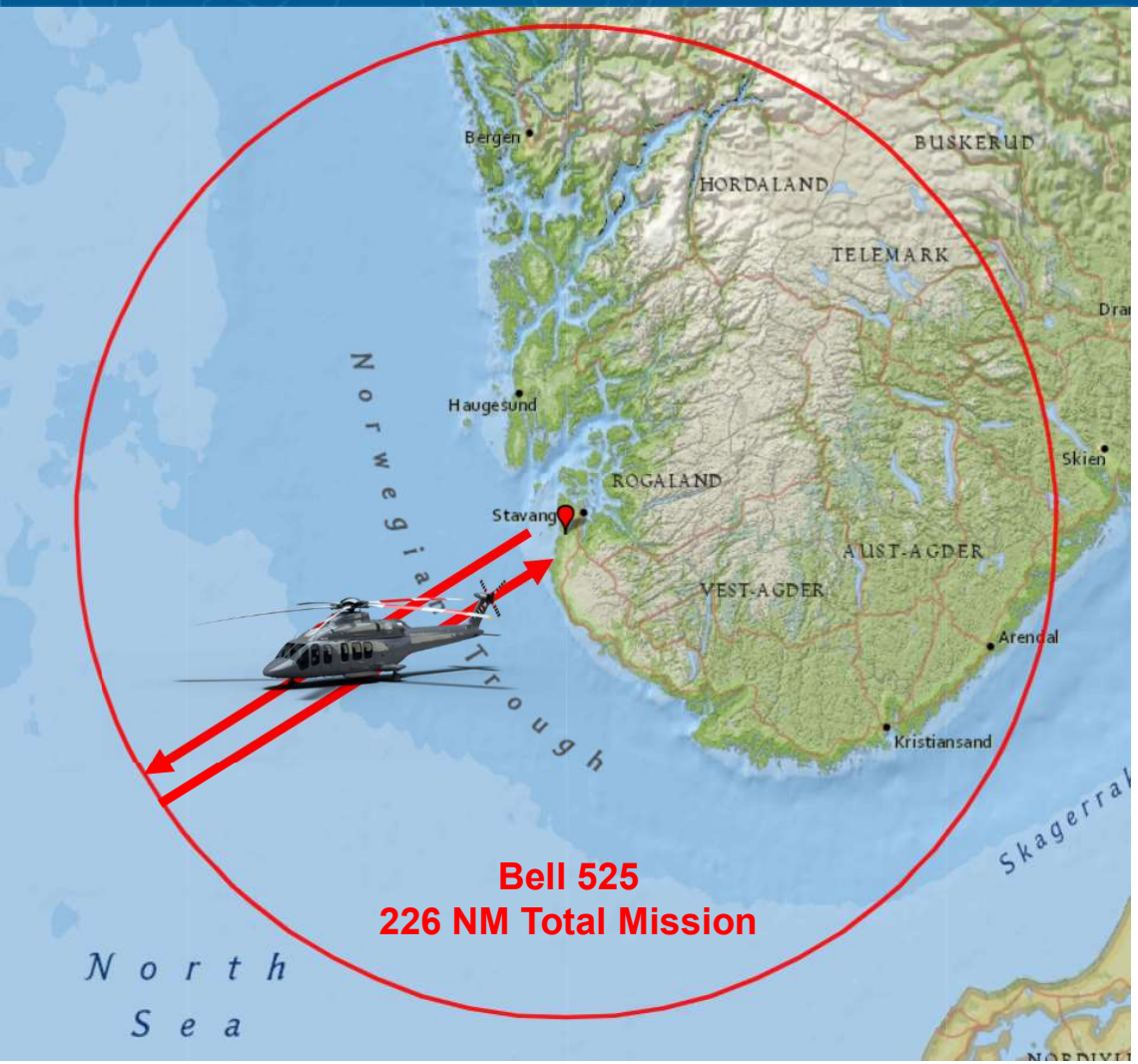
Low Noise Design features considered from the beginning

State-of-the-Art performance at automated and optimized rotor tip speeds

Certification Estimates: 29% quieter than S-92 during most flight conditions

- 3 dB EPNL based on preliminary certification test data for takeoff, flyover, and approach conditions.

Bell 525 Mission Emissions – Stavanger



Bell 525 Stavanger Mission Details	PC2e
Mission Takeoff Weight (lb)	**20,500**
Pilot(s) Weight (lb)	400
Total Passenger Capacity @ 230 lbs each	**16 Pax 3,680 lbs**
Mission Radius (NM)	113
Flight Time to Reserve (hrs)	1.64
AVG Cruise speed (KTAS)	138
CO_2 Emissions (lb)	6,939
CO_2 Emissions per Seat Mile (lb)	1.92

Assumptions:

- V_{LRC}, 3000ft, ISA
- Standard OGP configuration with FIPS
- 2 pilots @ 200lb ea.
- No refueling available at the offshore installation
- 30 min fuel reserve (V_{LRC}) + 10% of mission fuel
- Takeoff GW was adjusted to meet:
    1. CAT A runway takeoff at Stavanger
    2. Elevated heliport PC2e WAT limit to land and takeoff at rig

525: Standard Safety Features

- Fly-by-Wire
  - Triple Redundant Systems
  - Full-time 4-axis Autopilot
  - High Rate-of-Descent Protection
  - Unusual attitude recovery via Go Around button
- Garmin G5000H Flight Deck
  - Synthetic Vision
  - TCAS
  - HTAWS
  - Tail Rotor Camera
  - Power Situation Indicator
- Integrated Vehicle Health Management
- Marinized Airframe
- Wire Strike Protection System

- **Drive System**
  - **No High-Speed Planetary Gear**
  - **Only Aircraft to-be-certified to latest EASA loss-of-lubrication standards**

- **Emergency Egress**
  - **Sea-State 6 Floatation Design**
  - **Large Pushout Windows**

Why Fly-by-Wire?

Fatal Accident Occurances

Source: Helioffshore
http://helioffshore.org/wp-content/uploads/2019/12/HeliOffshore-2019-Industry-Safety-Report.pdf

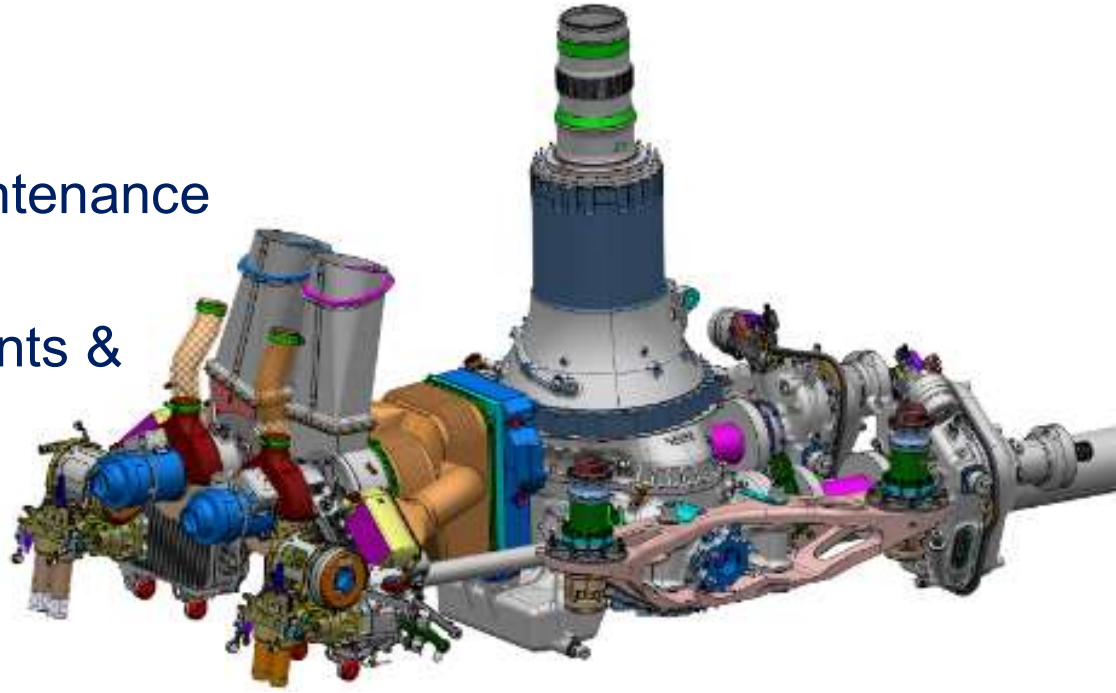
- Fixed-Wing Industry is Ahead of Rotorcraft in Adoption of FBW
- Rotorcraft Flight Safety is Directly Linked to Pilot Workload and Situational Awareness
- Fly-by-Wire Flight Controls Reduce Pilot Workload, Increase Situational Awareness

Fly-by-Wire is the Enabling Technology, Assisting Pilots to Prevent Accidents

525 Drive System Overview

525 Drive System Configuration Objectives:

- Provides maximum system separation and redundancy
- Minimizes the number of single load path components
- Minimizes maintenance required and maintenance related incidents
- Minimizes the potential of loss of lube events & maximizes MRGB loss of lube capability



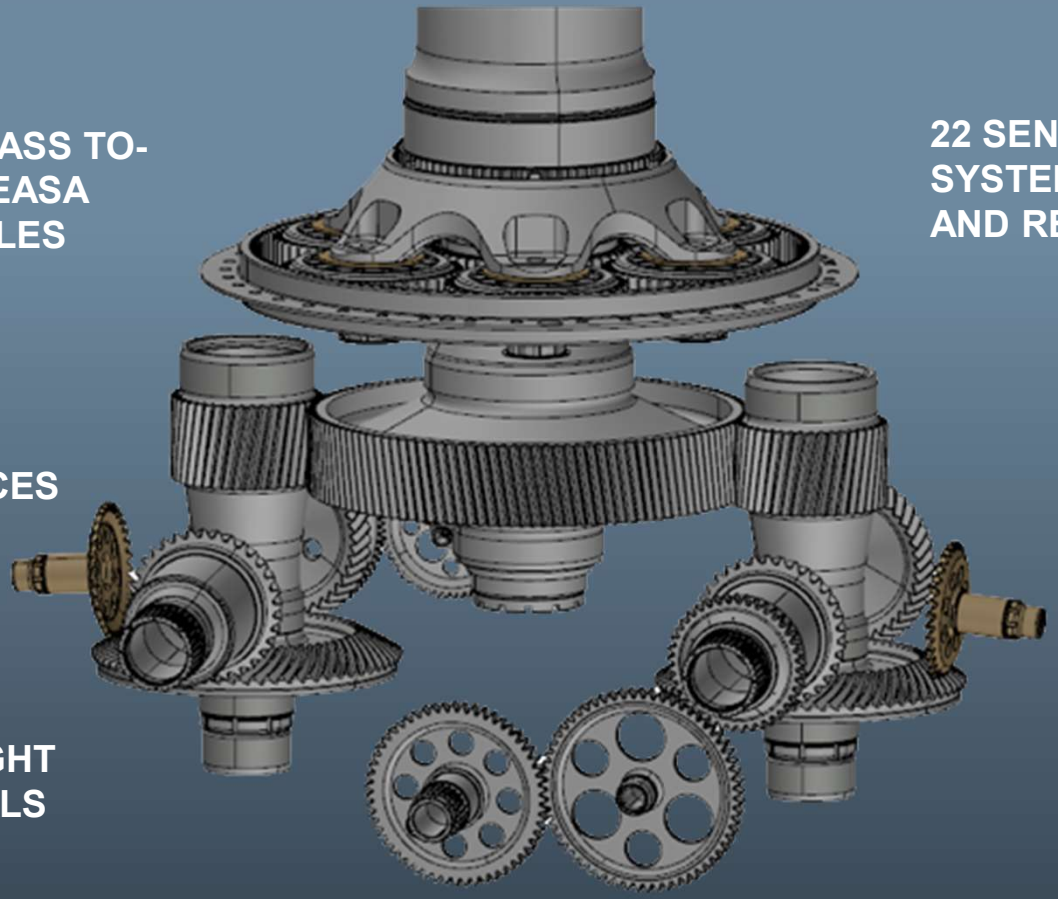
525 Drive System: Safety Through Separation & Redundancy

BELL 525
DRIVE SYSTEM ADVANTAGES

ONLY DRIVE SYSTEM IN CLASS TO-BE-CERTIFIED TO LATEST EASA LOSS OF LUBRICATION RULES

SIMPLE DESIGN WITH LOW MRGB PART COUNT REDUCES MAINTENANCE BURDEN

DESIGNED FOR 5,000+ FLIGHT HOUR OVERHAUL INTERVALS TO REDUCE DMC



22 SENSORS IN ROTOR AND DRIVE SYSTEM MEASURING VIBRATION AND RECORDED IN IVHM SYSTEM

NO HIGH-SPEED COMPONENTS IN MAIN GEAR BOX: REDUCTION GEAR BOXES PROVIDE 70% LOWER RPM IN MRGB

TAGNITE COATING IN MRGB FOR CORROSION PROTECTION

BELL 525
IVHM

INTEGRATED VEHICLE HEALTH MANAGEMENT

525 – A CLEAN-SHEET OPPORTUNITY FOR IVHM

- Past systems: generally added after the fact
- 525: Designed-in, all digital aircraft
- Broader, better than typical “HUMS”:
  - Modern Central Maintenance Computer
  - “Quick Download” between flights
  - Fluid level trending (gearbox oil, hydraulic fluid)
  - Tail rotor torque monitoring
  - Sensors in all critical areas (including TR Controls)
  - Alerts via satellite
- Designed with industry input to meet real needs

Goals for Future Products…

- Minimizing vehicle energy use
  - Improvements in traditional technology
  - Hybrid and electric
  - Hydrogen
- Weight efficient
  - Aerodynamics
  - Configuration
  - Materials and advanced manufacturing
- Certification
  - Continue to work closely with regulatory authorities to achieve TC and VTC

Sustainability & Safety - Challenges

- Aerospace Product Certification
  - Certification process is by nature not very supportive of new technology
  - Regulations are usually based on past experiences; reactive not proactive
  - Aerospace is a “closed” ecosystem, slow to adopt technology from other industries
- Software Design
  - Very rigorous and time-consuming process; no easy changes, no quick changes
  - Related to electrification, no quick way to refine requirements and make changes

Sustainability & Safety – The Future?

- Smarter Systems can be more Sustainable Systems
  - Safety critical monitoring systems
  - “Live” reporting of data for timely maintenance actions
  - Use smarter/constant measuring to reduce required built-in margins

- FAA & Sustainability
  - “Working to Build a Net-Zero Sustainable Aviation System by 2050”
    - Development of new, more efficient aircraft and engine technologies
    - Increase operations efficiency in the NAS
    - Production and use of Sustainable Aviation Fuels (SAF)
    - Electrification and, potentially hydrogen, as solutions for short-haul aviation

Sustainability & Safety – The Future?

- EASA & Sustainability
  - Robust certification & Green standards
  - Operational Efficiency & Sustainable Aviation Fuels
  - Air transport decarbonization, electric & hydrogen powered aircraft solutions
  - Environmental impact of drones & air taxis
  - Research towards zero emissions aviation

Open Discussion

WHAT'S NEXT?