



The Future of Short Haul Flights
16th Florence Air Forum | 24 September 2021


PIPISTREL

European origin, global outreach:

Headquartered in Slovenia with multiple facilities in Slovenia and Italy



Aircraft manufacturing, maintenance and **sales**.

> Prototyping, special projects, component-level manufacture.

Pipistrel d.o.o.
Ajdovščina, Slovenia

Since 1989, 4,500 m²



Pipistrel **Composites**

> Structural composite manufacturing.

Composites
Vipava, Slovenia

Since 2017, 4,600 m²



Pipistrel **3D Studio**.

> Additive manufacturing and water-jet cutting.

3D Studio
Ajdovščina, Slovenia

Since 2011, 335 m²



Pipistrel's **R&D** and Certification division.

> Engineering, design and laboratories.

Vertical Solutions
Ajdovščina, Slovenia

Since 2016, 4,200 m²

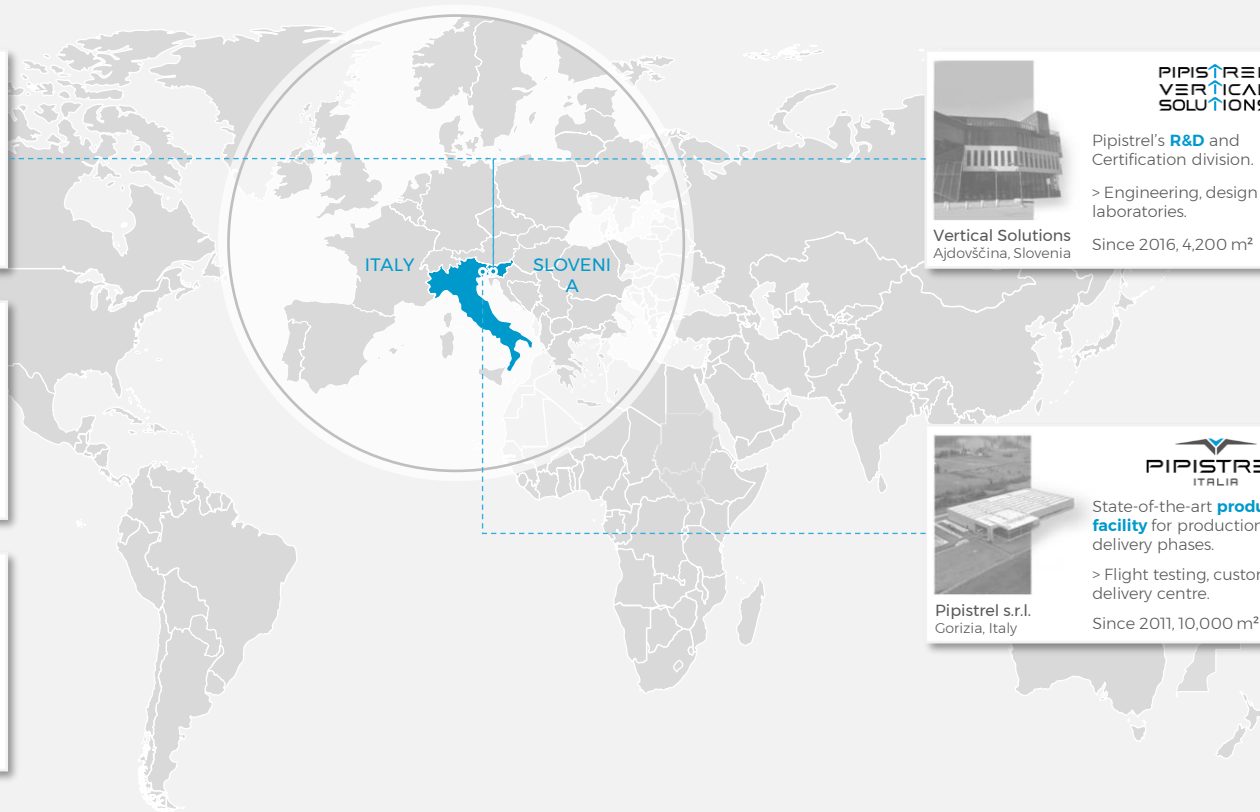


State-of-the-art **production facility** for production and pre-delivery phases.

> Flight testing, customer and delivery centre.

Pipistrel s.r.l.
Gorizia, Italy

Since 2011, 10,000 m²



Value chain:

Vertically integrated design, manufacturing, own IP, own zero emission powertrains, own batteries



Pipistrel's capabilities cover the full idea-to-certification process in-house

Production capacity will increase to 63,635 m², or 450 aircraft per year

The sales network now includes 53 dealers and contract manufacturers

Pipistrel has partnered with 64 flight schools worldwide

1 CONCEPTUAL DESIGN

3D CAD models, project phases, estimated budget.

2 AERODYNAMIC ANALYSIS & DESIGN

Including computational fluid dynamics.

3 STRUCTURAL ANALYSIS & DESIGN

Predicting materials' behaviour by load condition.

4 SYSTEMS DESIGN

Design and integration of aircraft systems.

5 ELECTRIC / HYBRID POWERTRAINS

Design and airframe integration of powertrains.

6 AVIONICS AND ELECTRONICS

Custom electronics boards, software, or interfaces.

7 STRUCTURAL TESTING

Testing of full-scale airframes and aircraft components.

8 FLIGHT TESTING

Test plan, data collection and analysis.

9 PROTOTYPE CONSTRUCTION

Construction and tooling, including composites.

10 CERTIFICATION AND STC

Certification with EASA or supplementary type certs.

PRODUCTION LINE IN ITALY



A 20,000 m² total floorspace available today

1 DEALER NETWORK TARGETS CONSUMERS AND FLIGHT SCHOOL CUSTOMERS



2 DEDICATED SALES TEAM TARGETS OEM, CORPORATE AND GOVERNMENT CUSTOMERS



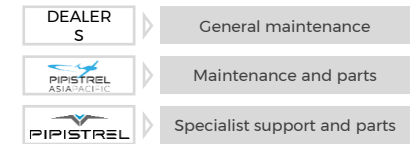
3 LOCALISED MANUFACTURING & DISTRIBUTION PARTNERS TO PENETRATE NEW REGIONS



WORLDWIDE NETWORK OF FLIGHT SCHOOLS PROVIDES TRAINING BUT ALSO MARKETING

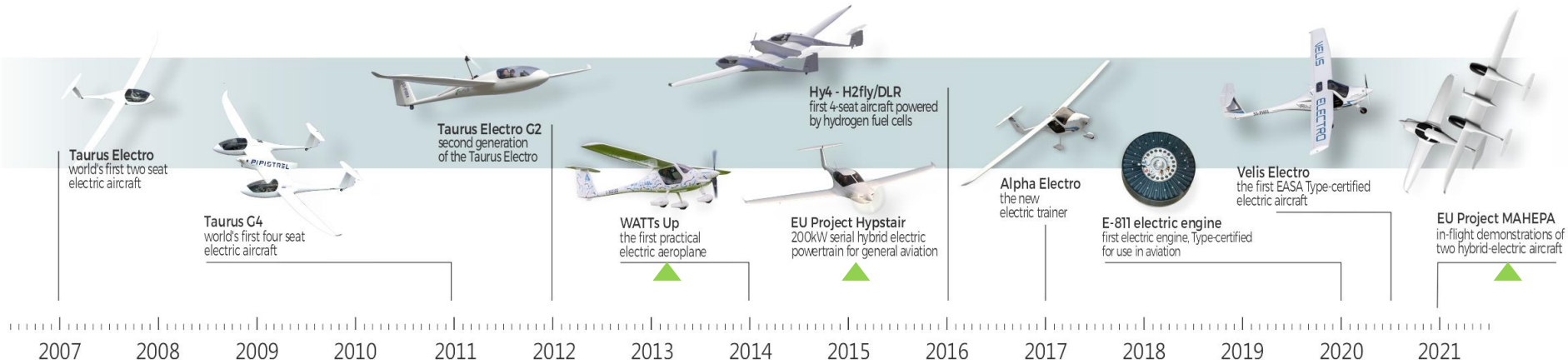


DEALERS PROVIDE 1ST LINE MAINTENANCE, WHILE PIPISTREL HQ PROVIDES SPECIALIST SUPPORT





PIPISTREL



Flying electrically since 2007.

Research - MAHEPA 2017-2021

Development of Powertrains

Components designed for flight



MODULAR APPROACH TO HYBRID-ELECTRIC PROPULSION ARCHITECTURE

11

Research - MAHEPA



Photography: Jozef Kovacic - MAHEPA



MARKET STUDY - MICROFEEDER

TYPE OF SERVICE

>> **MICROFEEDER** - from secondary airports to hubs and vice-versa (hub-to-spoke)

POTENTIAL CUSTOMERS

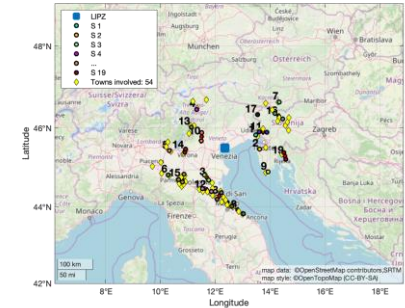
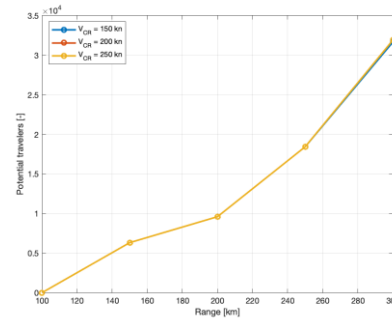
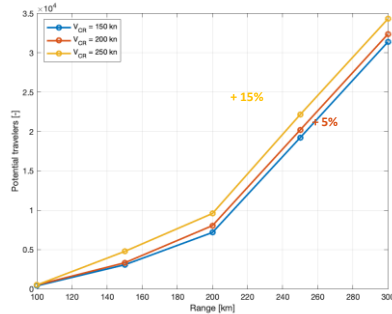
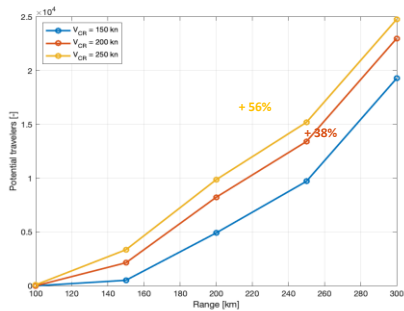
>> **CATCHMENT AREA** - towns with more than 20,000 inhabitants where time advantage criterion is satisfied

CASE STUDIES

>> **Brussels (Belgium)**

>> **Venice (Italy)**

>> **Riga (Latvia)**



MARKET STUDY - MINILINER

TYPE OF SERVICE

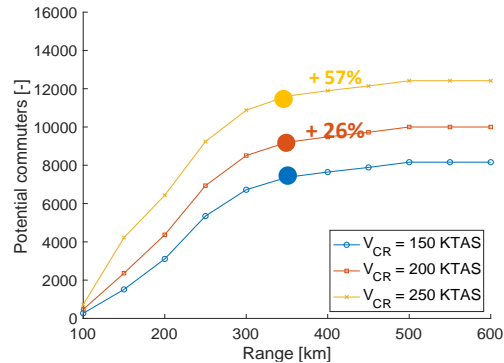
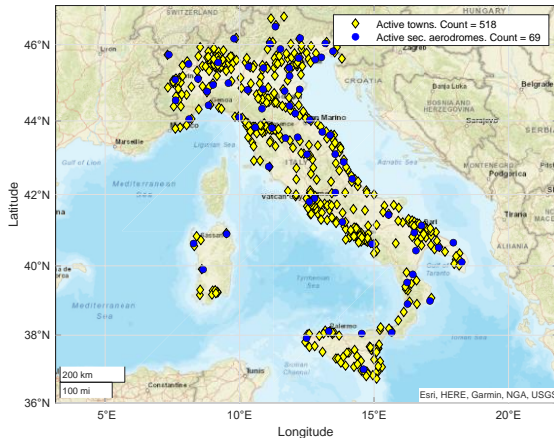
>> **MINILINER™ (INTERCITY)** – between secondary airports (point-to-point)

POTENTIAL CUSTOMERS

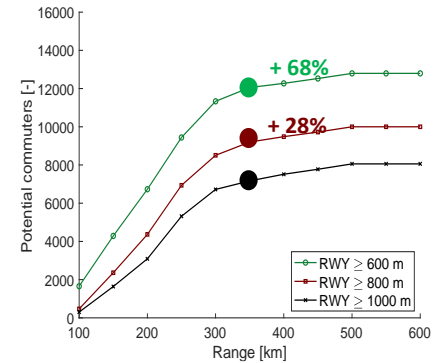
>> **CATCHMENT AREA** – towns with more than 20,000 inhabitants where time advantage criterion is satisfied

CASE STUDY

>> **Italy**



RWY>= 800 m with varying range and cruising speed



Cruising speed 200 KTAS with varying range and runway length

ONGOING: ASSESSMENT & CROSS-CHECK

>> C7A: Traditional and DEP, WTP and BLI

>> Aerodynamic analysis

>> Noise assessment

>> Propeller design

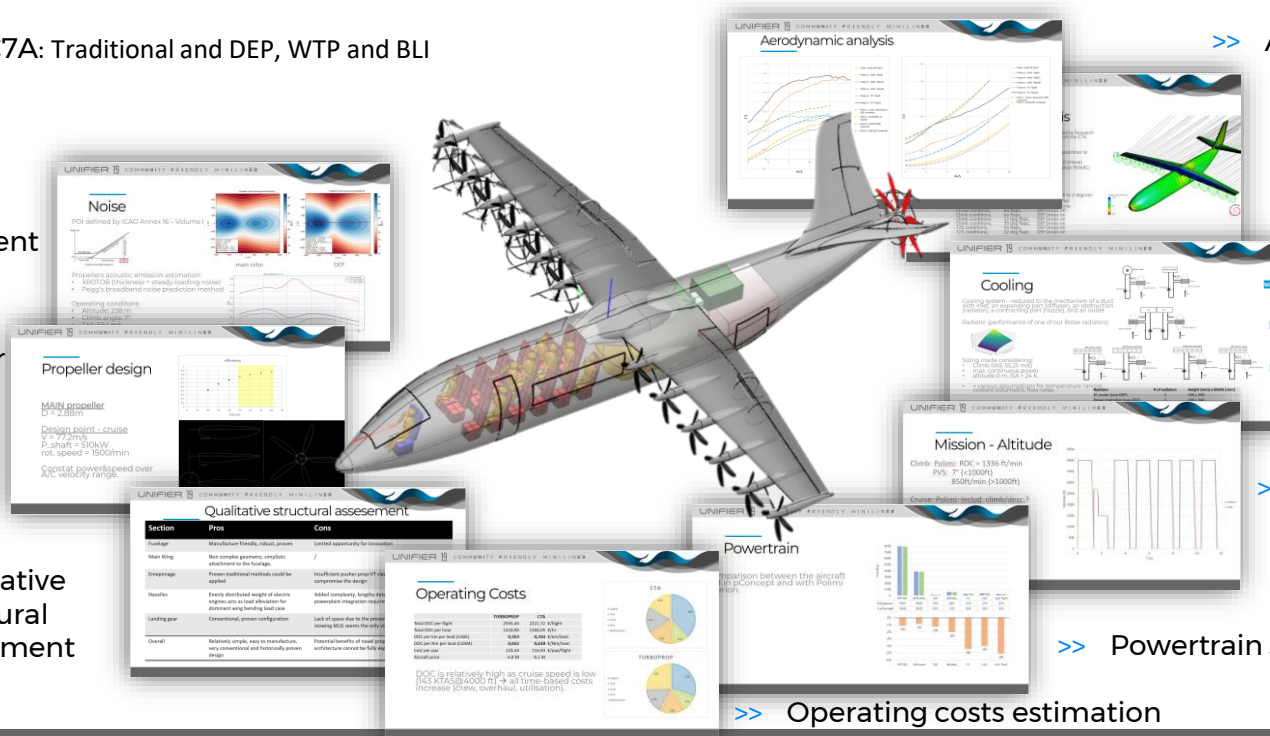
>> Qualitative structural assessment

>> Powertrain sizing

>> Cooling drag prediction

>> Mission analysis

>> Operating costs estimation





PRVK-X

Increased complexity,
optimised for DOC

PRVK-1

Optimised for low noise, short
runways, steep arrival/departure
H2B-direct turbine compatible

PRVK-LR

Long range, high speed
H2B-direct turbine compatible

Technology innovation building blocks:

- Redundant MW-class fuel-cell system, incl. thermal management, waste heat utilization (anti-ice/de-ice, environmental ctrl, ...), boil-off mngt.
- H2B is enabled on PRVK-1 and PRVK-LR concepts
- LH₂ 300 kg-class storage, compatible with zero-emission regional airliner needs
- 1500 VDC power management
- MW-class high-power density long-life battery
- 0.35 M tip-speed low noise propellers
- HMI -> Single pilot operations

