

The main title of the presentation, "ICAO CO2 Emissions - Embraer's Initiatives", is displayed in a large, white, sans-serif font. The word "ICAO" is significantly larger and more prominent than "CO2 Emissions - Embraer's Initiatives". The background features a network of blue lines and spheres, suggesting a global or interconnected theme.

Agenda

- ① Embraer's Decarbonization Commitments
- ② Decarbonization Agenda
- ③ Decarbonization Solutions – Available and Under Evaluation
- ④ Enablers

EMBRAER'S Decarbonization COMMITMENTS

SCOPE 1

Direct Emissions

Carbon Neutral Growth from 2022, and **Carbon Neutrality** by 2040

- **Regular usage of SAF** from 2021 at Embraer's units
- **Reaching 25% of SAF** in our operations by 2040

SCOPE 2

Indirect Emissions

- **100% energy from Renewable Sources** by 2030

SCOPE 3

Product Lifecycle Emissions

Solutions to net zero carbon emissions in aviation by 2050

- **Aircraft 100% compatible with SAF** by 2030
- Collaborate to **expand SAF production**
- Keep **improving the efficiency** of our current portfolio
- **New technologies:** EVTOL, Energia Family...

Decarbonization Agenda



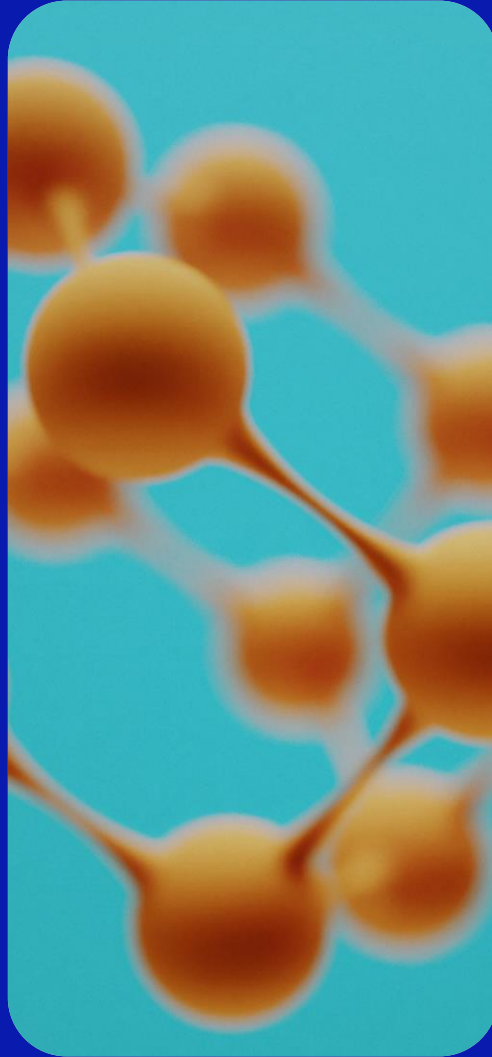
Aero and Systems Efficiency



Electric Propulsion



SAF



Hydrogen

Aero and Systems Efficiency

Lower Fuel Burn, Less Emissions



Up to **-25%**
Lower Fuel Burn PER Seat
E195-E2 vs. E195-E1



New Aerodynamics



New Engine



4th gen. Fly-by-wire

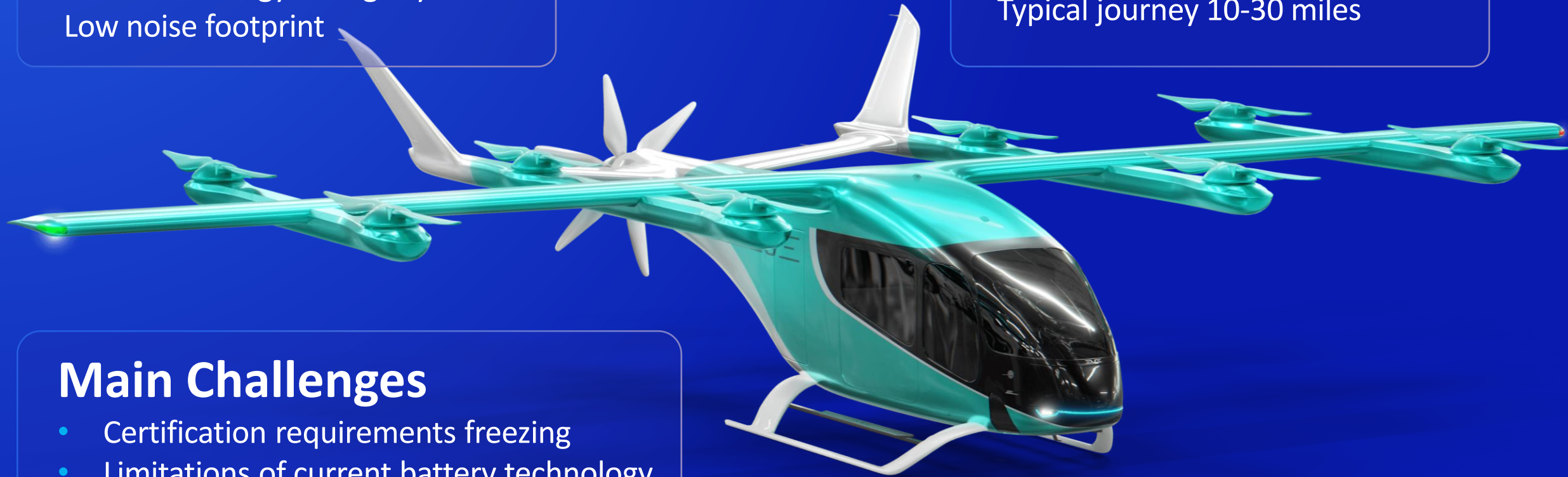
Zero direct Carbon Emission

100% Electric

Next Gen energy storage system
Low noise footprint

Urban Air Mobility

60 miles range (100km)
Typical journey 10-30 miles



Main Challenges

- Certification requirements freezing
- Limitations of current battery technology
- Operation rules freezing
- Infrastructure readiness

SAF



Embraer flying SAF – Since 2005



2005 – Ipanema
Ethanol (Unleaded)



2011 – E170
HEFA (Camelina oil)



2012 – E195 AZUL SIP
– Sugarcane



2016 – E190 KLM
HEFA Camelina Oil



2019 – Legacy 450
ATJ – wood residue



2019 – Praetor 600
ATJ – wood residue



2022 – E195-E2 100%
SAF HEFA-SPK



2023 - Phenom 300 &
Praetor 600
100% SAF HEFA-SPK

In Production A/C
100% SAF up to
2030

Hydrogen

2023/2024 Focus
50 Seater Concepts



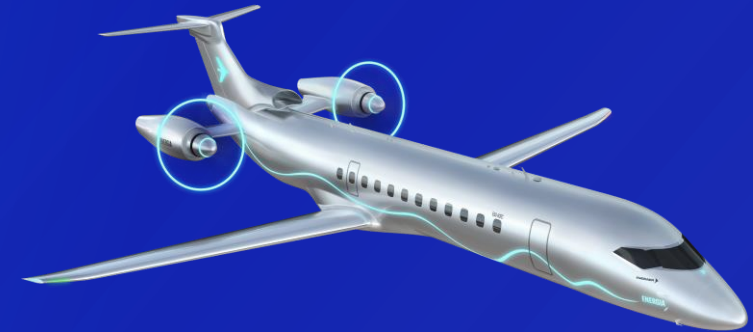
ENERGIA Hybrid-electric

Tech Readiness	2030+
Range	600 nm
Δ CO ₂ 250nm	-25% (90% if SAF)



ENERGIA Hydrogen / Dual Fuel Gas Turbine

Tech Readiness	2038
Range	600 to 900 nm
Δ CO ₂ 250nm	-100%

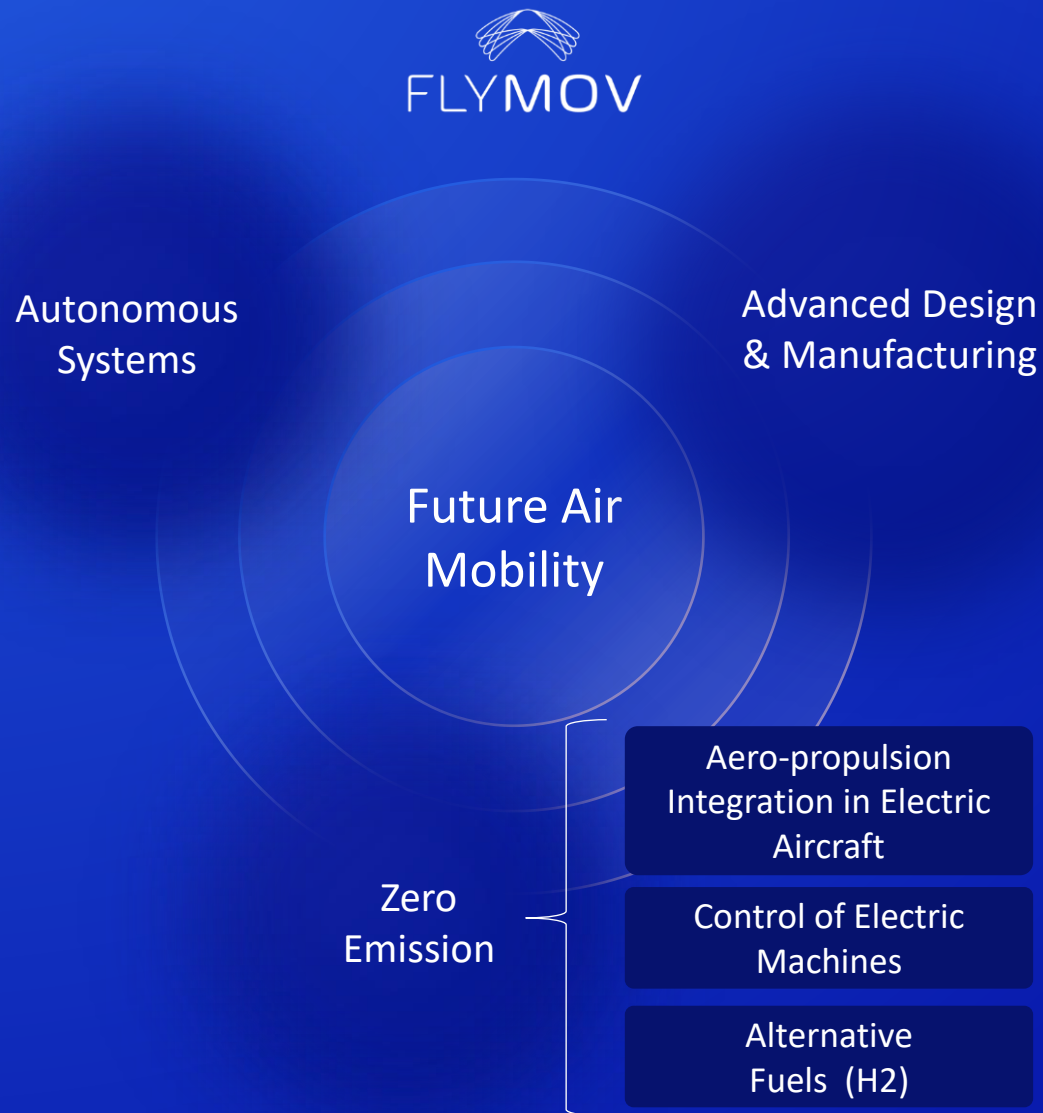


ENERGIA Fuel Cell

Tech Readiness	2035+
Range	600 nm
Δ CO ₂ 250nm	-100%

Enablers

Research & Network



Enablers

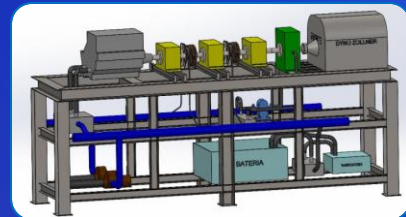
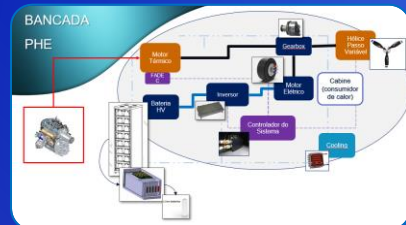
Research & Network

New Technologies Demonstration Platform (PDNT)

Reference Model Embraer



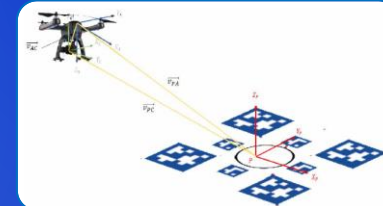
Hybrid-Electric Propulsion (GH2 + Fuel Cell)



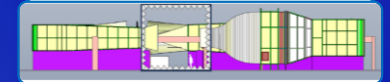
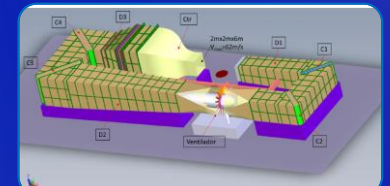
Materials



Autonomy



Noise



Enablers

Research & Network

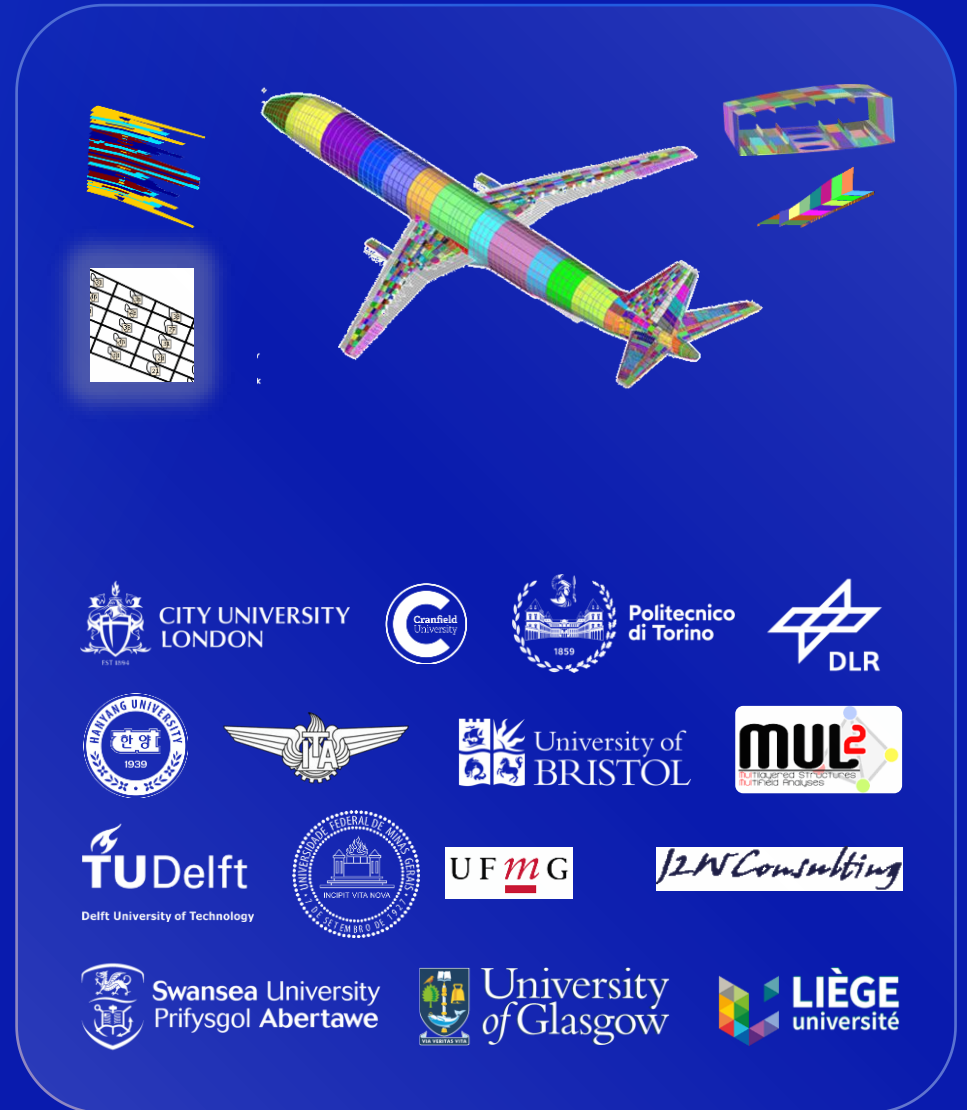
ATED

Aeroelastic Tailoring Enabled Design

- Efficient design framework for composite primary structures has been developed.
- **GLOBAL PARTNERSHIP leverage knowledge in Brazil.**
- Applying a wider approach for **AEROELASTIC TAILORING.**



ICAS von Karman Award 2024
Embraer Aeroelastic Tailoring Project



A blue-toned background featuring a network diagram with interconnected nodes and lines. A large, faint white circle is centered on the page, framing the text.

Thanks for
your
attention!