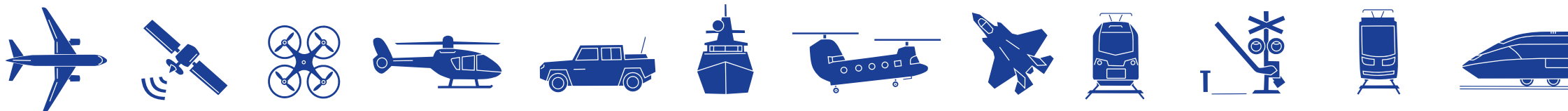


Building and sustaining (certification) competences in a Design Organisation

03 November 2021

“Van erven naar werven”

Eelco Bakker & Frank Kaiser



www.adse.eu

Content

Company introduction

ADSE

Established 1996 25+ years in operation

ENGINEERING Design & Certification CONSULTANCY Process Improvements

AIRCRAFT AUTOMOTIVE AEROSPACE INFRASTRUCTURE

Transportation systems

Aerospace Defense Mobility

75+ Highly Skilled Engineering Professionals € 8 M Turnover Worldwide Customer Base (Airbus, Boeing, Bombardier, EADS, etc.)

ADSE DOA 211481

3

ADSE Information

Building the ADSE DOA

ADSE

1996 2011

Engineers and Compliance Verification Engineers

Technical know-how

Process know-how

Organizational know-how

DOA Design Organization Approval

STC / Major changes

Minor Changes

Repairs

6

ADSE DOA

Main take aways

ADSE

- An organization is as good as its people.
- Do not take for granted inherited knowledge and experiences
- Capture essence of the competencies that were built up and how that was accomplished.
- Anticipate attrition, prepare knowledge transfer and continued training
- Create opportunities for gaining experience

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Basic, Certification and Specific Competences

ADSE

have thorough knowledge of airworthiness requirements in their fields of expertise; have a high level of integrity and sound, independent judgement in the applicable field; have experience in evaluation of compliance substantiation data; Participate in rule making

Specific Discipline Competences

Certification Competences

Basic Competences

have minimum 3 years experience in relation to airworthiness certification of aircraft; have knowledge of applicable Part-21 regulations;

have at minimum a Bachelor degree, or demonstrated equal working and thinking level; have minimum 5 years experience with aircraft design activities; have full understanding of relevant procedures within the DCE


?

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ADSE Competences

Company introduction

Established
1996



25+ years
in operation

ENGINEERING
Design & Certification


CONSULTANCY
Process improvements

EXPERTISE

IMPROVEMENTS

SOLUTIONS

INNOVATIONS





Transportation systems


Aerospace


Defense

Mobility

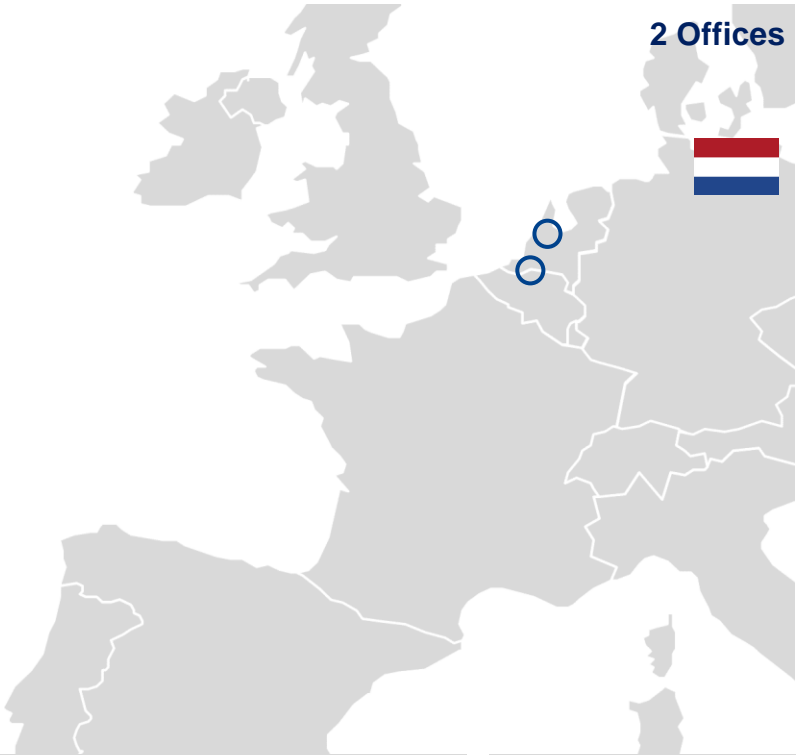
 **75+** Highly Skilled
Engineering Professionals

 **8 M** Turnover

 **Worldwide** Customer Base
(OEMs, Suppliers, Operators, MROs, Authorities)

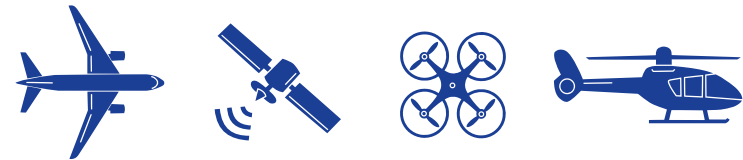
 **EASA**
DOA.21J.481

2 Offices

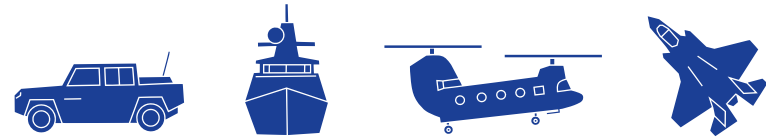


Key markets

TRANSPORTATION SYSTEMS



OEMs | Suppliers | MROs | Airlines | Airports | Authorities



Government | Armed Forces | Defence Industry

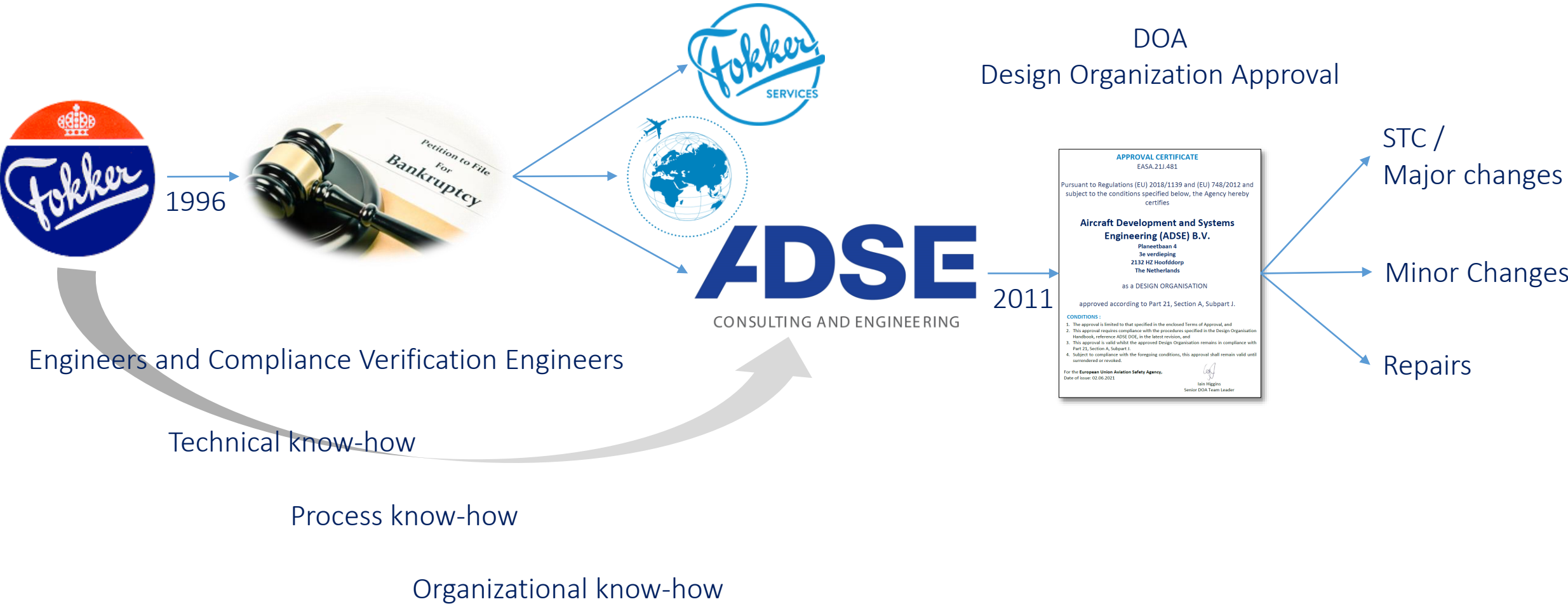


Government | Operators | Asset Managers | Manufacturers | Construction Companies

Key customers

 AEROSPACE	    
	     
 DEFENCE	          
 MOBILITY	         

Building the ADSE DOA



Place of a DOA in the aerospace industrial landscape

- A DOA is at the end of the line
- Integrator and certification responsibility
- Large Transport Aircraft
 - Dominant OEMs
 - Modification market requires
 - design and production capability
 - Financial robustness
- Supply chain requires product qualification
- Tier 1 are close to OEM, co-building certification experience
- Tier 2 and lower, limited or no exposure to certification aspects
- MRO has no design certification exposure

DOA's in the Netherlands

Organisation	DOA Scope	Scope Description	Scope Ptf
Fokker Aerostructures B.V.	Minor changes and/or minor repairs	Minor changes and minor repairs to structure and mechanical systems for aircraft and rotorcraft.	
Transavia Airlines C.V.	Minor changes and/or minor repairs	Minor changes and minor repairs to large aeroplanes related to cabin interiors, avionics, structures, electrical and hydro/mechanical systems;	
KLM Engineering & Maintenance	STC and/or repairs	Changes and repairs to large aeroplanes related to cabin interiors, galleys or other interiors equipment, avionics and installation of avionics equipment, electrical systems and related structure and environmental control systems; Repairs and minor changes to large aeroplanes related to ECS/Ice and rain, powerplant systems, structure and hydro/mechanical systems; Minor changes and minor repairs to turbine engines.	Privilege to approve the flight conditions supporting permits to fly, within technical capability defined in the scope.
Fokker Services B.V.	Type certificates	Changes and repairs to large and small aeroplanes to the categories of products (CS-23, CS-25)	Privilege to approve the flight conditions supporting permits to fly, within technical capability defined in the scope
SAMCO Aircraft Maintenance B.V.	Minor changes and/or minor repairs	Minor changes and minor repairs to aeroplanes related to metallic and composite structure, for non-critical parts, equipment & furnishing, electrical systems and avionics	
Belgraver b.v	Minor changes and/or minor repairs	Minor changes and minor repairs to aircraft related to non structural aircraft interior parts	
SAFRAN CABIN CATERING B.V.	Minor changes and/or minor repairs	Minor changes and minor repairs to large and small aeroplanes related to galley equipment and other cabin interiors equipment	
Aircraft Development and System Engineering (ADSE) B.V.	STC and/or repairs	Changes and repairs to aeroplanes and rotorcraft, related to avionics, installation of avionics equipment, structure, electrical systems, hydro-mechanical systems, environmental systems, cabin interiors, galleys or other interiors equipment (flight testing excluded)	
Fokker Techniek BV	STC and/or repairs	STC/Changes/Repairs for LA	
DutchAero Services BV	STC and/or repairs	STC to small aeroplanes and small / large rotorcraft for avionics, cabin, electrical systems and structures	

Source (8-Oct-2021) <https://www.easa.europa.eu/download/doa-adoa/List-of-Approved-DOA.xlsx>

- Scope of the ADSE DOA:
 - Small and Large Aircraft and Small and Large Helicopters
 - Unrestricted category for:
 - Avionics
 - Cabin
 - Electrical Systems
 - Environmental Control Systems
 - Hydro-Mechanical Systems
 - Structures

- Benefits of having a DOA
 - A quality mark
 - Recognition in the market
 - A learning environment
 - Aircraft modification business
 - Training business

APPROVAL CERTIFICATE

EASA.21J.481

Pursuant to Regulations (EU) 2018/1139 and (EU) 748/2012 and subject to the conditions specified below, the Agency hereby certifies

Aircraft Development and Systems Engineering (ADSE) B.V.

Planeetbaan 4
3e verdieping
2132 HZ Hoofddorp
The Netherlands

as a DESIGN ORGANISATION

approved according to Part 21, Section A, Subpart J.

CONDITIONS :

1. The approval is limited to that specified in the enclosed Terms of Approval, and
2. This approval requires compliance with the procedures specified in the Design Organisation Handbook, reference ADSE DOE, in the latest revision, and
3. This approval is valid whilst the approved Design Organisation remains in compliance with Part 21, Section A, Subpart J.
4. Subject to compliance with the foregoing conditions, this approval shall remain valid until surrendered or revoked.

For the **European Union Aviation Safety Agency**,
Date of issue: 02.06.2021



Iain Higgins
Senior DOA Team Leader

10 years of projects

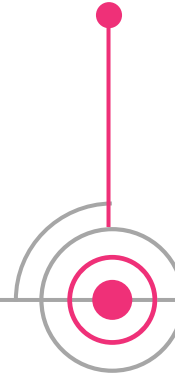
- New engineers were training on the job with the “inherited” engineers
- No need for new CVEs within the DOA as scope stayed the same
- New Part-21 requirements were developed by EASA



2011

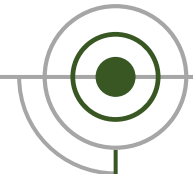


- Engineers with organizational and technical background for DOA
- No need for ADSE to think about specific trainings for CVEs
- EASA accepted our CVEs without challenging them due to high level of knowledge



2021

Covid



- Natural departure of CVEs
- New engineers in COVID period
- No certification education at e.g. TUDelft
- ...

Basic, Certification and Specific Competences

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have a high level of integrity and sound, independent judgement in the applicable field;
have experience in evaluation of compliance substantiation data;
Participate in rule making

Specific Discipline
Competences

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have minimum 3 years experience in relation to airworthiness certification of aircraft;
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have at minimum a Bachelor degree, or demonstrated equal working and thinking level;
have minimum 5 years experience with aircraft design activities;
have full understanding of relevant procedures within the DOE.



- We have learned the hard way: CVEs went on retirement without us capturing their:
 - Know-how and experience and/or
 - Initial requirements for specific CVE function
 - Continued requirements for specific CVE function
- To close the gap:
 - Started to make an inventory with each CVE regarding:
 - Regulatory requirements know-how,
 - Advisory Material know-how,
 - Example projects to be involved in, and
 - Required and requested trainings
 - Inventory of disciplines will be basis of structured personal training plan for new engineers who want to become a Compliance Verification Engineer
- To reduce the impact of the root-cause of lack of certification know-how:
 - Certification is now part of the ADSE Essentials training
 - For onboarding of new employees
 - To capture the essential CVE competencies and continuously update them
 - Call for action to incorporate certification know-how in the curriculum of e.g. Aerospace Engineering at TUDelft, InHolland and HvA
 - Started conversations with dean of TUDelft to set-up certification classes
 - Involvement in student projects for tailor-made masterclasses regarding certification (e.g. AeroDelft).

Main take aways

- An organization is as good as its people.
- Do not take for granted inherited knowledge and experiences
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- Anticipate attrition, prepare knowledge transfer and continued training
- Create opportunities for gaining experience

For **25** years, we make it work

EXPERTS

IMPROVEMENTS

SOLUTIONS

INNOVATIONS



Visit us at:
www.adse.eu

Telephone: 0031 (0) 23 554 2255
E-mail: info@adse.eu

Address: Planeetbaan 4
2132 HZ Hoofddorp
The Netherlands