

Zephyros FE-17

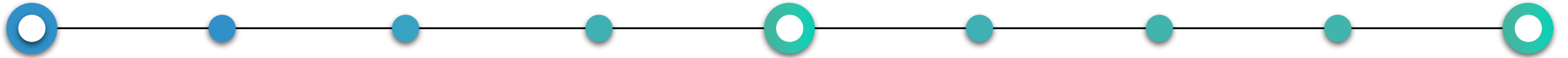
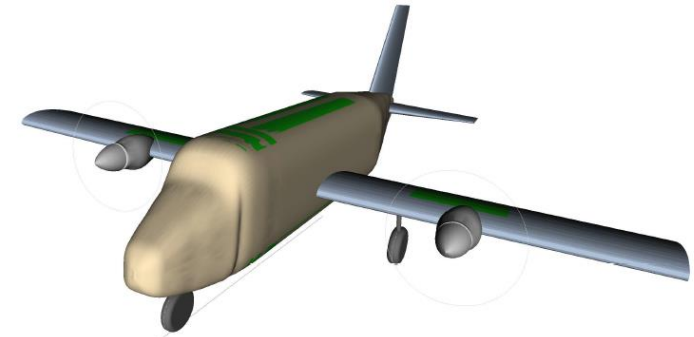
Team: Anemoi

Created by

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Why?

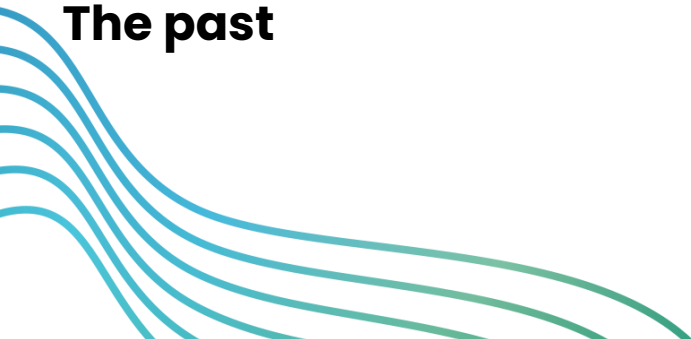
We felt the responsibility to **make the difference**



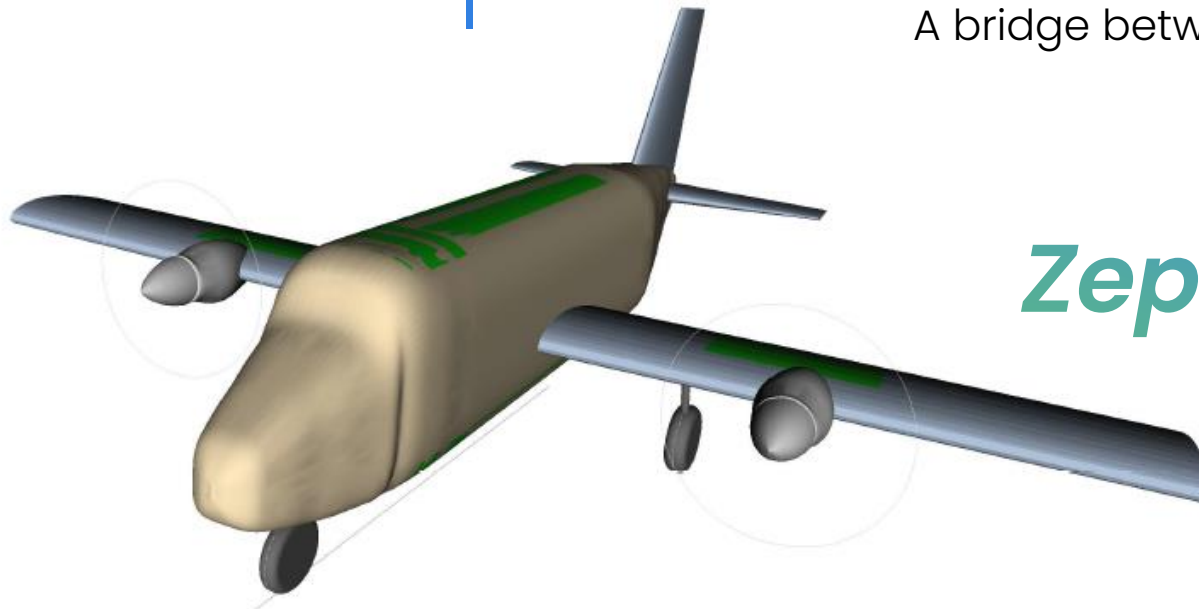
The past

The present

The future



A new bird
in the sky



Sustainability

An innovative all-electric solution with zero emissions

Technological Feasibility

A bridge between the present and the future

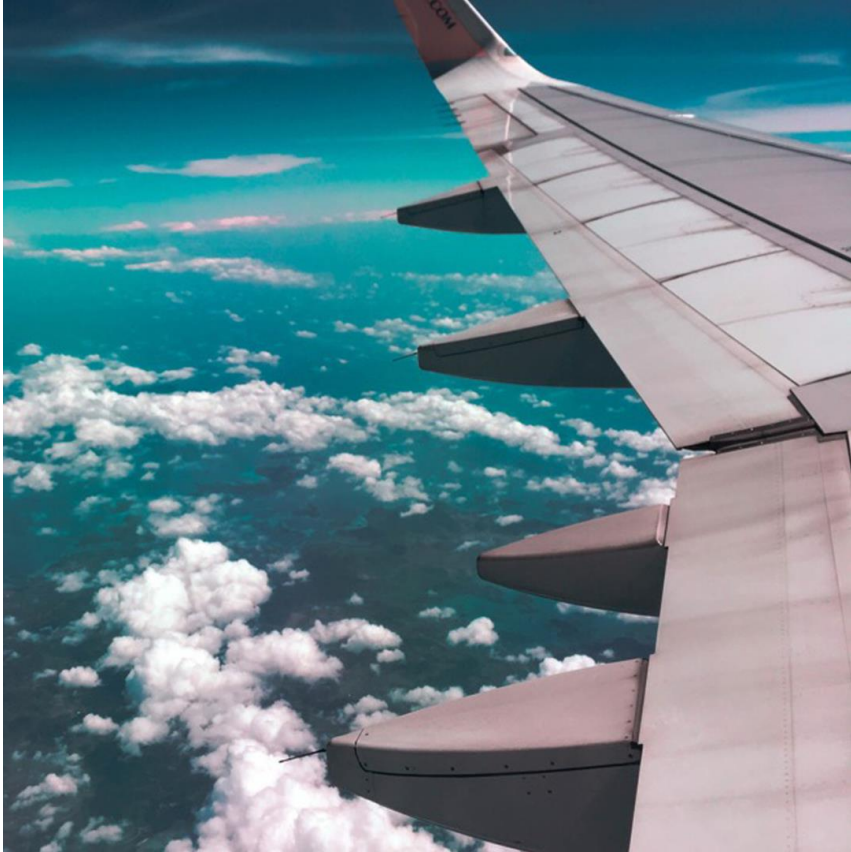
Zephyros FE-17



Chapter one: Payload

Our aircraft has been designed to accommodate **9 passengers**, which is more than twice the minimum number requested.

With this capacity we can **save time** and be **flexible** for other possible application.



Chapter two: Range

Battery performance

- 3300 kg of batteries installed
- Milan-Cortina and back without recharging using current technology

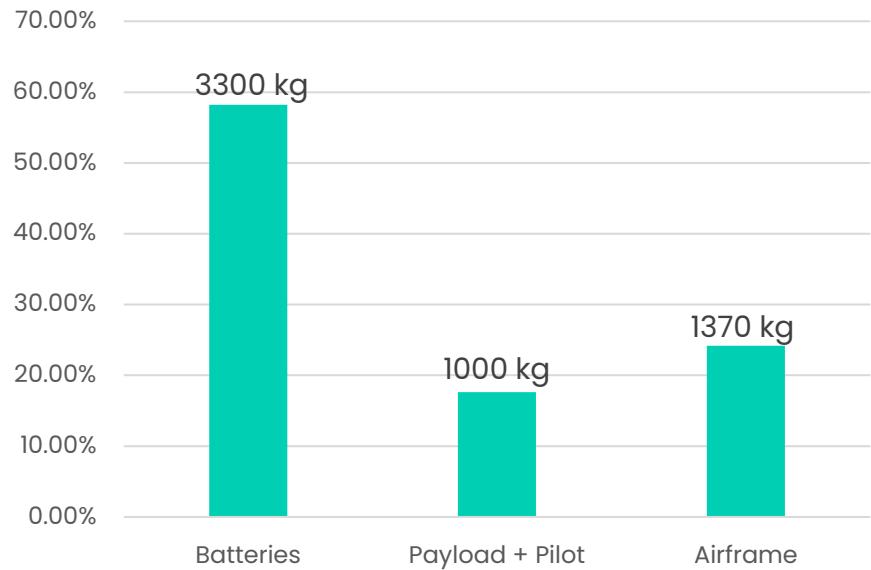
Extra-range for emergencies

- About 70 kms left in terms of autonomy after the sizing mission

Overall range: 700 km at MTOW

Distribution of weights

Refined analysis to satisfy all the requirements and meet the mission needs



Chapter three: Weight estimation

$$m_f = m_i \left[1 - x \left(1 - \frac{\rho_c}{\rho_{Al}} \right) \right] k$$

An innovative model to estimate composite percentage



Chapter four: Design overview

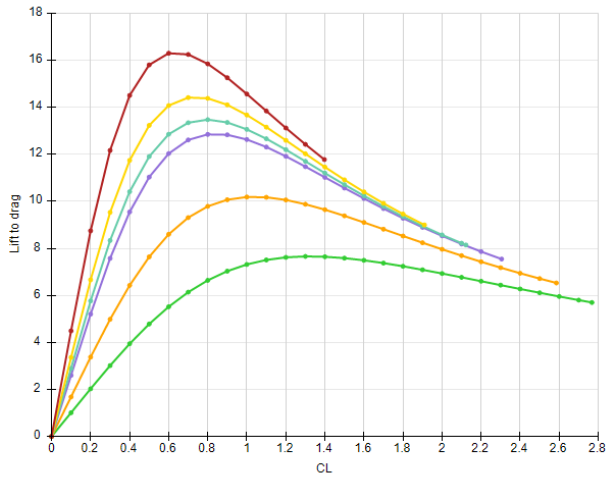
Optimization of the trajectory

Closed-loop process for wing design

Raw drawing of the fuselage to show spaces

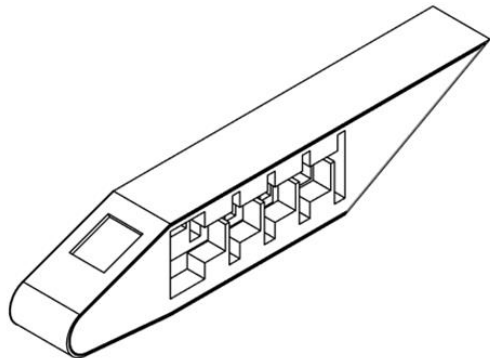
... and a lot of other things!

Low speed drag polar



Flap deflection [deg]
0
10
15
20
30
40

Landing gear = Up | Flap deflection takeoff = 15.0 deg | Flap deflection landing = 40.0 deg



Creative design project

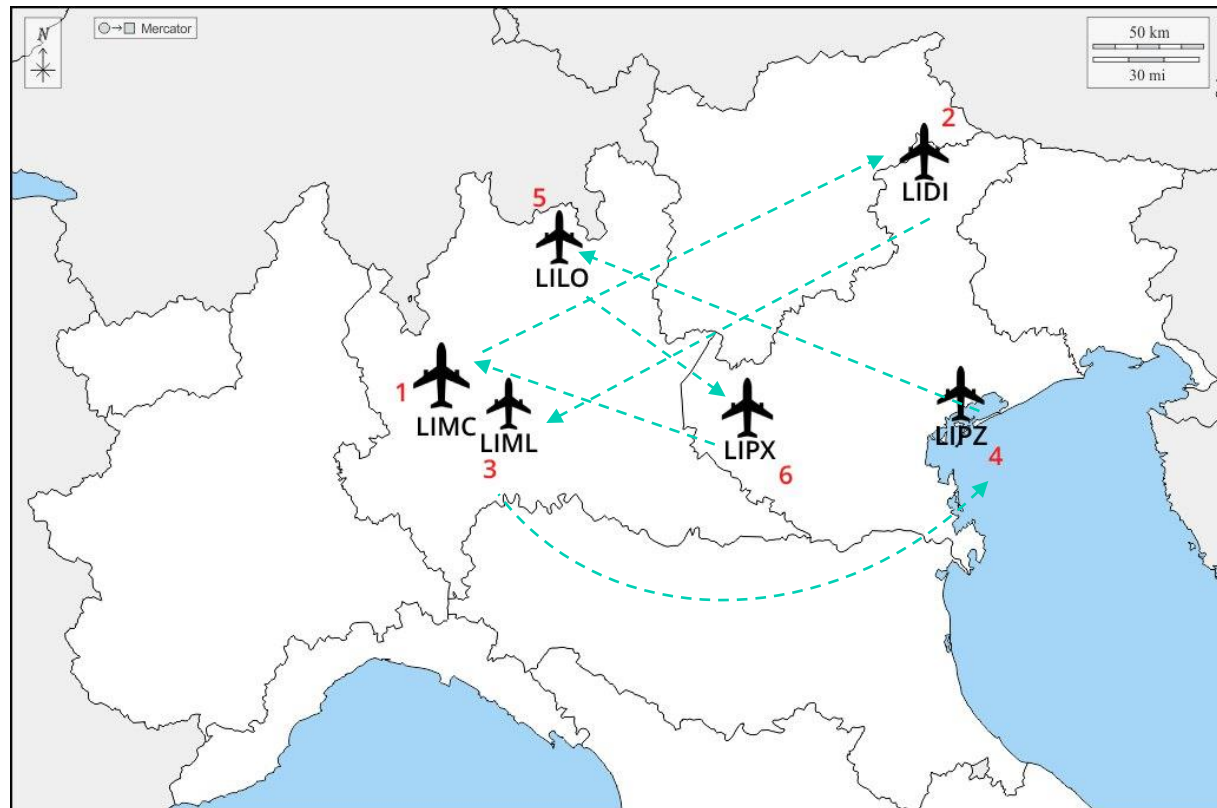
Now even more improved!

First design concept
Longer distances

- Aircraft design is **unchanged**
- **New battery** is added
- **2050 powerplant** features

	Units	2022	2050
Battery energy density	[Wh/kg]	210	1873
Battery power density	[W/kg]	1365	5619

Autonomy is now up to **5000 km**, like flying from Milan to Dubai



Taking off from Milan and reaching all these airports, we are able to finish the route with still **76%** of charge left!

Second design concept
More passengers

- **Batteries** from 3300 kg to **300 kg**
- **Operating empty weight** increase
- **Payload** increase

$$MTOW = W_{OE} + payload + batteries$$



Zephyros FE-17 can now board up to **32 passengers** (pilot excluded)



Thank You For Your Attention

Zephyros FE-17
to be continued...