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Electrification, Sustainability and Zero Emission
Power Electronics key role.

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Dr. Youcef Abdelli - April, 2024
Agenda

- ZT1 Technology Presentation: Core Business, Mission, and Vision
- Challenges and Opportunities in the Aerospace Market
- Decarbonization, Zero Emissions, and Sustainability Opportunities
- Supply Chain Sustainability, Transparency, and Disruptions
- TAM
- Questions
20 years + experience on electrification

PE Expert follow and electric systems
Head Propulsion & PE
Principal Propulsion & Battery system
CTO
Founder & CEO

13+ years aerospace

LIEBHERR

Electrifying mobility & smart microGrid

CTO
Principal Propulsion & Battery system
Founder & CEO

H2-Dash8
H2-Piper
H2-Dornier 228

A320-E-ECS
E-R44
E-Viation

E-Beaver
E-CARAVAN
Drone delivery

H2-ATR42

H2-ATR42
H2-Piper
H2-Dash8
ZT1 Technology Presentation: Core Business, Mission, and Vision

A start up founded on 2024
Dr. Youcef Abdelli

ZT1 Technology: To redefine industry standards by delivering advanced electrification solutions through innovative hardware and software.

Dr. Youcef Abdelli
Founder & CEO

MARKETS

- MEA
- UAM
- Drone - Cargo
- Smart MicroGrid

SOLUTIONS

- Inverter/Converter
- System electronics
- Electric propulsion
- Solid State
- Electronic Control Unit
- Machines
- System Development
- Software development
- Certification support part 23/33
Decarbonization, Zero Emissions, and Sustainability Solutions

Batteries

Turbine electric Hybrid

Biofuel

Synthetic fuel

Direct H2 Burning

H2 Fuel Cell
Decarbonization, Zero Emissions, and Sustainability Opportunities

- Advancements in Battery and Hydrogen Technology
- Sustainable Aviation Fuels (SAF):
- Innovation in Aerospace Design
- Comprehensive Policy and Industry Collaboration
- Integrated Decarbonization Strategies

Trade off regarding the application

- Weight
- Scalability
- True 0 Emission, Net 0 Emission
- Incremental improvement
- Maintenance
- Cost
- Infrastructure
- Efficiency
Aircraft Electrification Market - TAM

with sustainability, decarbonisation and 0 Emission the market is 10X
The market is growing much faster and has more opportunities toward sustainability, decarbonisation, and Zero e.

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The dominance of power electronics enbling

The Dominance of power electronics is indeed a big key driver.
Global MicroGrid toward power electronics domination

**Generation Stage**
- Hydro power plants
- Synchronous machine (main provider)
- Renewables
- Conventional power plants (oil, coal, gas, etc.)

**Transmission Stage**
- Substation
- Transformer
- Transmission line

**Distribution Stage**
- High-voltage distribution
- Low-voltage distribution

**Conventional grid**

**Power-electronics-dominated grid**
- PV
- DC/DC
- DC/AC
- EVSE
- EV
- DC/DC
- Wind farm
- AC/DC
- DC/AC
- Fuel cell system
- Main provider
- Energy storage
- Smart load

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Challenges in the Aerospace Market...

- **Fluctuating Demand:** Uncertainty in air travel demand
  - Economic, geopolitical, and health factors
  - Capacity planning and forecasting

- **Cost Pressures:** Increase of cost
  - Fuel, labor, regulation compliance, and maintenance
  - Lower profit margins for aerospace companies.

- **Technological Disruption:** Technology breakthrough
  - Challenging traditional business models,
  - Significant investment in research and development.

- **Supply Chain sustainability, Resilience and transparency**
  - Single-Source Suppliers
  - Geopolitical Risks
  - Planning uncertainty: budget, long term,

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Opportunities in the Aerospace Market …

- **Sustainable Aviation**
  - Innovation, differentiation: materials, topologies, architecture

- **Digital Transformation**
  - Adoption of digital tech boosts efficiency.
  - Machine learning enhancing, productivity
  - Digital twin

- **Regional & Urban Air Mobility**
  - Emerging concepts offer new market prospects.
  - Fix wing, VTOL/CTOL, Drone delivery …

- **Collaboration and Innovation**
  - Partnerships drive innovation and problem-solving.
  - Companies with start up
  - Private and public sector

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THANK YOU FOR YOUR ATTENTION