

**CZECH AEROSPACE CLUSTER**

MORAVSKÝ LETECKÝ KLASTR

**Petr Tomášek**

Executive Manager

# BASIC INFORMATION

— Founded in 2010

— 55+ members (companies, universities and businessmen)

— Zlin, Moravian–Silesian, South Moravian Region in Czech

— A member of working group Aviation – Ministry of Industry and Trade

— A member of RIS3 Zlin region and Industry Council of VSB-TUO

— A member of EACP, ECCP and National Cluster Association board

— A member of ASD – Working group UAS



2500+  
produced aircrafts



4000+  
employees



450+  
overall turnover  
in mil. €



100+  
innovation  
projects

# CAC STRATEGIC PILLARS

— Support of members innovation

— Support of education

— „Education gives us wings” – 734.740 €

— Working group QUALITY

— Connection of companies and institutions

— The creation of complex skills

— Jointed booth and targeted missions to customers

— World-wide



Innovation



Education



Collaboration



Marketing

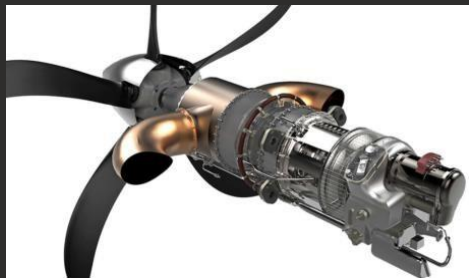
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# FINAL PRODUCTS



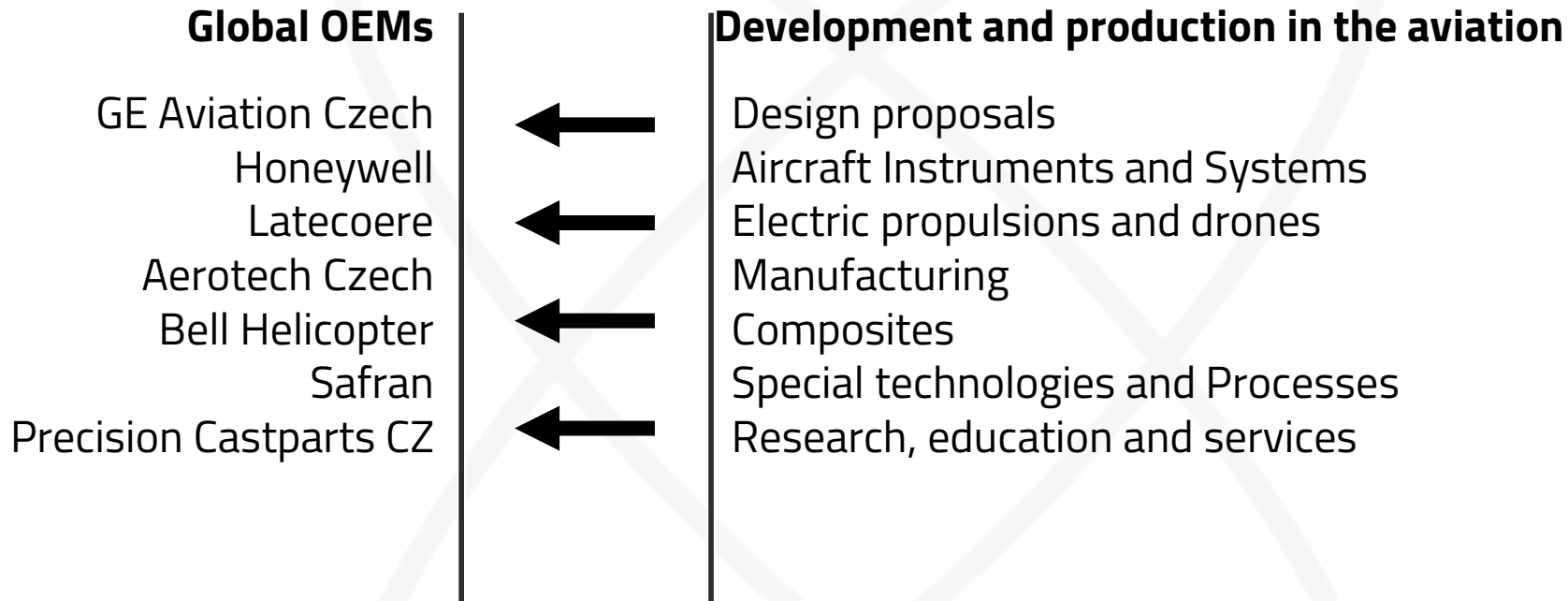
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# FINAL PRODUCTS



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# GLOBAL SUPPLY CHAIN – 130+ COMPANIES



# SUPPLY CHAIN CAPABILITIES

## **Design proposals**

System integration  
Detail design engineering Stress calculations  
Static, Fatigue and Dynamic Analysis

## **Aircraft Instruments and Systems**

Sensors, controls, measures  
Control systems  
Electrical devices  
On-board systems and equipment

## **Manufacturing**

Sheet metal  
Machining  
Castings  
Forging

## **Composites**

RTM  
Sandwich  
Autoclave technologies  
Bonding

## **Special Technologies and Processes**

Heat Treatment  
Surface Treatment  
HIP  
NDT

## **Electric propulsions and drones**

Electric propulsion systems  
BMSs  
UAV development and manufacturing  
UAV operation technologies

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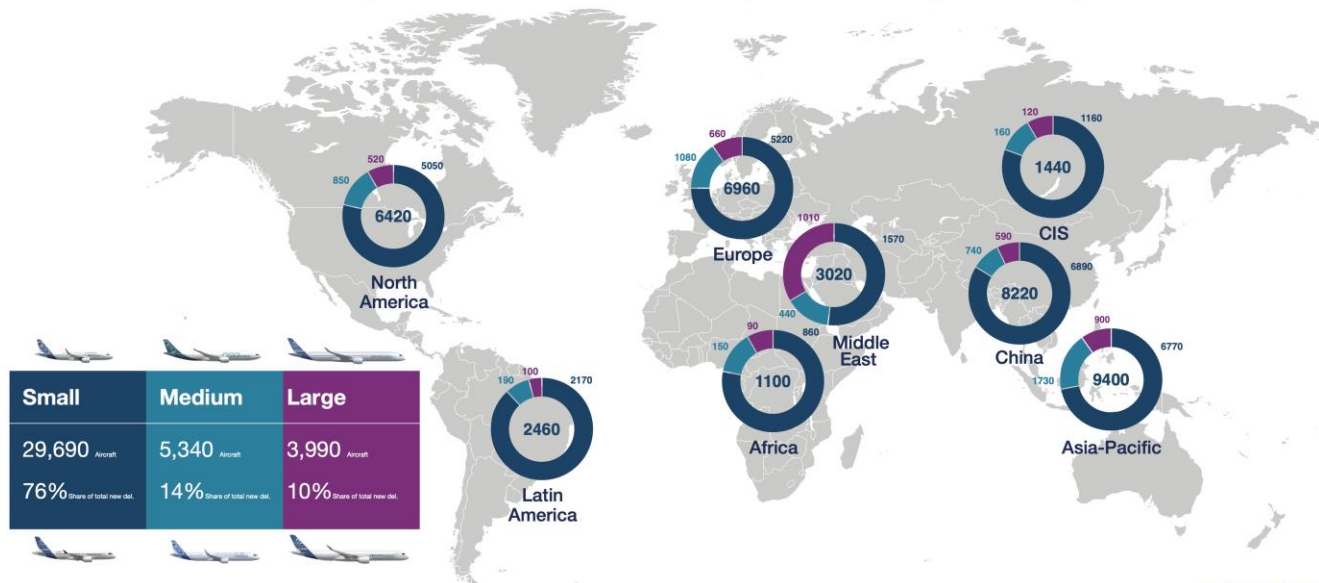
**Research, education and services**



# GLOBAL AIRCRAFT MANUFACTURING

## Commercial Aircraft demand 2021-2040

Asia-Pacific, China, Europe and US continue to be major drivers for growth & replacement



Source: Airbus Market Forecast 2021-2040

**AIRBUS**



# SPACE VS AEROSPACE

## Price

## Quality

## Pros & Cons

### SPACE

- 100% Quality then price
- Margins up to 8%
- If supplier increase the price – ESA will pay it after clarification

- Quality is managed via output control
  - Metrology - Dimension checks
  - Non-conformity – Clarification of process
- No special qualifications for low tier manufacturing

- Reference
- Technology maturation
- Prestige
- Hard entry
- Single projects

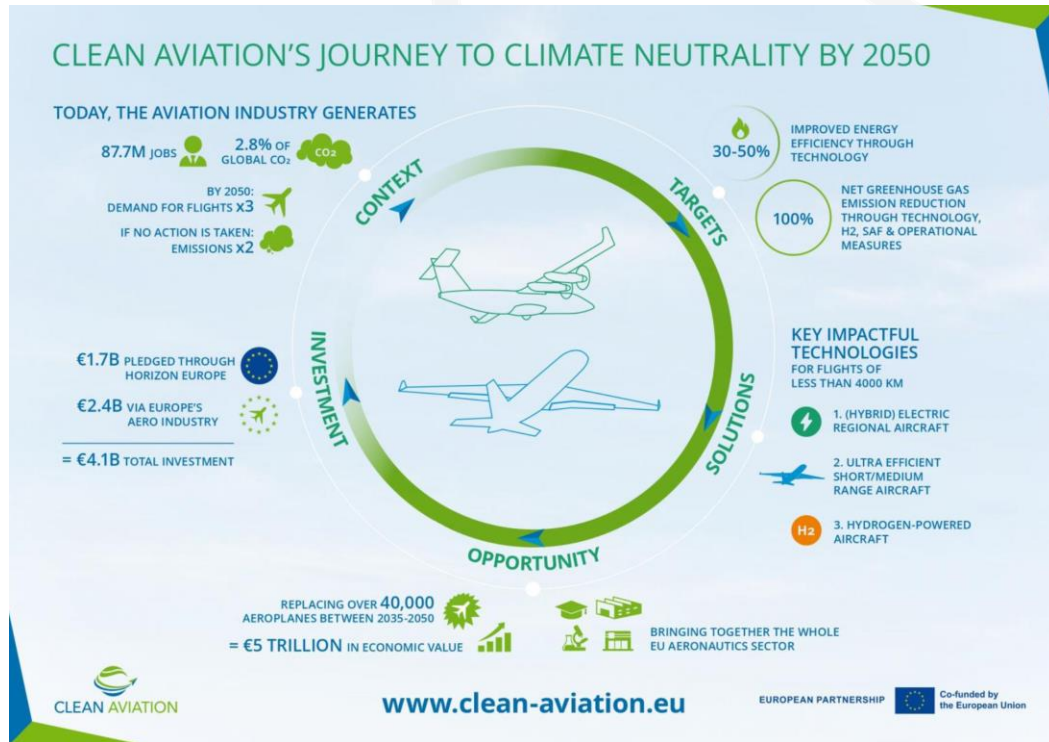
### AEROSPACE

- Focus on price – starting to be key element
- Still better than other sectors
- Aviation insurance

- Quality standards – AS9100/NADCAP/OEM
- QMS – invitation to aerospace

- Longterm projects - Flexibility
- Through the lifetime of aircraft
- Modification of parts
- Cross platform use – different aircraft

# TECHNOLOGIES & CHALLENGES



## Technologies

- AM, electric propulsions, batteries
- Robotics and AI
- Traditional materials reduction
- Autonomous systems

## Challenges for suppliers

- Price & Capacity
- Quality & Safety first
- Automatisation
- Sustainability

# TECHNOLOGIES & CHALLENGES

## **Manufacturing digitalization**

- Certification needed - QMS
- Repeatability

## **Additive Manufacturing**

- Still not recognised
- Not approved as safe and reliable

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## **Climate change**

- Sustainable aviation fuel
- Hybrid/electric propulsions

## **Cybersecurity**

- Manufacturing – again QMS
- Airlines, Airports, ATM, UTM
- Operations, compliance and SAFETY!

# HOW CAN CLUSTERS HELP?

## Internationalization

- Find partners
- Open doors to customers
- Connect to suppliers
- Technology scouting

## Networking

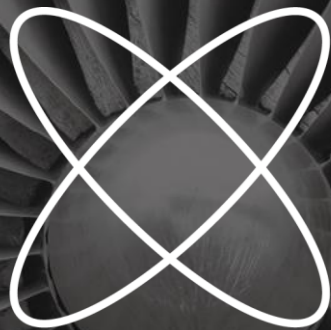
- Inside the cluster (Czech Republic)
- International via other clusters or platforms

## Skills and training

- Dedicated workshops
- Sharing best practices
- Joint trainings (funding programs)

## Certification support for aerospace & medical industry

- Národní plán obnovy – 2022-2024
- 110 mil CZK to 50+ companies
- AS9100/NADCAP/other certifications – wages, audits, metrology, training, etc.
- In preparation – will open soon



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