









INSIEME PER UN VOLO PIU'SOSTENIBILE

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Avio Aero



a GE Aerospace company

Benvenuti

Margherita Bertinotti Avio Aero - Sourcing Leader

Avio Aerox

- INSIEME PER UN VOLO PIU' SOSTENIBILE

In un contesto di:

- Crescita della domanda del mercato mondiale (settore civile e militare)
- Automotive vs Aeronautic Business reshuffling
- Nuove opportunità di sviluppo tecnologie altamente innovative

Avio Aero incontra le aziende per creare un canale diretto di comunicazione e possibile collaborazione su:

- ✓ Fonti aggiuntive per incrementare la capacità produttiva
- ✓ Nuove fonti per portare in Italia capability oggi presenti solo all'estero
- ✓ Nuove tecnologie che rappresentano enablers per lo sviluppo di programmi di interesse nazionale





- We are Avio Aero



Manuela Brero Avio Aero - Strategic Sourcing Leader

PROPULSION & ADDITIVE TECHNOLOGIES











AVIO AERO designs and produces engines, components and systems for the commercial and military aviation

We are specialized in **advanced technologies** for the production & services of **mechanical transmissions**, **turbines**, **combustors**, **turboprop engines and propulsion systems** for aircraft and helicopters.





-Our History: 115+ years of evolution & innovation



AVIO Aero

-Our Products

COMPONENTS AND SUBSYSTEMS



Accessory Drive Transmissions

- Accessory Gearbox
- Inlet Gearbox
- Transfer Gearbox
- Aircraft Mounted Accessory Drive

Avio Aero



Power Transmissions Systems

- Propeller & Reduction Gearboxes
- Helo Rotor Drive Systems & Main Gearbox



Turbines

- Turbine Module
- Disk
- Rotor
- Stator
- Casings & Frames



Combustors

- Combustion Chamber
- Reheat Module



Controls and accessories

- Control Units & Software
- Fluidic & Electrical Accessories

-Our Products

FULL ENGINES

Full engine design, manufacturing, assembling and testing



Catalyst

Beechcraft

Denali

H-Series

L 410NG





COLLABORATIVE ENGINES

Modules, components, design, manufacturing, engine assembly and test



EJ200

Eurofighter Typhoon





RB 199

Tornado

T700

| EH101 | NH90





CT7-8

AW249

HH101



LM2500

FREMM frigate class





Revenues \$1.7B

Investment \$129.4 M

Research & Development Plant & Equipment



Updated as of December 2023



Our People

Updated as of December 2024

35%

Engineers*

30%

Under 36

49%

Operators

51%

Salaried



~ 5,900

Across Europe



a GE Aerospace compan

PRODUCTION FACILITIES

Rivalta (Torino - Italy) Borgaretto (Torino - Italy) Cameri (Novara - Italy) Pomigliano (Napoli - Italy) Brindisi (Italy) Prague (Czech Republic) Bielsko-Biała (Poland)

TEST FACILITIES Sangone (Torino - Italy) Zielonka (Poland)

LABORATORIES

Bari (Italy) Torino (Italy)



Aerospace market growth and new programs development



Vincenzo Ebreo Avio Aero - Sourcing NPI & Value Analysis Leader

-Our market play

Commercial

The use of turbofan-powered aircraft to transport passengers and cargo on a scheduled basis, playing a crucial role in global connectivity and economic development

Defence

The use of military aircraft and related systems to support national security, conduct surveillance, and engage in combat operations to protect a nation's interests

Small Turboprops

The use of turboprop-powered aircraft for civilian and defence purposes, including regional passenger transport, cargo delivery, and various specialised operations



- Market growth projections





Commercial Air Travel Demand





Global **Defence** Spending



Turboprop New Make Forecast



Forecasted growth 3.3% avg YoY until 2034

Raising spending for fleet modernisation and next-gen technologies

Stable growth driven by modernisation needs and new platform's introduction



Avg = averageHSD = High-Single Digitavg = averageMSD = Mid-Single DigitYoY = Year over YearLSD = Low-Single Digit

CAGR = Compound annual growth rate NATO = The North Atlantic Treaty Organization RoW = Rest of the World

— Executing throughout NPI



-GCAP PROGRAM

 GCAP PROGRAM launched on 9th December 2022 (based on previous Tempest and F-X progs)

- PURPOSE → Development of a 6th generation fighter for multi-domain operations, in substitution of Eurofighters & F-2 (>600 aircrafts currently in service). EIS by 2035
- TRI-LATERAL partnership → Italy, UK and Japan, through their national propulsion companies Avio Aero, Rolls Royce and IHI will collaborate in an equal partnership for the development of technologies that will enable the propulsion system within a "system of systems concept"
- Leonardo, BAE Systems, MHI are the national airframers that will cooperate as as System Integrators of the whole platform





Generational opportunity to ensure military business growth and technology development



- CLEAN AVIATION Commitment to a more sustainable future of flight



Hybrid electric

MW-class hybrid electric propulsion system development ... builds on GE's experience with motors, generators, power converters and power management systems



Hydrogen

CFM International* developing hydrogen combustion and fuel systems for Airbus ZEROe aircraft project ... builds on 8M operating hours with hydrogen in GE land turbines



CFM RISE

GE and Safran Aircraft Engines program maturing advanced engine architectures like open fan, compact core and electric technologies for >20% better fuel efficiency vs. today's engines



Ground & flight tests designed to show technology readiness this decade for multigenerational upgrade by mid-2030s





High priority aeroengine application



Alberto Demenego Avio Aero - Engineering Section Manager - Controls, Accessories and Marine



Veronica Malerba Avio Aero - Materials and Processes Development Senior Engineer



Giacomo Corda Avio Aero - Sourcing Supplier Development Leader

HIGH PRIORITY AEROENGINE APPLICATIONS Accessories & Controls – seeking new players



Control System (also known as Accessories & Controls) is the automation of the turbomachine and is constituted by:

- Control unit (electronic hardware, software, full authority)
- Sensors (different technologies, traditional and "smart)
- Actuation (including fluids conditioning)

Control System is a product line and key enabler for future applications.

Examples: hybrid propulsion, advanced thermal management, electrification

Typical approach to development and production is twofold:

- Internal design and buy/make manufacturing
- External design and make controlled via dwg/specification

New opportunities for expanding collaboration, specifically but not limited to fuel system and complex electronics

HIGH PRIORITY AEROENGINE APPLICATIONS Accessories & Controls – seeking new players



HIGH PRIORITY AEROENGINE APPLICATIONS Materials and processes development – seeking new players

Mature next LPT and Gearbox technology



Airfoil Materials with improved Temp. capability (SX and intermetallic alloys)

Increase portfolio of materials applicable for Additive Manufacturing



Next Gen Military

Ceramic Matrix Composite development (Ox/Ox, C/SiC, SiC/SiC etc.)

Environmental Barrier Coating systems for CMC

Coatings to improve oxidation and wear resistance Innovative **stainless steels** for shafts

Helicopters

Plating and painting for corrosion protection

Expand supply chain of chemical processing and non-destructive test

New Magnesium alloy for casting



REACH

Decrease use of Cr(VI) and other hazardous chemicals

Reach compliant extended capability environmental coatings

Pilot lines to demonstrate environment for coatings



...chemistry alloys and processes modeling and possible new material development with Al

HIGH PRIORITY AEROENGINE APPLICATIONS Products and processes – expanding supply base



Gears

- Spur and bevel gears
- Shafts



Forgings

- Open and close die
- Rings

Castings



Seals

- Carbon seals
- Brush seals



Locking-nuts

Including insert in Vespel ®



Honeycomb

Sand casting

Investment casting

Production and transformation



Special processes

- NADCAP qualified
- REACH compliant
- Verticalized and integrated



Miscellaneous

- Springs
- Rigid and flexible piping

Need to reinforce supply chain in terms of capacity and new capabilities





a GE Aerospace company

- Working with Avio Aero

Avio Aero

Giacomo Corda Avio Aero - Sourcing Supplier Development Leader

Becoming a world-class supplier in Aerospace



High Quality Standard

- Quality requirements: AS9100 norms, at least NADCAP for Special Processes certification
- Company requirements: Sound Quality Organization, Risk Management, Project Management, Special Processes
- Company vision: Lean Approach, APQP, Digital transformation



Concurrent Engineering

- Co-design in partnership
- Joint risk/opportunities management approach to launch activities while finalizing design



Flexibility and best-in-class lead time

- Small batches and high technical complexity management
- In-house processes verticalization to cut off non-added value lead times
- Strong sub-tiers management



Military Business

- National authorization to work on military programs (T.U.L.P.S. license ex art. 28)
- International Trade Compliance and export licences management

Know the rules and get structured to manage complexity



AVIO AERO suppliers' introduction



Conclusion and next steps

Avio Aero is a GE Aerospace company that design, manufactures and maintains components and propulsion systems for civil and military aviation.

Avio Aero's challenge is to develop new technologies and applications to reduce fuel consumption & CO₂ emissions, produce lighter aircrafts, and achieve best-in-class performance.

To show interest in collaborating with Avio Aero visit the link below: https://avioaero.com/en/our-company/doing-business-with-us

#weareavioaero

