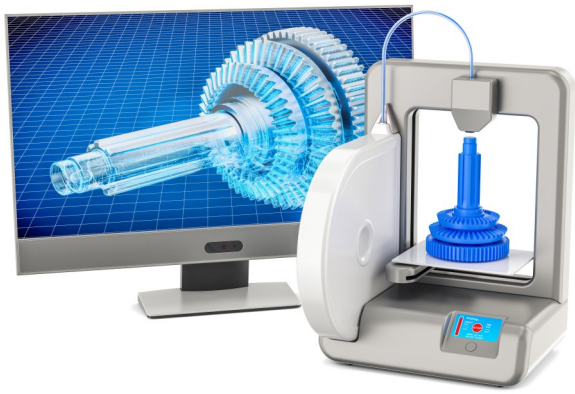
German Association
for Defence Technology

Centre for Studies and Conferences

European Military Additive Manufacturing Symposium

12th and 13th October 2021 | Maritim Hotel Bonn | Germany



Programme

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Terms and Conditions

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as of October 4th, 2021

Supported by: EUROPEAN DEFENCE AGENCY

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About the Conference

Additive manufacturing (AM) or three-dimensional (3D) printing has introduced a novel production method in design, manufacturing, and distribution to end-users.

This technology has provided great freedom in design to create complex components, highly customisable products, and efficient waste minimisation. AM has been introduced in industry already for some time and it is still not yet at the end of its development and technically possibilities.

The German Association for Defence Technology - Centre for Studies and Conferences will organise the European Military Additive Manufacturing (AM) Symposium on 12 and 13 October 2021 in Bonn, Germany to discuss the military perspective of AM. This symposium is supported by the European Defence Agency (EDA).

On a battleship or in the field, what potential for our troops if containers with spare parts and the corresponding logistic chain could be immediately on hand. Parts and their line of communication could be increasingly re-placed by the right printer, the respective raw material and construction.

This may sound easy but unfortunately it is not. While the technical potential of AM rises continuously, logistical and other non-technological limitations (i.e. certification and liability) remain fundamental.

It is the intention of this symposium to address all the advantages and limitations from the perspective of industry, research and armed forces. It is setup to foster the mutual understanding of:

- what is already possible
- what is expected to come in the future
- where are the limits of the diverse stakeholders and what needs to be done to raise the treasure built in Additive Manufacturing … **Join us!**

About Additive Manufacturing

For increased power and efficiency:
"For the first time, the pistons for the high-performance engine of the 911 flagship model, the GT2 RS, are now being produced with a 3D printer."

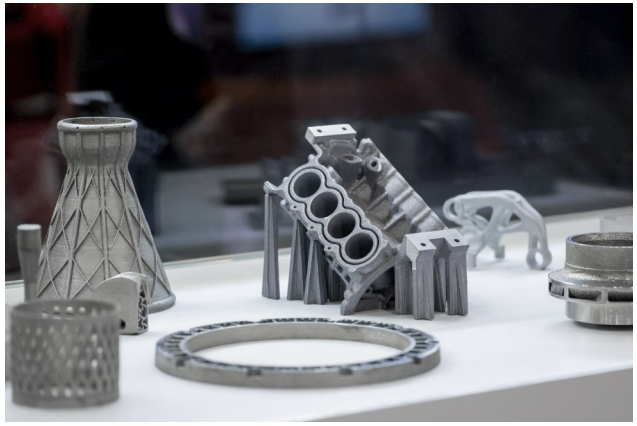
newsroom.porsche.com/en/2020/technology/porsche-cooperation-mahle-trumpf-pistons-3d-printer-power-efficiency-911-gt2-rs-21462.html posted on 07/13/2020

So, high performance structures exposed to great stress already found their way from prototyping into the production line! Many other examples can be found: aviation, medical equipment and even building houses with concrete - the possibilities are limitless.

The advantages in production and manufacturing are obvious and reach from conventionally 'un-constructible' structures to cost savings and advanced mechanical characteristics.

From a military perspective, another point could be even more interesting: the logistical footprint is highly driven by spare parts.

This symposium aims to achieve higher visibility on certain levels and bring European stakeholders from military, industry and research together.



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Programme on October 12, 2021

08:00 Conference Counter Opens | Check-In
Welcome Coffee served

09:00 **Opening of the Conference**
Major General (ret.) Wolfgang Döring, Chairman and Managing Director, German Association for Defence Technology (DWT)

09:05 **Key Note EDA**
Olli Ruutu, Deputy Chief Executive, European Defence Agency

09:30 **Key Note "a military perspective"**
Flotilla Admiral Ulrich Reineke, Naval Command, German Navy

09:55 **Key Note "an Industrial point of view"**
Dr. Hans Bartosch, Senior Vice President Design and Integration Managing Director Airbus Helicopters Deutschland GmbH

10:20 Coffee Break | Exhibition

Military Requirements vs. Technical Capabilities

Hosted by: Felix Zimmer, Bundeswehr Research Institute for Materials, Fuels and Lubricants

11:00 **AM for the German Armed Forces**
Felix Zimmer, Bundeswehr Research Institute for Materials, Fuels and Lubricants

11:10 **Use cases and the future of AM in the military market**
Michael Eichmann, Stratasys

11:20 **Bionic Design as an Enable for 3D-Printing in Military Applications**
Tim Wischeropp, Fraunhofer Research Institution for Additive Manufacturing Technologies IAPT

11:30 **Additive Manufacturing in the defense MRO industry – challenges and solutions?**
Augustin Niavas, GE Additive Germany

11:40 **From Prototyping to Qualified Serial Production in Additive Manufacturing**
Anja Rupprecht, Diehl Defence

11:50 Panel Discussion with the speakers of the session

12:20 Lunch-Break | Exhibition

Best Practice

Hosted by: *Martin Huber*, Project Officer Logistics, EDA

13:45 **Military requirements to get use of AM solutions and the way ahead to become a military capability**
Martin Huber, Project Officer Logistics, EDA

13:55 **Enabling technologies for providing OEM-verified spare parts in the field**
Christian Duun Norberg , Fieldmade AS

14:05 **AM-Process to optimize the availability of supply critical spare parts**
Lieutenant Colonel Peter Klein, BAAINBw T1.6

14:15 **EDA-AMALIA Project. Additive Maufacturing of Metallic Auxetic Structures and materials for Lightweight Armour**
Stefano Lionetti, Rina Consulting – Centro Sviluppo Materiali SpA

14:25 **EDA - AMTEM Project. Additive Manufacturing Techniques for Energetic Materials: New Opportunities for Defense Applications**
Dr. Barbara Baschung , French-German Research Institute of Saint-Louis

14:35 Panel Discussion with the speakers of the session

15:05 Introduction into the format of speaker corners

15:10 **Presentation of "Speaker-Corners" (1st bench)**

15:30 Coffee-Break | Exhibition

16:10 **Speaker Corners A1 - A14**
Parallel Speaker-Corners (1st bench of speakers / 4 rounds 15min / each)

17:30 Beer Call in the Exhibition

18:00 Walking Dinner Buffet | Exhibition

21:00 End of the first Day

Speaker Corners - Day 1

Corner A1: **3D Printing in the Field: Three years of Experience made in Afghanistan**
Captain Maximilian Krönert, Bundeswehr Research Institute for Materials, Fuels and Lubricants

Corner A2 **Printing Spare Parts at Remote Locations: Fulfilling the Promise of Additive Manufacturing**
Dr.ir. Rob Basten, Eindhoven University of Technology

Corner A3: **Study on the Energy Absorptoion Properties of the Additively Manufactures Aluminium Structures Subjected to a Blast**
Magda Stanczak, French-German Research Institute of Saint-Louis

Corner A4: **Additive Manufacturing Techniques for Energetic Materials: Application on Gun Propellants**
Maxime Chiroli, French-German Research Institute of Saint-Louis

Corner A5: **Challenges in quality management of AM spare parts**
Patrick Lurtz, Bundeswehr University Munich

Corner A6: **Laser Ultrasound Structuroscopy of Lattice Structures in Cu-Inconel 718 made by selective Laser Melting**
Antonio Caraviello, Ph.D., University of Defence, Faculty of Military Technology, Czech Republic

Corner A7: **Laser Ultrasound Structuroscopy of Metal Products made by Additive Manufacturing**
Alexander Kravcov, University of Defence, Faculty of Military Technology, Czech Republic

Corner A8: **Additive manufacturing for warhead applications**
Dr. Matthias Bleckmann, Bundeswehr Research Institute for Materials, Fuels and Lubricants; ***Markus Bähr,*** Diehl Defence

Corner A9: **Metal Additive Manufacturing: Application Concepts for Effectors and Protection**
Aron Pfaff, Fraunhofer-Institut für Kurzzeitdynamik, Ernst-Mach-Institut, EMI

Corner A10: **Recent progress in the development of additively manufactured energetic materials**
Daniel Mitró, Fraunhofer Institute for Chemical Technology ICT

Corner A11: **PowderGenetics® - a holistic approach for powder characterization to maintain constant component quality in additive manufacturing**
Dr. Christian Soder, IABG

Corner A12: **Basic research on 3D Metal Print Technology (3DMP®) for protection applications**
Dr.-Ing. Norman Herzig, Nordmetall

Corner A13: **World first metal-AM use in the field: Lessons learned after three successful int. army exercises with cold spray technology**
Stefan Ritt, SPEE3D

Corner A14: **Certified materials and applications with FDM & PolyJet**
Dominik Müller, Stratasys

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Programme on October 13, 2021

08:00 Conference Counter opens
Welcome Coffee served

Selected Spotlights:

09:00 **How AM found its way to the top of considerable manufacturing processes**
Matthias Müller, TRUMPF Laser- und Systemtechnik

09:20 **A virtual warehouse of parts pre-prepared for production**
Afonso Nogueira, Hypermetal

09:40 **Quality Assurance – a perspective with aviation-standards**
Dr. Jürgen Kraus, MTU Aero Engines

10:00 **Presentation of "Speaker-Corners" (2nd bench)**

10:30 Coffee-Break | Exhibition

11:15 **Speaker Corners B1 - B13**
Parallel Speaker-Corners (2nd bench of speakers / 4 rounds 15min / each)

12:30 Lunch Break | Exhibition

Circular Economy

Hosted by: ***Pieter Taal***, Head of Industry Strategy and EU Policies Unit, EDA

13:45 **The IF CEED initiative: boosting circular economy in European defence**
Pieter Taal, Head of Industry Strategy and EU Policies Unit, EDA

13:55 **Best practices, experiences and challenges with AM and circularity by the Dutch Army**
Tim Julsing, Royal Dutch Army, Ministry of Defense

14:05 **tbd**
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14:15 **Utilisation of existing previously unused resources to increase the self-sufficiency of ships**
Captain Lieutenant Sascha Hartig, Bundeswehr University Hamburg

14:25 Panel Discussion with the speakers of the session

14:55 Resume / Farewell

15:15 End of Conference

Speaker Corners - Day 2

Corner B1: **Certification needs for parts made with the AM method and the PNA cooperation potential**
Lt. PhD, Eng. Radosław Kicinski, Faculty of Mechanical and Electrical Engineering, Polish Naval Academy

Corner B2: **Challenges of design and modelling of SLM parts**
Grzegorz Moneta, Ph.D. Eng., Łukasiewicz Research Network – Institute of Aviation

Corner B3: **Advances in additive manufacturing of explosives**
Lukasz Wieja, Military Institute of Armament Technology, Department of Explosives Research

Corner B4: **Metal Fused Filament Fabrication (M-FFF) of 17-4PH and 316L for defence applications**
Timo Osinga , Royal Netherlands Aerospace Centre (NLR)

Corner B5: **The effect of additive manufacturing on the military health and medical technology supply chain: A comparative simulation of additive and traditional supply sources**
Oliver Rose und ***Andreas Glas*** , Bundeswehr University Munich

Corner B6: **Intelligent Inspection of Products of Additive Manufacturing for Navy Supply**
University of Defence, Faculty of Military Technology, Czech Republic (Speaker to be determined)

Corner B7: **Intelligent Inspection of Ammunition made with Additive Manufacturing**
Alexadner Kravcov, Ph.D., University of Defence, Faculty of Military Technology, Czech Republic

Corner B8: **Disruption of supply chains through mobile additive manufacturing: use of containers as repair and spare parts printers**
Markus Heilemann, Fraunhofer-Einrichtung für Additive Produktionstechnologien IAPT

Corner B9: **Representative structure elements for a fatigue approach of additively manufactured structures**
Dr.-Ing. Rainer Wagener, Fraunhofer LBF

Corner B10: **Opportunities and challenges of Additive Manufacturing in the maritime defence industry**
Corinna Bischof und ***Dr. Jannis Kranz***, thyssenkrupp Marine Systems

Corner B11: **Application potential of wire arc additive manufacturing technology in the field of weaponry**
Dr.-Ing. Norman Herzig, Nordmetall

Corner B 12: **AM of Metallic Auxetic Structures and materials for Lightweight Armour**
Stefano Lionetti, Rina Consulting – Centro Sviluppo Materiali SpA

Corner B13: **Selective Laser Melting (SLM) of M50NiL – Enabling increased power density**
Andreas Rottmann, Schaeffler Aerospace Germany

Corner B14: **Ambitious into the future of additive manufacturing: Where the powder bed ends, the powder nozzle begins**
Christoph Machowetz, toolcraft AG

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Visitor Tickets | Accommodation

=> Visitor Registration <=

The conference is open for

A) Public Services (Armed Forces, Civil Services, Parliaments, Ministries, Embassies),
B) Research (Universities, Research Institutes) and
C) Industry

from EU / NATO member states.

Rates:

	Attendance both days	**Lunch**	**Walking Dinner (day 1)**
Category A) Public Services	85,00 €	+ 12,61 € each	+ 12,61
Category B) Research	260,00 €	included	included
Category C) Industries	1190,00 €	included	included

Prices do not include German taxes (19% VAT) or accommodation.
Special rates are available for Exhibitors, Speakers, participation on one day only, "Early-Birds" from Categories B and C.
For details visit www.European-Military-AM-Symposium.eu

Please book your accommodation directly at the conference hotel: +49 228 81080 (booking code: "DWT")

Exhibition Options

=> Exhibitor Registration <=

Option A (Exhibition Space) | 290,00 € / m²

- Stand in the Size and Position of your Choice
- 1 Ticket per 6 m² booked Space
- 20% Discount for additional "full Tickets"
- 70% Discount for "exhibition only Tickets"
- Security Charge
- Inserts for the Visitor Information
- Electricity (up to two 3-socket Connectors)

Option B (System Booth) | 360,00 € / m²

- Option A included
- Octanorm System Stand
- Carpet Expo Rips Grey
- Booth Cleaning at Night

Option C (System Booth, Illumination, Furniture) | 410,00 € / m²

- Option B included
- Illumination of the Booth
- Front-Banner with your Logo 200 x 50 cm
- Furniture as required
- Sideboard, Counter, Brochure Stand
- Lockable Storage Area (if needed)
- Choose the Colour of your Carpet

Option D (Premium Booth) | 540,00 € / m²

- Option A included
- Premium-Booth Building, i.e. with:
  - Wood-Construction
  - Printed Stretchframe-System
- Presentation Technology (TV, Beamer)
- Furniture, Illumination
- Graphics at the Booth / Counter / ...
- Booth Cleaning at Night
- Laminate / Parquet / Carpet

This conference is restricted to visitors from EU member states and NATO countries .

Please register online:
www.European-Military-AM-Symposium.eu

For advice please contact:

Participants:	+49-228-41098 - 0
Exhibitioners:	+49-228-41098 - 12
Fax:	+49-228-41098 - 19
Mail:	info@dwt-sgw.de

Notes:
With your registration you agree to electronic data processing of your personal data, the distribution of a list of attendees to the conference visitors, the publication of photos/videos taken at the conference. All Prices subject to VAT.

Participation might be rejected on individual basis.

Liability:
In case of cancellation of the event, registered participants and exhibitors will be notified.
The liability of SGW is limited to the participation and /or exhibition fees.

This Conference is organised by:
German Association for Defence Technology
Centre for Studies and Conferences Ltd.,
Hochstadenring 50, D-53119 Bonn,
www.dwt-sgw.de
Managing Director: Colonel (ret.) Bernd Kögel,
Tel.: +49-228-41098-0, info@dwt-sgw.de;
Bank: Sparkasse KölnBonn,
IBAN:DE36 3705 0198 0053 0033 80, BIC: COLSDE33XXX
VAT Nr.: DE 189 475 986,
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