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Innovating what's next: Sustainable PCA

SINERGO CASE STUDY FOR SMARTER GROUND OPERATIONS

KEEP IN TOUCH



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about us

Sinergo is a **multidisciplinary integrated** engineering and architecture company with over 30 years of experience.

I'm Filippo Bittante, Sinergo's CEO and Technical Director, a mechanical engineer with almost 20 years of work expertise.



Why PCA Matters Today



- Ground operations = 30% of airport emissions
- Rising demand for **sustainable turnaround solutions**
- **PCA**: proven technology, now smarter & more efficient
- Venice: our **case study** to shape future-ready airports

Global context & industry drivers

30% of total **airport emissions**
come from **ground operations**
[APU and GPU usage]

↘ Full gate
electrification
reduce emissions by **63-97%** per aircraft movement
[ROI of 1-2 y]

Global context & industry drivers

European benchmark

Amsterdam
Schiphol
Airport

- ➔ 144 stands with fixed PCA units aiming to reach “**zero-emissions ground handling**” by 2030.

SAVE–Sinergo challenge in Venice

GOAL NO use of APU

TARGETS Thermal comfort
Noise reduction
Energy efficiency
Digitalization &
smart monitoring

Venice
Marco Polo
Airport



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SAVE–Sinergo challenge in Venice

What **sets us apart**
from other projects



Modular architecture
combined with
Smart BMS platform
for **predictive maintenance**



Technical solution & innovation

1 **PCA and 400 Hz units directly on jet bridges**

- Reduce power loss
- Improve reliability

*** -20%**

**reduction in
energy consumption**

[analysed data on site]

Technical solution & innovation

2 IPM module – Intelligent Power Management

- Optimize energy delivery
- Better load balancing
- Excess energy now powers EV chargers for ground vehicles



System comparison

Amsterdam
Schiphol

PCA units occupy 5×2.5 m per stand

Venice
Marco Polo



Compact and **modular**

Adaptable to existing infrastructure

Smart BMS for predictive maintenance

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Venice Marco Polo Airport

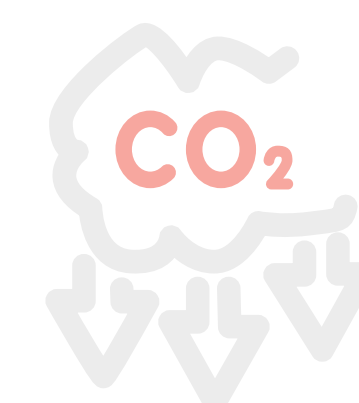


Measured Impact



5.237,84 MWh
expected saving

based on on-site calculations
from the test boarding bridge



1,200 tons
of CO₂ saved

between 2024 and 2028

International Benchmarks

Global PCA market

- 278 M\$ in 2024
- **+6,5 % CAGR** until 2033



source: datahorizonresearch.comry

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Scalability & Systemic Sustainability

Venice **pilot** project

Modular structure - Integrated BMS - Analytics dashboard

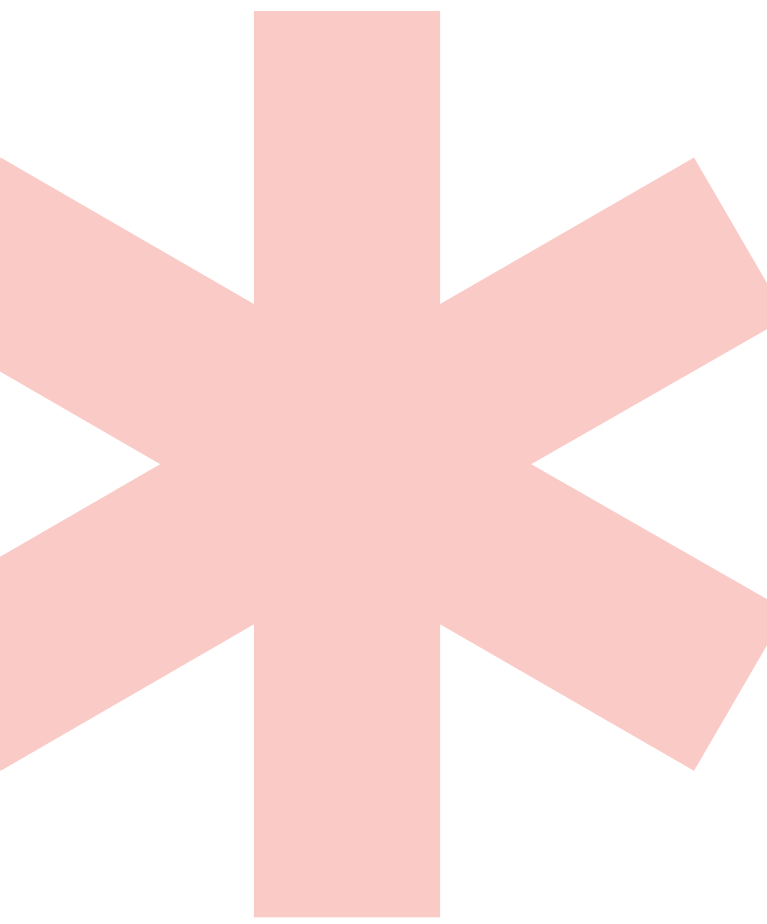
 **Replicable** • Future-proof model

 Ground **Electrification**

 Europe goal **Net Zero** 2050
Airports cut emissions by 55% by 2030



What You'll Take Away



Real-World **Insight**

Energy & Emissions **Savings**

Modular & **Scalable** Design

Smart System Integration

Future-Ready **Strategies**

Venice Marco Polo Airport



Let's accelerate
the transition —
together

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Thank you

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