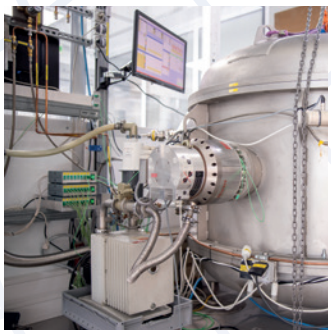
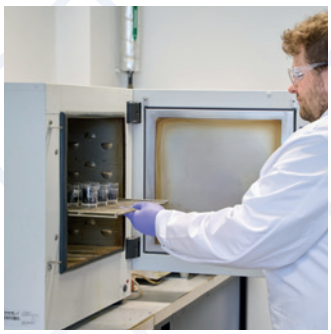
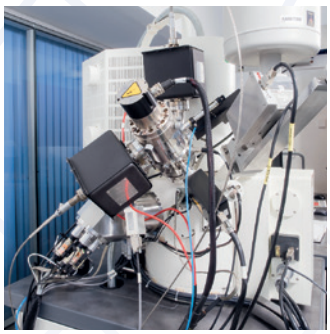
AAC
aerospace & advanced composites

AAC, Advanced solutions for space and beyond.

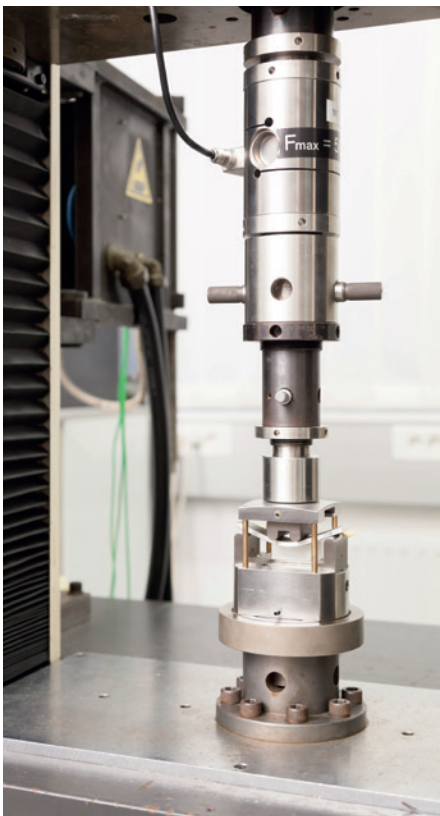
WE SUPPORT YOU IN BRINGING YOUR PROJECT TO SUCCESS.



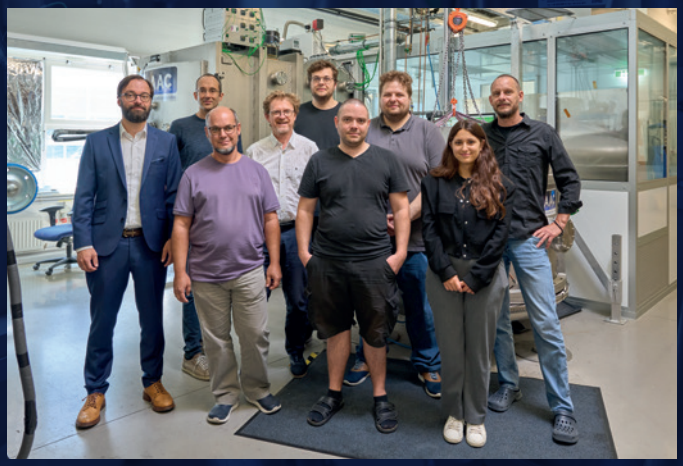
Materials Technology with High-Tech Quality


Testing and developing a wide range of materials for efficient use in high-tech applications is our core expertise. We combine the diverse know-how of our team — spanning chemistry, physics, mechanical engineering, and electronics — into a comprehensive service offering that creates valuable synergies. Through national and international research projects, we take an interdisciplinary approach, leveraging our full range of expertise to deliver outstanding results with forward-looking impact. Our products, used both terrestrially and in aerospace applications, also benefit from our extensive experience in the space sector. Since our founding in 2010 as a private company, we have established a strong reputation in research, development, and failure analysis through our outstanding engineering expertise. With a clear focus on long-term partnerships, we work closely with the European industry and aerospace sector to achieve mutual success.





Milestones (MS)

MS1
2010
Spin-off from Austrian Institute of Technology (AIT) (Advanced Materials (AMAT) division); Foundation of Aerospace & Advanced Composites GmbH (AAC)

MS2
2012
Relocation to TFZ Wiener Neustadt; Opening of building F

MS3
2016
Setup of HaDES gear test rig for harmonic drives under space-like conditions

MS4
2017
Clean room for flight hardware testing & start of ConMon project for in-situ contamination monitoring in vacuum

MS5
2018
Commissioning Large thermal vacuum chamber (Extended Vacuum Chamber (XVC)) connected to clean room

MS6
2019
Commissioning of clean room and Extended Vacuum Chamber (XVC) ; Expansion of Thermal Vacuum (TVAC) & liquid nitrogen (LN2 – Liquid Nitrogen) (LN2) tank 12 m^3

MS7
2019
Renewal of ESTEC Testhouse contract–Focus on SCC & cold welding tests

MS8
2020
Upgrade of Extended Vacuum Chamber (XVC) with bakeout jig, Temperature-Controlled Quartz Crystal Microbalance (TQCM) & Residual Gas Analyzer (RGA) analysis

MS9
2023
Validation of TS8519 solid lubricant material by European Space Agency (ESA–with ENSINGER)

MS10
2023
Slipring tribometer for Thermal Vacuum (TVAC) conditions – setup and initial applications

MS11
2023
Selection and testing of Aerospace & Advanced Composites GmbH (AAC) foils for International Space Station (ISS) (SIMID S20)–Atomic Oxygen-resistant materials (ATOX)

MS12
2024
Commissioning of liquid helium cryostat system for component and material testing

Excellence in Four Areas






SPACE

Through close collaboration with the European Space Agency (ESA), leading aerospace companies—both large and small – and interdisciplinary research partners, we are able to study material properties under conditions similar to those found in space. One key example is our research in the field of tribology, which directly fuels our product development. We apply our expertise, innovative technology, and modern methods to create solutions and products that make space research results applicable to terrestrial use.

ENERGY

In the energy sector, our main focus lies in advancing efficient functional coatings to prevent ice build-up on rotor blades, as well as in developing anti-stick and easy-to-clean coatings for photovoltaic systems and other applications. Through our work in these areas, we make a significant contribution to the growth of progressive energy technologies.

AVIATION

In the field of aviation, our current research and laboratory work focuses on integrating sensor systems into polymer composites and developing structural health monitoring systems to detect emerging material damage at an early stage. Additionally, we are working on improving functional coatings for aircraft de-icing and on developing new high-temperature alloys for turbine blades.

INDUSTRY

We offer our industrial partners the benefit of extensive expertise gained from numerous research projects to help characterize new materials, coatings, and components. Our capabilities in this complex field range from comprehensive measurement series to advanced analyses conducted in cleanroom environments. As a reliable and high-performing partner, we bring top-level technical know-how to the successful implementation of both bilateral and multilateral projects.

FACTS & FIGURES

130+
Successfully completed ESA projects

30+
Years of space industry experience – since 1989

400+
Satisfied international business partners



THREE STEPS TO PROJECT SUCCESS

1

Initial Contact: You reach out to us and receive a non-binding initial consultation.

2

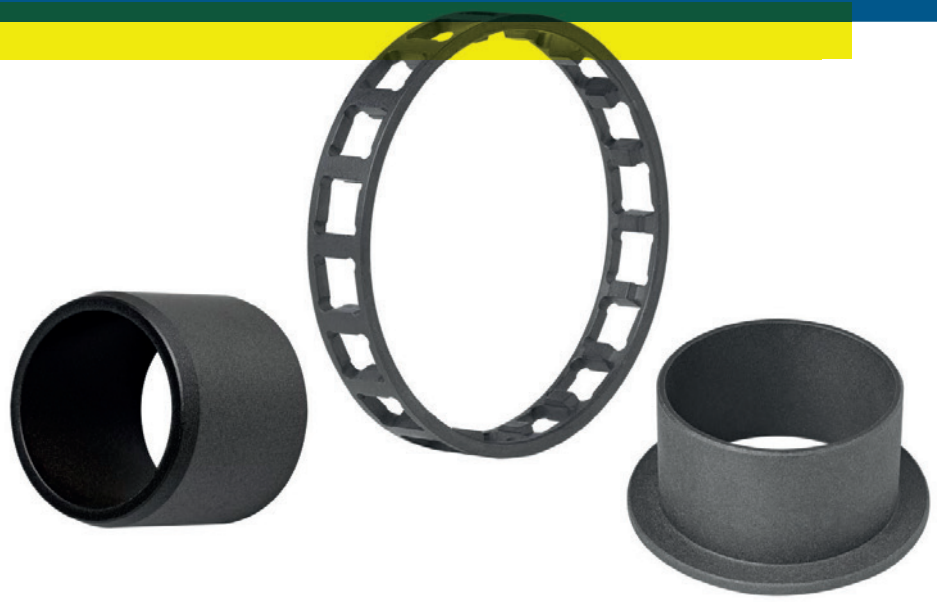
Assessment & Proposal: We analyze your specific needs, recommend the most suitable approach, and provide you with a tailored offer.

3

Project Execution: The project is carried out in close collaboration with you by a team configured specifically for your project.

Ensinger

Complete Provider of Plastic Solutions



Advantages:

- → Development partner of ESA
- → Low outgassing according to ECSS Q 70-02
- → Extensive space heritage
- → Material qualification to FAR 25.853 JAR25.853 for aircraft interiors
- → Expertise in AS/EN 9100
- → Radiation resistant plastics
- → Electrically insulating materials
- → Conductive plastics
- → Heat resistant plastics

Further information

Ensinger GmbH · Rudolf-Diesel-Straße 8 · 71154 Nufringen · Germany

The Perfect Service for Every Sector

Whether in space, aviation, energy, or industry —AAC teams deliver first-class, customer-focused service in every field. Our interdisciplinary research and development work, combined with experience from over 130 projects, ensures that you benefit from our comprehensive expertise and the valuable synergies that emerge across all four sectors.

FROM CONSULTATION TO SOLUTION

From the very first contact, you receive professional guidance. We listen carefully to fully understand your individual goals and project-specific requirements in detail. Using state-of-the-art analysis methods, we develop tailored solutions that prove themselves in real-world applications.

TESTING

AAC employs specialized equipment and procedures to test materials and components under space-relevant conditions:

- ESA-certified test facility
- Additive manufacturing tech
- Chemical analysis
- Coefficient of moisture expansion (CME)
- Cryogenic mechanical testing
- Environmental testing
- Mechanical testing
- (Micro-) hardness testing
- Microstructural analysis
- Non-destructive testing (NDT)
- Outgassing analysis
- Stress corrosion cracking (SCC) testing
- Component testing
- Surface characterization
- Ice adhesion testing
- Thermal vacuum testing
- Tribological testing

DEVELOPMENT

In collaboration with industrial and research partners, we develop new materials and components within national, European, and ESA-funded projects:

- Anti-icing coatings
- Development of composite manufacturing processes
- Design of test methods and equipment
- Functional coatings
- Structural composite materials
- Thermal control materials
- Tribological materials

RESEARCH

As part of nationally and European-funded projects, we also develop new testing methods, devices, materials, and components:

- 3D printing
- Anti-icing coatings
- Process and condition monitoring for composites
- Functional and ice-repellent coatings
- Lubricants for space applications
- Effects of space environments on materials

FIELDS OF APPLICATION AND TOOLS

- Ice protection and functional coatings
- Cold welding database
- Failure analysis and material development
- Materials for space applications
- Simulation
- Space tribology





COMPLETED AND ONGOING PROJECTS:

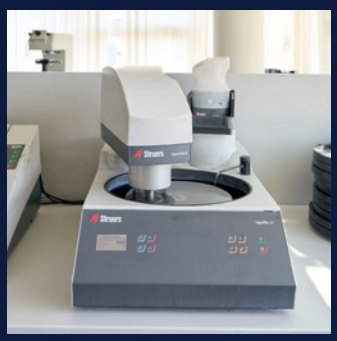
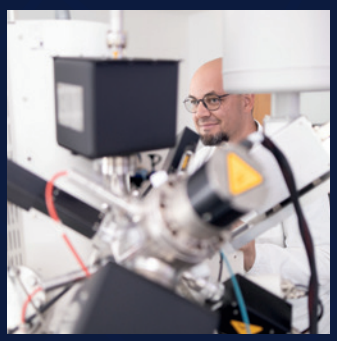
PROFILM—
„European Thin Protective Layers for Space Applications “
Duration: 7/2024 – 8/2026
Funding Source: ESA
Collaborating Partners:
HPS GmbH, AAC, DLR
Description: Funded by ESA with a budget of €1 million, this project is led by HPS, AAC, and DLR. Its goal is to develop next-generation multifunctional films for space applications. The focus is on enhancing satellite protection and performance by creating advanced materials with properties such as ATOX resistance, non-reflectivity, and adaptability for use in thermal insulation, deorbiting systems, and stealth technologies.

EVA MODEL—
„Evaporation modelling for long life mechanisms used in geostationary satellites“
Duration: 12/2024 – 11/2026
Funding Source: ESA
Collaborating Partners:
CIM-mes, Nengineering
Description: This project aims to develop an evaporation model for long-life space mechanisms, taking into account all key mission parameters that affect lubricant mass loss. A web-based tool will be created to calculate outgassing behavior, enabling spacecraft engineers to design their mechanisms with even greater precision.

EUROPEAN NEXT GENERATION ROTORCRAFT TECHNOLOGIES
Aerospace & Advanced Composites GmbH is proud to be part of the ENGRT II consortium, comprising 56 partners from over 10 European Union countries. Airbus Helicopters and Leonardo welcome the European Commission’s selection of the „European Next Generation Rotorcraft Technologies—Phase II (ENGRT II)“ project under the European Defence Fund (EDF). Building on the EDF project launched in 2022, ENGRT II was proposed by a European consortium of leading research centers, SMEs, and industry players, coordinated by Airbus Helicopters and Leonardo as part of the EDF 2024 call. Following this selection, the European Commission will now prepare a grant agreement with the consortium.



Engineering Services for Failure Analysis, Material Testing, and Development


Our core focus in this field is the analysis of surfaces, coatings, and materials, as well as the execution of material development projects. To cover this broad and demanding range of services professionally, we are equipped with state-of-the-art instruments and employ innovative techniques. These include scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDX), along with various spectroscopic and thermal analysis methods.

We offer a wide range of testing and analytical services for industrial companies—as well as for engineering firms looking to expand their capabilities with our expertise:

- Metallography
- Failure analysis
- Scanning electron microscopy (SEM)
- Surface characterization
- Tribological investigations
- Friction coefficient measurement
- Adhesion testing
- Hardness testing
- Coating thickness measurement
- Nanoindentation
- Mechanical material testing
- Chemical analysis
- Density determination
- Thermal analysis
- Dynamic light scattering (DLS)
- Coating characterization
- Weathering tests

... and much more

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XOS | Office trifft Lösung





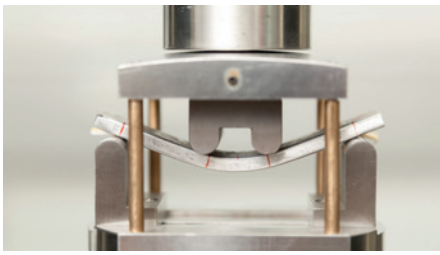
IMPLEMENTATION AND PRACTICAL BENEFITS

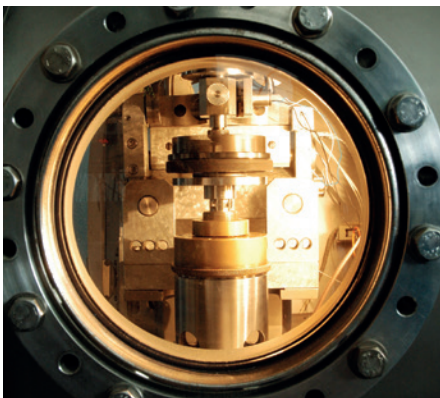
Through our services, we ensure the performance, durability, and integrity of materials across a wide range of applications, making sure that industrial components meet strict quality and safety standards. AAC supports its clients in implementing corrective actions to prevent future failures, enhance product design, and improve overall reliability. Our failure analysis process not only identifies immediate issues but also contributes to long-term improvements in material performance and safety.

VISION FOR THE FUTURE

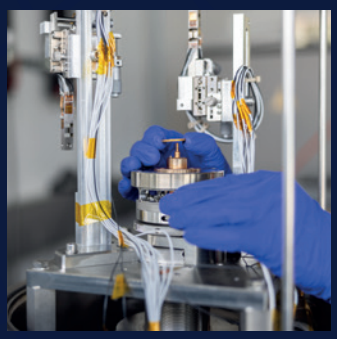
Our goal is not only to support the success of our clients but also to make a broader contribution to the scientific and technical community. By developing new material analysis techniques and innovative testing protocols, we push the boundaries of current technologies and help enhance the safety and reliability of industrial components and materials. Through the continuous refinement of analytical methods and advancement of testing procedures, we are committed to meeting the ever-increasing demands of high-performance technology sectors.







For Space – and Beyond






AAC products are precisely tailored to operational requirements and offer innovative solutions for both current and future challenges. Every product we develop benefits from over 30 years of experience, collaboration with renowned partners, and expertise gained from more than 100 national and international projects. In doing so, we help drive our clients' success and create products that set new standards across industries.

MVM MFGK Austria

Günstige Energie für eine stabile Zukunft!

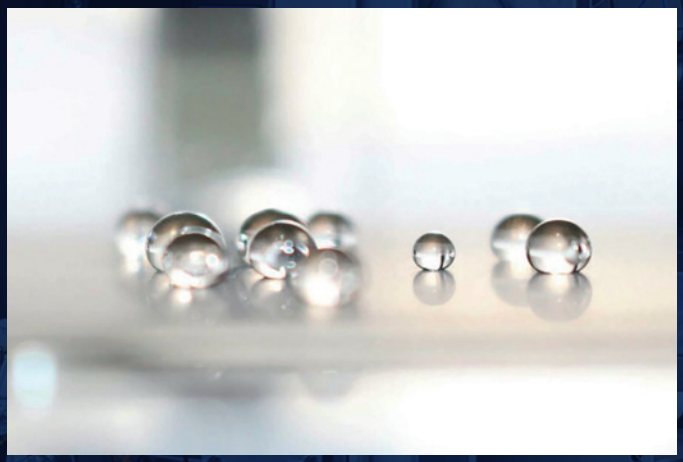


Unsere Schwerpunkte:

- ✓ Sichere Versorgung mit Erdgas und Strom
- ✓ Individuelle Energielösungen für Unternehmen und Haushalte
- ✓ Starke Partnerschaft innerhalb der MVM-Gruppe

MFGK Austria GmbH
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/ Top M73 / 2
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service@mfgka.at
www.mfgka.at

FUNCTIONAL COATINGS



ADVANCED PIGMENTS



AAC coatings stand out for their exceptional properties, including water repellency, abrasion resistance, anti-icing capability, non-stick performance, and excellent resistance to UV radiation, heat, and corrosion.

Developed on both non-PFA and PFA bases, our AAC coating family redefines functional surface protection—exceeding conventional standards. The durability and performance of our coatings are specifically tailored to meet the demands of various industries.

We offer two product lines tailored to different applications: Easy-to-Clean Coatings and Anti-Ice Coatings. You can find all specifications and product details at: **https://www.aac-research.at/products/coatings.**

Beyond their technical performance, our coatings also meet high sustainability standards by extending product lifecycles, reducing maintenance costs, and minimizing environmental impact.

Where high-value assets require secure protection, AAC security pigments offer innovative solutions against fraud and counterfeiting. These pigments can be integrated directly into production processes and materials, effectively preventing unwanted imitation.

AAC security pigments cannot be photocopied and are only visible under specific IR laser wavelengths. Each application has a unique spectral fingerprint that allows for unmistakable identification. The pigments are compatible with a range of polymers and are engineered for long-term durability.

We apply our comprehensive know-how and materials expertise to help make the world a safer place.

Grant Thornton
Tax | Audit | Advisory

Lokal verankert.
Global vernetzt.

76.000 Expert:innen in **156 Ländern**. In Österreich an drei Standorten: Wien, Wiener Neustadt, und Klagenfurt. Know-how und Branchenverständnis, um Ihre individuellen Herausforderungen zu meistern.

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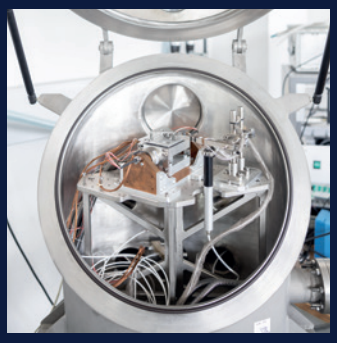
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