Industrial 3D Printing in Aviation

Benefits and Application Examples of Additive Manufacturing for SMEs

Flight plan

- 1. Relevance of 3D Printing in Aviation
- 2. Certification Without DOA/POA
- 3. Ecosystem & Partner Structure
- 4. Work with the EASA
- 5. Project Examples & Benefits
- 6. Materials & Functional Applications
- 7. Our Customers
- 8. Core Competencies
- 9. Contact & Closing

Why is 3D printing relevant for aviation?

- Reduces production costs by up to 80% for prototypes
- Accelerates development timelines by 50%
- Ensures safety during development phases
- Production of small and large series, tools, assembly aids,

  and spare parts made from: Composites - with continuous fibers
  Metals
  Acrylic and
  Silicone
  and much more...

Is it possible – and does it make sense –

to develop and certify components without

holding a DOA or POA yourself?

! Absolutely !

Especially when it comes to additive manufacturing.

A smart move with impact:

- more knowledge

- more innovation

- less cost

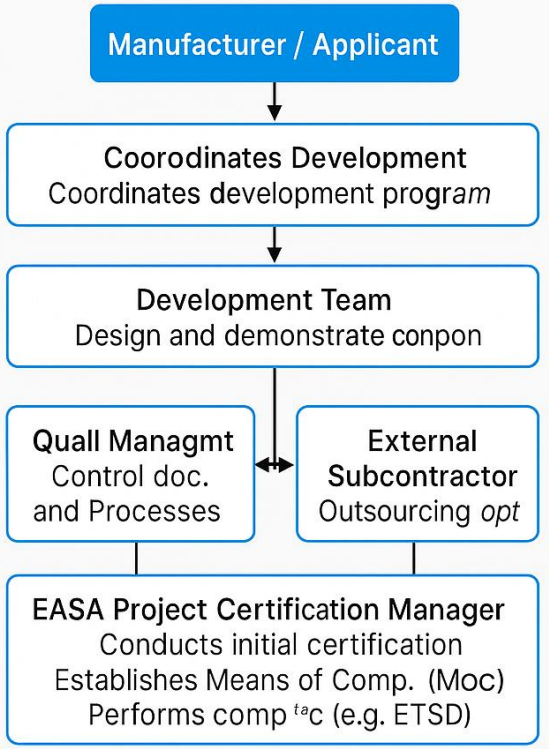
- and stronger positioning for the future

- Become a producer

Let´s see how that works.

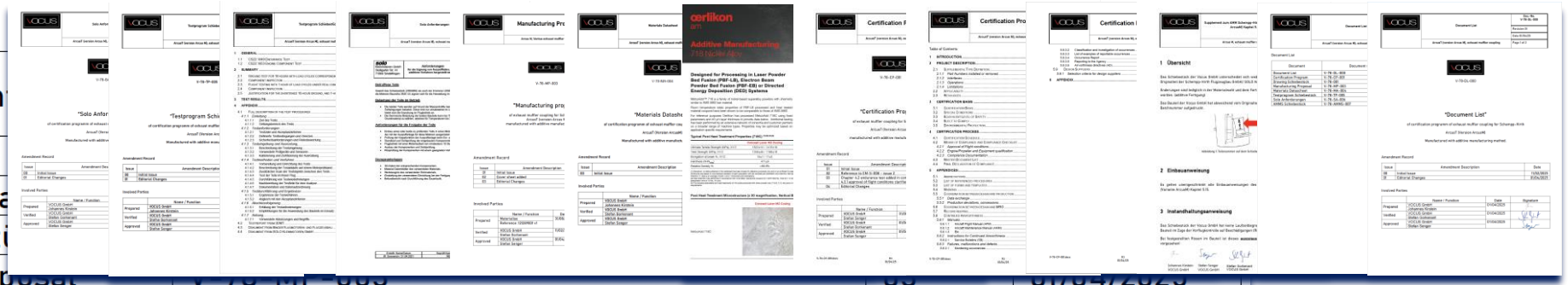
The Structure of your Tasks and your key partners

Area	Your Responsibility	Certified Partner
Design Development	Concept, design, calculations	DOA handles validation & submission
Certification	Support with documentation	DOA or direct ADOA process with EASA
Manufacturing	Optional: hand over design	POA handles production & Form 1 issue



Working with EASA

- Certification process may seem complex at first
- With proper preparation, it becomes efficient and goal-oriented
- Technical competence builds trust with EASA
- Clear communication and solid documentation are key
- Professionals are valued – collaboration becomes productive and enjoyable



Documen			
Document List			
Certification Progra			
Drawing Schiebestü			
Manufacturing Proposal			
Materials Datascheet	V-78-MA-004	00	01/04/2025
Testprogram Schiebestück	V-78-TP-005	01	01/04/2025
Solo Anforderungen	V-78-SA-006	01	01/04/2025
AMMS Schiebestück	V-78-AMMS-007	01	01/04/2025

But reaching the goal is a wonderful success.

We received our STC approval April the 5´tn 2025.

EASA
European Union Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

10086856

This Certificate/Approval is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation and in accordance with Commission Regulation (EU) No. 748/2012 to

VOCUS GMBH

AM TECHNOLOGIEZENTRUM
86159 AUGSBURG
GERMANY

and certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable Type Certification Basis and, if applicable, environmental protection requirements when operated within the conditions and limitations specified below:

Type Certificate Number: EASA.A.532
Type Certificate Holder: SCHEMPP HIRTH FLUGZEUGBAU
Type: Arcus
Model: ARCUS M

Description of Design Change:
Installation of an alternative exhaust muffler coupling.

EASA Certification Basis:
The Type and OSD Certification Bases (CB) for the original product remains applicable to this certificate/approval.
The requirements for environmental protection and the associated certified noise and/ or emissions levels of the product are unchanged and remain applicable to this certificate/approval without any impact on the noise database.

Associated Technical Documentation:
Installation of an alternative exhaust muffler coupling i.a.w. Vocus GmbH document# V-78-CP-001 at revision 4, dated April 1, 2025;
Document List# V-78-DL-000 at revision 1, dated April 1, 2025;
Aircraft Maintenance Supplement document# V-78-AMMS-007 at revision 0, dated March 31, 2025;
or later revisions of the above listed document(s) approved/accepted under the EASA system.

See Continuation Sheet(s)

For the European Union Aviation Safety Agency

Cologne, Germany, 07 April 2025

Marco CAPACCIO
Section Manager
Small Aircraft, Balloons & Airships

Task Number: 60073982
VOCUS GMBH - 310439

An Agency of the European Union

TE.CERT.00091-005 © European Union Aviation Safety Agency. All rights reserved. ISO9001 Certified. Page 1 of 2

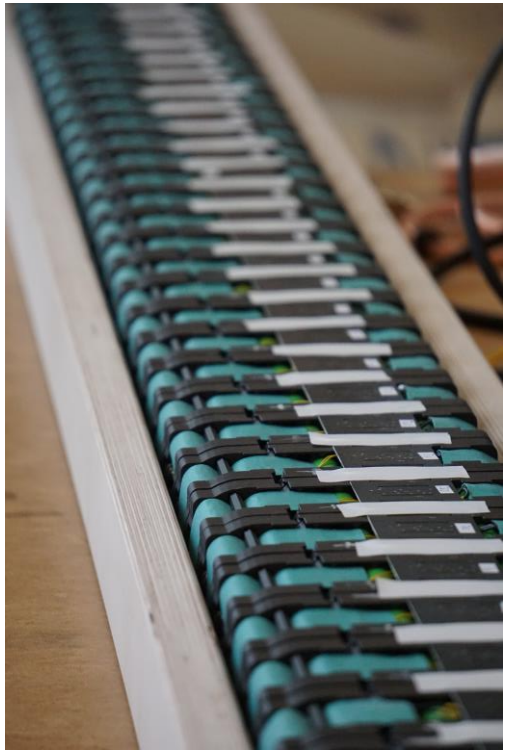
Examples / Projects / Parts

1: Battery Modules / Cell Holders A/C

AdvanTec GmbH: SafeBatt2Fly

Material: PA6 CFK FRA

- Connection module
- End module
- Cell holder
- Electronics Enclosure
- **Cost savings in development: > $ 70,000**
- **Time savings: approx. > 1.5 / 4 years**



Benefits:

- Weight reduction
- Cost efficiency for small series
- Rapid prototyping
- Design freedom
- Functional integration

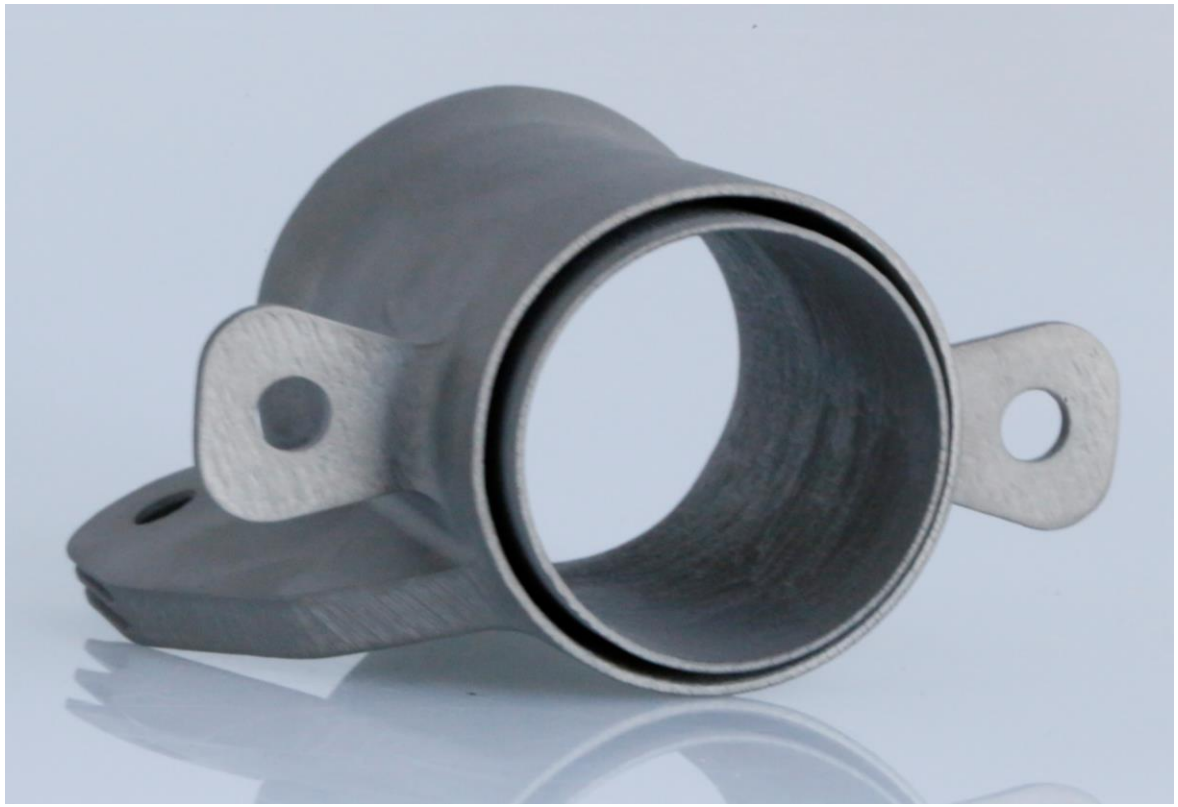
2: Exhaust System Component – A/C VOCUS GmbH Sliding Piece

Material: Inconel

10 times longer service life

EASA certification pending Q2/25

More precise, faster, and cost-effective

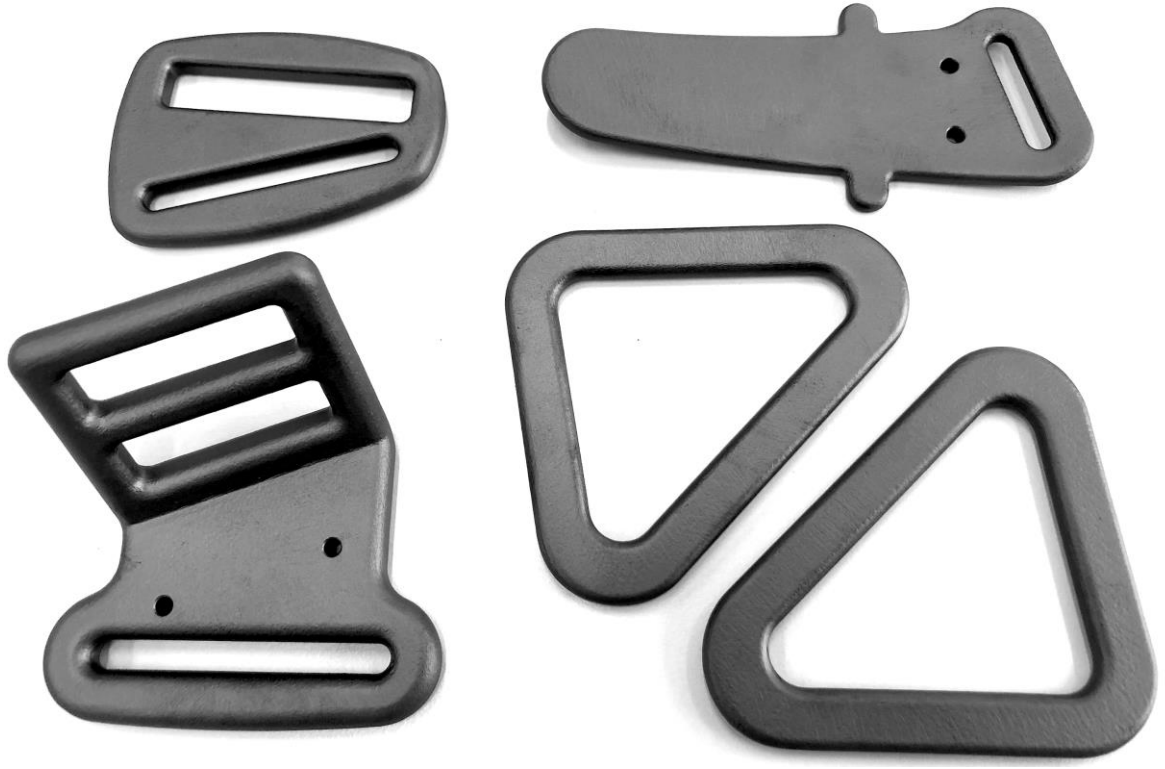


3: Seatbelt Fittings – Aircraft (A/C)

Gadringer Gurte GmbH

Material: Titanium

- Carbon Coating
- Costs equivalent to the original
- Minimum production quantity: 1
- EASA certification planned
- Smal Series possible



#3: Canopy Hinge A/C Schempp-Hirth Flugzeugbau GmbH

Material: PA6 CFRP

with continuous CFRP rovings

- Predetermined breaking point defined
- In serial production since 2016
- More precise, faster, more cost-effective

If you're interested, don't wait – take the first step.

Additive manufacturing rewards the curious and the proactive.

- Stay curious!

- Leverage the possibilities of additive manufacturing!

- and gain a competitive advantage!

Additive Manufacturing in Aviation is not a trend – it's a transformation!

- It reduces costs, accelerates development, and empowers small companies to create certified, high-performance parts without massive infrastructure.
- Through real-life examples, we've seen how SMEs can compete with industry giants – by being faster, more flexible, and smarter in production.
- Don't wait for the future – start building it.
- Use additive manufacturing to rethink how parts are designed, produced, and certified.

VOCUS

ahead in additive manufacturing

OUR Customers

rineck • Werkzeugtechnik

ALAMO ENGINEERING

BOEING

EMECTRIC TAILORED BATTERIES

AIRBUS

GARRECHT Avionik GmbH

Gadringer Gurte GmbH

WIMMER clever. composites.

DG AVIATION

NOLL

SCHEMPP-HIRTH

TAKTOMAT passion for automation

MACHmotors

LAMINAR AEROTEC

EVO Mobilität entsteht im Kopf

solo AIRCRAFT ENGINES

CLOUDDANCERS

EVOBAY

3DMT the measure of quality

Universität Augsburg Medizinische Fakultät

ARCHIMEDES

Technische Universität München

DLR

UNIVERSITÄTSKLINIKUM AUGSBURG

Our Core Competencies

- Additive manufacturing for prototypes, series, tools, and spare parts

- Development and optimization for AM processes

- Consulting, support, and part-screening for efficient AM applications

Trust in our expertise and long-standing experience to implement your projects efficiently and cost-effectively!

VOCUS

ahead in additive manufacturing

Thank you very much for your attention and your interest!

Use our expertise for your company or project.

We look forward to your questions –

contact us today to learn more about what we can do for you.

Hall A1 booth 201

www.VOCUS3.de

scan for contact