



**AACHEN CENTER
FOR ADDITIVE
MANUFACTURING**



Navigating AM Complexity

Your Partner for Additive Manufacturing

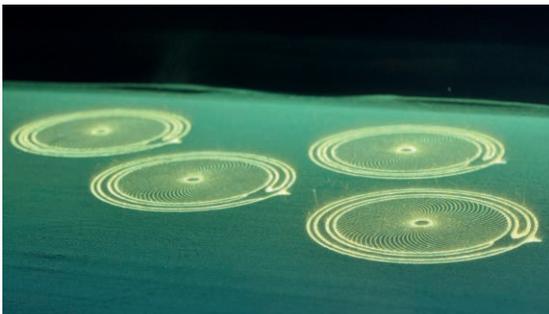
About us

The ACAM Aachen Center for Additive Manufacturing provides access to innovative know-how, consultancy and training in the area of industrial 3D printing. In close cooperation with our industry members and R&D partners we accelerate the industrialization and widespread adoption of this disruptive technology within Europe's most vivid engineering ecosystem: The RWTH Aachen Campus.



ACAM connects industry and research

Industry members of ACAM carry out consortial, pre-competitive research and define relevant topics in a continuously growing community. Regularly held events allow for information exchange, creation of peer groups and discussion of future collaborations between industry and R&D partners.



Direct access to unique AM resources

Within ACAM, industry partners gain access to a unique AM material, machine and software portfolio, available at our R&D partner's facilities. More than 100 researchers, 25 years of experience and 50+ metal and polymer systems enable tailored, independent solutions along the entire AM process chain.



Tailored AM consulting services and training

While complexity for free is desirable on component level, it has to be navigated on all company levels from strategy down to operations when implementing Additive Manufacturing. ACAM's professional consulting and education approach, the outstanding AM know-how, gained in countless industrial and publicly funded projects, is made available for companies seeking for guidance and support on their AM journey.

ACAM was established in 2016 to facilitate our industry member's participation in AM-related R&D carried out on the RWTH Aachen Campus. By combining the expertise of over 100 researchers from 12 R&D partners and more than 35 industry members, ACAM understands and reinvents Additive Manufacturing on a global scale.



Research Partners at the



More than **100 researchers** dedicated to AM
200+ years of person-years in R&D experience

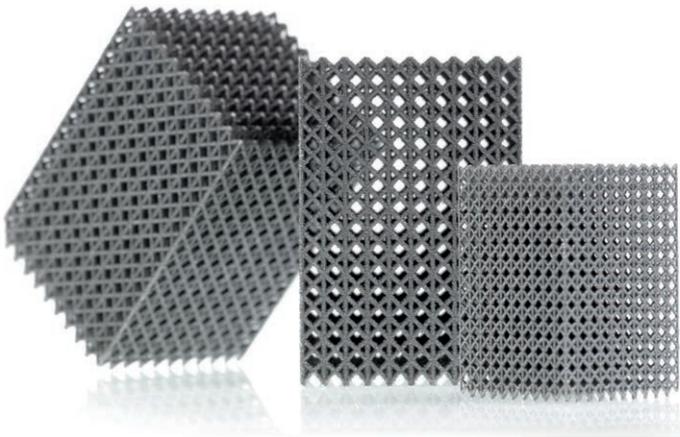


3,000 m² AM lab space
Design, post-processing and testing facilities



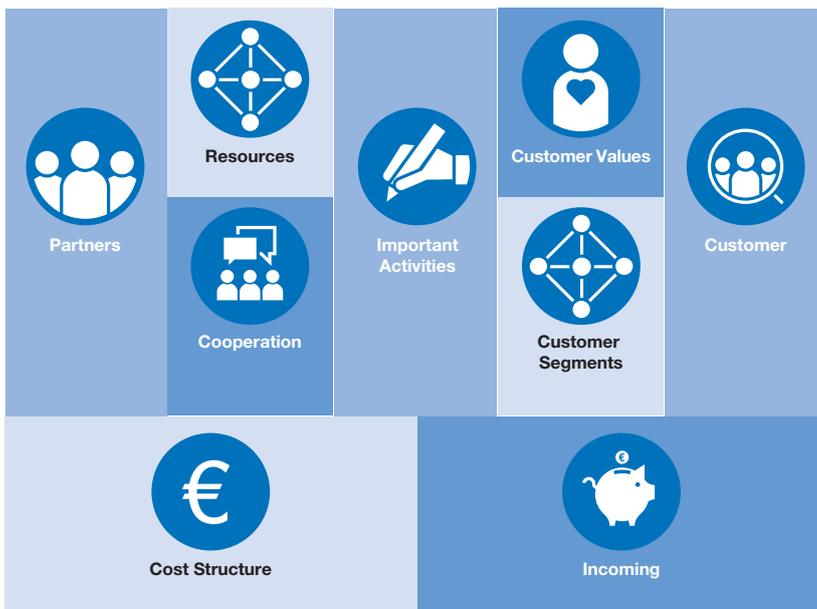
25 systems for metal AM, 15 for polymers
L-PBF, DED, SLS, SLA, EBM, FDM

Dimensions of Additive Manufacturing at ACAM – A holistic approach



Design

Adding value by means of AM starts in the early phases of product design. Lattice structures, functional integration, internal structures and topology optimization are just a few manifestations of Design for Additive Manufacturing. To exploit the full potential of those approaches, engineers are required to substantially challenge the way they ideate and design components. As part of our AM sandbox we provide access to all relevant software suites and guide our partners through the AM data chain. Furthermore, ACAM offers support in (re-)designing metal and polymer parts for a large share of relevant AM processes.

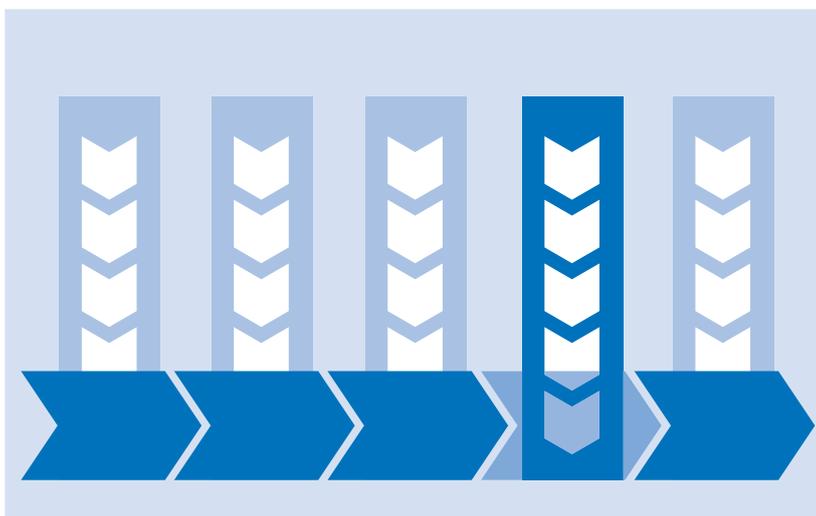


Business Innovation

A successful implementation does not solely rely on technological aspects. Industrial end-users require robust methods to calculate AM product cost, optimize overall equipment effectiveness of their machinery and leverage know-how of their potential suppliers. This is where ACAM's unique portfolio of consulting services helps to build a foundation for decision-making at all company-levels, from strategy to operations.

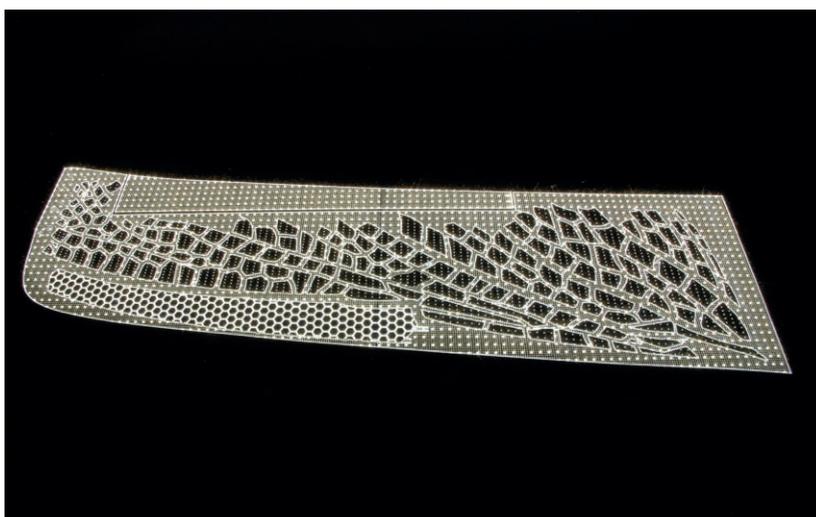
Process Chains

The connection of all elements along the entire horizontal and vertical AM process chain is where ACAM's extensive partner network unfolds its full potential. Within this framework we identify customer- and part-specific process routes, ensuring maximum leverage of AM technology.



AM Technologies and Materials

AM processes are diverse and imply numerous unforeseen challenges when being implemented in a production environment. As all major metal and polymer AM processes are available within the R&D partner network, we are proud to offer independent insights and benchmarks to maximize AM productivity for our industry partners.



Navigating AM Complexity

With a holistic approach along all relevant dimensions of AM, we help our customers navigate AM complexity by means of seminars, guided tours, tailored consulting services as well as engineering and production.



Discover3Dprinting

The seminar series Discover3DPrinting is the easiest way to gain a comprehensive overview of the possibilities of AM. Within the framework of various trade-shows, the Discover3Dprinting seminar series aims to provide an introduction to all relevant AM technologies, software tools, and materials. Established together with FormNext in 2017, these introductory lectures reached over 500 participants and are nowadays available on trade-shows like FormNext, IAA, PCIM, ACHEMA, Automechanica, and more.



3D Printing Guided Tours

Our guided tours feature insights into Europe's most vivid AM environment – RWTH Aachen Campus. With an installed base of more than 50 industrial systems along the entire process chain we showcase all process steps from design to post-machining of AM components.

Engineering and Prototyping

While AM enables component designs that may not be tapped by means of conventional manufacturing methods, a few technology-specific restrictions exist. In order to exploit the full potential of 'complexity for free', designs have to be modified in a way that fits the respective AM technology's restrictions. ACAM's unique software and machine portfolio, combined with the expertise gathered in countless industry projects, enables tailored design solutions and fully functional prototypes boosting your company's part portfolio.

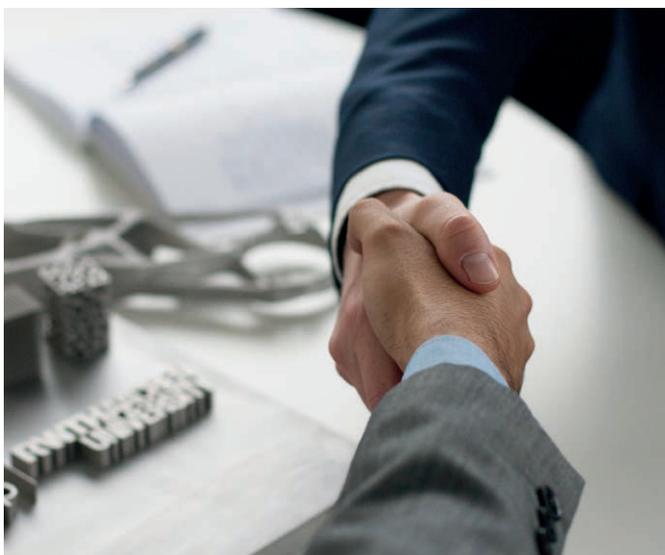


Project References

-  Material Screening
-  Design and Prototyping of Turbomachinery Components
-  Topology Optimisation for Aerospace Components
-  Functional and Interior Automotive Parts

Consulting Services

Successful implementation of Additive Manufacturing is not possible without the knowledge of the market, competitors and business opportunities. ACAM offers a vast range of consultancy services starting from benchmarks to shop floor management up to factory planning and supplier evaluations. Our broad network and expertise allow independent and useful insights to leverage your company's AM potential – tailored to your needs.



Project References

-  Technical Due Diligence
-  Competitive Landscape Analysis
-  AM Software Evaluation
-  Market Entry Strategy
-  Factory Layout Planning

Consortial R&D

Powered by the know-how and resources of 12 R&D partners, ACAM provides unbiased, independent consortial R&D Projects to the industry member community. All elements of the horizontal and vertical AM process chains are covered within five tracks: materials, quality, productivity, digital and business opportunities.



Industry-driven R&D projects

The ACAM industry members jointly define R&D projects on an annual basis. Furthermore, relevant topics are collected during brainstorming sessions at the annual meetings. By leveraging the unique resources of the RWTH Aachen Campus, the defined projects are then conducted by our R&D partners. Comprehensive project findings are made available for the respective consortial partners, while all industry members receive an executive summary.

Voucher System

Each ACAM industry member receives a certain amount of vouchers worth 2,000 € as part of their membership. Those vouchers are then assigned to desired R&D projects. During the annual meeting, our industry members have the opportunity to evaluate and discuss the project ideas with the designated R&D partner's project leaders.



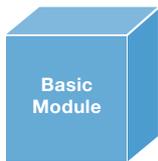
Annual Reports and Meetings

As a member you take part in the project process from the kick-off meeting until the presentation of results. On this path, there are multiple occasions to have insights on the progress and possibilities to share your thoughts with the project leaders. In the end, you'll receive the results of your projects, as well as our annual comprehensive report on all ACAM activities.

ACAM Professional Education Program

The ACAM professional education program leverages 25 years of R&D know-how in the area of Additive Manufacturing in Aachen. We qualify employees on all levels from CxOs, via designer to machine operators. In the seminars, you will experience the unique features of AM technologies, materials, and processes, the challenges while implementing AM as well as economic perspectives on one of the most dynamic manufacturing markets. The seminars are available at your premises and in Aachen.

1,5 h



Introduction to AM

Basic

Metal AM (PBF)	Metal AM (DED)	Polymer AM (SLA, SLS)	Polymer AM (FDM, Jetting)	AM Software	Health & Safety	Design for AM
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3,5 h



Detailed AM insights

Advance

Metal Materials for AM	Market, Costs and Innovation	Post-processing for AM	PBF Process, Parameters & Hardware	Part Identification	Automation & Factory Planning	DED Process, Parameters & Hardware
Plastic Materials for AM	Design for AM	Metrology and Quality Assurance				

1,5 h



Real-world scenarios and hands-on training

Experience

Lab Tour PBF	Lab Tour DED	Lab Tour FDM	Lab Tour Jetting	Lab Tour Post Processing	Exercise Design	Exercise DED Software
Use Case Aviation	Use Case Automotive	Use Case Turbo-machinery	Use Case Medical	Use Case Tooling	Exercise PBF Software	

Knowledge Area AM

In close cooperation, the ACAM Aachen Center for Additive Manufacturing and KEX AG are leveraging the unique experience in the field of Additive Manufacturing on a broad online knowledge base and tool suite.

Are you facing similar challenges in the highly dynamic and innovative field of Additive Manufacturing?

- Evaluating the potential utilization of 3D-printing processes related to your product portfolio
- Staying up to date regarding relevant processes, materials and software in the field of Additive Manufacturing
- Assessing the maturity of state-of-the-art / disruptive process technologies along the entire AM value chain
- Scouting related patents

Our Solution: Knowledge Area AM

- Utilize our huge application finder landscape with hundreds of pre-evaluated parts and products
- Rely on a frequently updated, near-time technology monitoring
- Unique digital process chain tool, based on a comprehensive pool of material, technology and expert profiles
- Patent analyzer toolbox

powered by



Features

Application Finder



- Global overview of components in all markets
- Filter for AM part specific industry and material
- Detailed AM part profile containing references, TRL, material and entity
- Monthly updates with up to 30 new AM parts

Material & Technology Landscape



- All relevant AM-processes based on latest research results and industrial experience
- Identify suitable processes, materials and pre/post-processing steps for your production
- Stay informed about new processes and materials

Patent Analyzer



- Keep an overview of global and European patent landscape regarding AM
- Track your competition by screening their latest patents on a weekly basis*

Near-Time Technology Monitoring



- Monitor the TRL of hundreds of relevant materials, procedures and AM software solutions
- Setup a personal alert for your company and receive feedback if relevant things change**

Our Offer



Membership

- Joining ACAM is the best way to stay up to date regarding the most recent developments in Additive Manufacturing
- ACAM provides four types of memberships tailored to the respective background of your company
- Basic and business memberships come with an annual voucher budget to participate in Consortial R&D Projects



Community

- Networking, idea exchange and R&D updates during ACAM semi-annual and additional peer group meetings
- Interaction and exchange of information with other industry and R&D Partners, AM technology monitoring, event list in the online area
- Access to Knowledge Area AM*



Research & Development

- The ACAM industrial members jointly define research topics on an annual basis. Leveraging the unique resources on the RWTH Aachen Campus, the defined projects are then conducted by our R&D partners
- The project findings are accessible for the respective consortial partners. All ACAM industrial members receive a comprehensive executive summary for each project



Services

- Bi- or multilateral projects according to our customer's specific needs
- ACAM recruits the project team from a large pool of experienced, motivated AM engineers and consultants
- To ensure best-in-class results ACAM acts as project leader and general contractor
- Services also available without membership



Further Education

- Since the industrialization of Additive Manufacturing affects all organization levels, ACAM has developed a comprehensive, modular training approach
- In close collaboration with its R&D partners, ACAM is continuously updating the seminar's contents to provide an up-to-date overview and perspective on all relevant elements along the AM process chain
- Further Education also available without membership

Our Member Network

Our industry member network offers the unique opportunity to stay up to date with the most recent developments in AM and allows for sharing ideas as well as creating new business opportunities.



AACHEN CENTER FOR ADDITIVE MANUFACTURING

Join the ACAM Community!

Community | R&D | Services | Education

Business Members

Basic Members

Cooperation Members



Networking Events

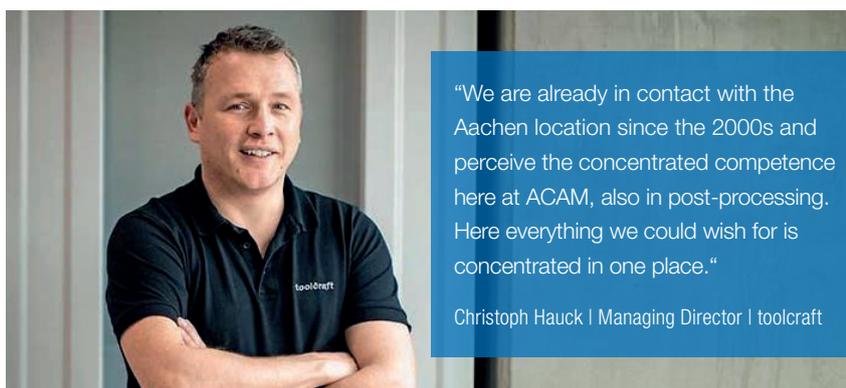


Approval of new consortial projects



“Through collaboration with leading clusters like ACAM, we will be able to more quickly uncover the financial benefits of AM that will lead to a step change in adoption.”

Pierre Forêt | Senior Expert AM
Linde Group



“We are already in contact with the Aachen location since the 2000s and perceive the concentrated competence here at ACAM, also in post-processing. Here everything we could wish for is concentrated in one place.”

Christoph Hauck | Managing Director | toolcraft

toolcraft

DENSO

“The difference in Aachen is the centralization of Additive Manufacturing Technologies, including the whole process chain. That is the primary reason for us to join ACAM.”

Dr. Masashi Totokawa | Senior Manager | Denso

“The cooperation within ACAM’s network is excellent, especially the consortial and bilateral projects. By doing the first steps in a consortium, we’ve reduced our risks and our investments in total.”

Dr. Andrew Willet | Manager Advanced Production Processes and Measuring | Toyota

TOYOTA

Membership Types

BASIC MEMBERSHIP 20.000 € p.a.

As a basic member you have access to the ACAM community. You will receive the annual report and will be invited to all community events. In addition, you have an annual voucher budget worth 6.000 € to participate in Consortial R&D Projects.

BUSINESS MEMBERSHIP 40.000 € p.a.

Our business members possess an annual voucher budget worth 22.000 €. Despite being able to allocate them to bilateral projects and training, they constitute the ACAM steering committee, defining the roadmap and pre-selecting the consortial R&D projects. Furthermore, as a business member you get access to the Knowledge Area AM and receive an additional discount for training and bilateral projects.

COMMUNITY MEMBERSHIP 16.000 € p.a.

As a community member, you receive access to the Knowledge Area AM, a broad and unique knowledge database. Furthermore, you become an equal partner of the ACAM community, participating in our annual meetings and receiving the annual report, holding executive summaries for all consortial R&D projects.

COOPERATION MEMBERSHIP individual fee

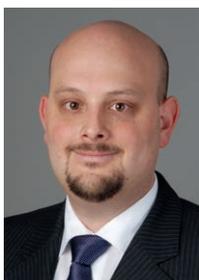
The cooperation membership is designed to promote a collaborative technology, software and service exchange. The benefits and costs are arranged individually.

SERVICE PORTFOLIO		Platform only	ACAM Membership		
		Knowledge Area 10.000 € / year	Community 16.000 € / year	Basic* 20.000 € / year	Business 40.000 € / year
	Community AM Knowledge Area Basic Expert Networking in the ACAM Community Annual ACAM Report	✓	✓	✓	✓
	Research & Development Annual ACAM applied R&D projects Partner matching for public research projects			✓	✓
	Membership ACAM vouchers (each worth 2,000 €) Steering Committee Member			3	11
	Further Education Tailored Inhouse Seminars General seminars and Certificate Courses	€	€	%	✓ %
	Services ACAM expert hotline for specific questions Process, equipment and material development AM engineering services and prototyping	€	✓ €	✓ €	✓ %

*Basic ACAM Membership also available without AM Knowledge Area (12.000 € / year)

€ paid access; % discounts provided

The ACAM Team



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Managing Director



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Managing Director



Tobias Stittgen
Senior Advisor
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Ingrid Roll
Marketing and Community Manager



Erik Feldbaum
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Lea Eilert
Technology and Project Manager

Sources

Title: ACAM

P. 2: Oerlikon AM/Benjamin Pascher/RWTH DAP

P. 3: RWTH Aachen Campus

P. 4: RWTH DAP/ACAM

P. 5: RWTH DAP/ACAM

P. 6: Mesago/ACAM

P. 7: Fraunhofer ILT/RWTH DAP

P. 8: Oerlikon AM/ACAM

P. 10: Shutterstock

P. 12: ACAM

P. 13: Linde Group/toolcraft

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