Overview of the Hungarian Aerospace Industry
Product development, diversification, collaboration
ILA 2010 Berlin

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HAIF

www.haif.org
1. Introducing the Hungarian Aerospace Industry
The initial development was driven by part manufacturers and small aircraft developers.
<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Description</th>
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| **GEES Veresegyház** | Budapest | - Greenfield site - 100% GE  
- Repair activity  
- 15M$ middle size investm.  
- SME/Supplier category  
- Not airport dependent  
- Established in 2000  
- 240 people  
- Engine component repair  
- FAA/JAA/AS9100 certified |
| **Lufthansa Techn. Budapest** | Budapest | - Greenfield JV site - 15% Malév  
- Overhaul activity  
- 17 M$ middle size investm.  
- Integrator category  
- Airport location  
- Established in 2001 as a JV  
- 340 people  
- Airbus 320/Boeing 737 overhaul  
- FAA/JAR-145 certified |
| **Elektro-metall Paks Ltd.** | Budapest | - Greenfield site - 100% German  
- Component manufacture  
- Small size investment <10M$  
- SME/Supplier category  
- Not airport dependent  
- Established in 2001  
- 200 people  
- Airbus wire harness manufact.  
- AS 9100 certified |
| **Hungaerotech Debrecen** | Debrecen | - Greenfield site - 100% Dutch  
- Component manufacture  
- Small investment <10M$  
- SME/Supplier category  
- Not airport dependent  
- Established in 2002  
- 40 people  
- Turbine parts manufacture  
- AS 9100/ NADCAP certified |
| **Alcoa-Köfém Nemesvámos** | Nemesvámos | - Privatizat./Acquis.-100% US  
- Component manufacture  
- Middle size investment ?M$  
- SME/Supplier category  
- Not airport dependent  
- Established in 1997/2002  
- 110 people  
- Aerospace fastener manufact.  
- AS 9100 certified |
| **Flame Spray Ltd. Gödöllő** | Gödöllő | - Greenfield site - 100% Italian  
- Thermal spray (APS, HVOF), slurry diffusion, honeycomb brazing  
- SME / Supplier category  
- Not airport dependent  
- Established in 2002  
- Employs 57 people  
- AS 9100/ NADCAP certified |

4 out of 6 foreign investments (FDI) entered to the turbine technology business
The small aircraft manufacturing sector is growing across the country…

Apollo Fox ’99 - Eger
UL certified in 6 countries

Corvus Phantom ‘08
2 seat full composite UL

BHX -03 ‘08 - Budapest
Electric powered UAV

Hydropteron ‘09 - Miskolc

Avana Larus ‘09 - Tököl
5 seat full composite turboprop.

Corvus Racer 540 ‘10
1 seat acrobatic aircraft

2 seat compos. amphibian
The Present

Design/Development 10
Component manufacturing 11
Small a/c manufacturing 5
Parachute manufacturing 1
Air Ballon manufacturing 1
Maintenance/Overhaul 80
Training 4
Consulting 2
Parts sale 1
Tools manufacturing 3
Calibration 1
Engineering 3
HR services 2
Modification 1
Marketing 2
Industrial organizations 3

In order to increase the number of component manufacturers HAIF launched the Aerospace Supplier Initiative Programme in December 2004. Mainly automotive component manufacturers are involved in the programme.

In March 2006 HAIF initiated and organized the establishment of the Hungarian Aerospace Cluster. Now it has 4 founders and 16 members.

In 2008/09 HAIF launched AS9100 Quality Assurance programs for 30+ SMEs, mainly members of HAC.

Total 131 organizations, 2300 people with a few component manufacturers
2. Introducing the Hungarian Aerospace Cluster
2.1. Creation of the Hungarian Aerospace Cluster

Organized by HAIF, founded in March 2006 by four small aircraft developer:

1. Corvus Aircraft Ltd. – UL & LSA manufacturer
2. Halley Ltd. – UL manufacturer
3. Composite One Ltd.- amphibian design & prototype developer
4. Hungarocopter Ltd. – small helicopter developer

Joined members:

1. Design & Engineering companies (7)
   Idea-Aircraft Ltd. – Amphibian design & prototype development
   eCon Engineering Ltd. – Computer Aided (CAE) solutions
   CAD -Terv Engineering Ltd. – Engineering services, Catia
   Delta -Tech Engineering Ltd. – Special tool & machine design
   Meshining Engineering Ltd. – CAE solutions
   C3D Engineering Ltd. – 3D CAD design, virtual simulations
   CFD Engineering Kft.- CAE services, virtual testing

HAC was established to provide an organizational framework for faster growth
2. Prototyping companies (2)
   Varinex Informatics Plc. – rapid prototyping
   Technoplast Ltd. – rapid prototyping

3. Part manufacturing companies (7)
   Hungaerotech Ltd. - machining
   Dendrit Ltd. - machining
   Borsodi Műhely Ltd. - machining
   Produktum Ltd. – aluminium stands
   Ostorhazi Ltd. – special coatings
   Elektro-Metall Paks Ltd. – wire harnesses
   ELTEC Hungary Ltd. – wire harnesses
   Gravitas 2000 Ltd. - machining

4. System integration and testing (1)
   Naturen Ltd.- Virtual design and testing, embedded control

5. Software development & avionics (2)
   Allied-Visions Ltd. – flight simulator software development
   Aviatronic Ltd. – avionics & embedded systems
2.2. Objectives of the Cluster

1. Speed up the development of the Hungarian Aerospace Industry
2. Diversification of the best part manufacturers to aerospace
3. Creation of a network of aerospace and related industries
4. **Development of new Hungarian designed small aerospace vehicles**
5. Organize the production of these vehicles internationally
6. Organize and develop complementary capabilities among Hungarian firms to be able to manufacture higher assemblies for large aircraft
7. Achieve synergies and economies of scale using networking in the fields of design, development, training, logistics, quality (AS 9100), IT, marketing and certification
8. **Introduction of modern management methods and principles to the SME sector – six sigma, lean manufacturing**
9. Develop new supplier relationships with other countries
10. Replace expensive foreign suppliers with low cost ones
11. Increase the Hungarian participation in EU founded aerospace projects
2.3. Main Characteristics of the Cluster

- Organized on **bottom up** principle
- Non-profit, **not a legal entity** but with **formal membership**
- Led by **3 managers** - 2 founders and HAIF chairman
- Barter-type financing
- **100 % privately owned** - 16 Hungarian SMEs and 5 foreign subsidiaries
- **100 % SMEs** - nearly 1000 employees
- **Focusing on product development**
- Good engineering background
- Equipped with modern softwares – **Catia, Solidworks, Ansys**
- Competences: **composites, machining turbine parts, space avionics**
- Young, dynamic management
- Supported by **HAIF, NORT and ITD Hungary**
- Collaboration agreement with Pannon Automotive Cluster, Aviation Valley Poland and Hanse-Aerospace

Collaboration started with local automotive, ICT and space industry
2.4. Main Partners

In January HAC joined ECARE+ the European aerospace SME organization
3. Creation of the Hungarian Aerospace Technology Platform

**Created:**
November 2007

**Founders:**
- 2 Universities (BUTE, ELTE)
- 1 Research organization (KFKI AEKI)
- 4 Companies
  - Bonn Hungary Ltd.
  - SGF Ltd.
  - BL Electronics Ltd.
  - Slot Consulting Ltd.
- Hungarian Aviation Industry Foundation

**Members:** 31

[www.haif.org/HATP.html](http://www.haif.org/HATP.html)

Objectives:

To provide organizational framework for Aerospace research in Hungary
To close the gap between the EU and Hungary in Aerospace technology
To help the best research organizations to diversify into Aerospace
To devise a national strategy for aerospace research
**To develop and test small aerospace vehicles**
To launch integrated research projects
To participate in space missions and FP7 research programmes
To establish new R&D relationships with EU countries

Rosetta incorporates several Hungarian ICT components…
4. Main focus areas of the industry in the future:

- Development and manufacture of aircraft for general aviation
- Development of Unmanned Aerial Vehicles (UAV)
- Development of systems and equipment for general aviation and UAVs
- Development of space systems
- Engineering services – design and simulation
- Development of passenger cabin systems – collaboration with Hanse Aerospace
- Manufacture of special tooling and equipment
- Testing of components and systems for aerospace applications
- Manufacture of composite parts
- Manufacture of turbine parts – collaboration with Aviation Valley Poland
- Software development and testing – embedded systems
- Establish and ramp up collaboration between local and international Clusters and Platforms – HARP, HATP, Artemis Hungary ‘08, MMP‘08, and EU Clusters

In 2009 HAC joined EACP, European Aerospace Cluster Partnership organization
5. Latest Development

In July 2010 the ELTEC R&D center launches an Aerospace Incubation House for SMEs.
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Attachments
The evolution of our industry led to the emergence of new modern vehicles.
Apollo Fox was the first ultralight aircraft manufactured in Hungary - 1999
Corvus Phantom ultralight certified in Germany, Italy in 2008
Prototype of the „Hydropteron” composite amphibian by Idea-Aircraft Ltd.
Prototype of the „Avana Larus“ composite amphibian by AVANA Industries
Prototype of the "Diora" coaxial-rotor 1 seat helicopter by Dioferr Ltd.
Prototype of the BHX-03 electric powered UAV by Bonn Hungary Electronics
Hydropteron water tests started in the summer of 2009.

Avana Larus flight testing starts – in the summer of 2010.
Hydropterons flight tests started in November 2009
Corvus Racer 540 acrobatic aircraft debuted in Canada Windsor in June 2010