

ADMIRE Reserach Center

at

Carinthia University of Applied Science

ACE²-EU First Virtual Town Hall Meeting



Mathias Brandstötter, 31.03.2025 © ADMIRE Research Center





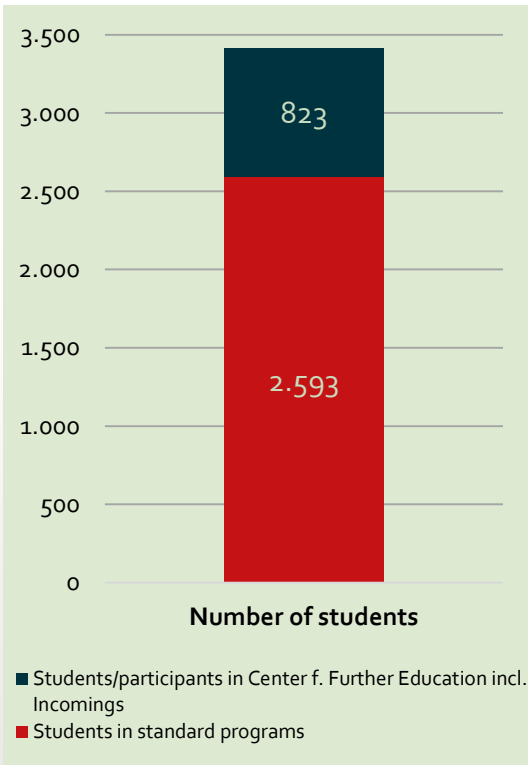
staff & faculty

- 483 full-time employees
- 445 part-time lecturers

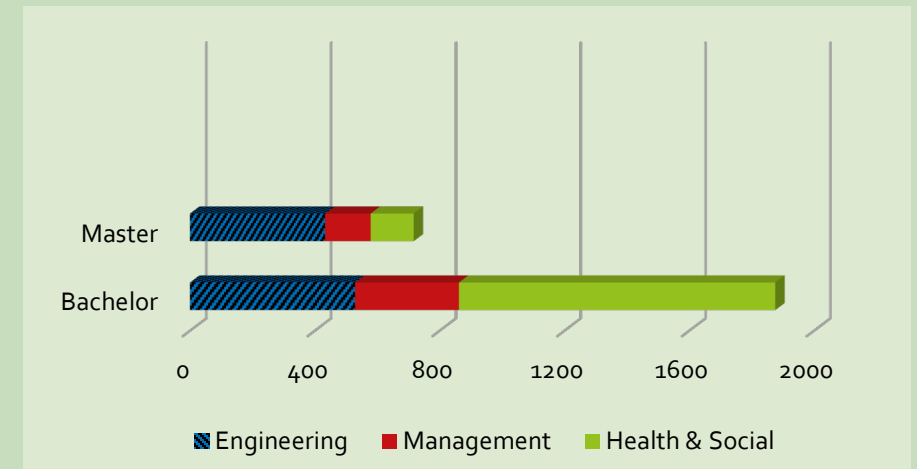
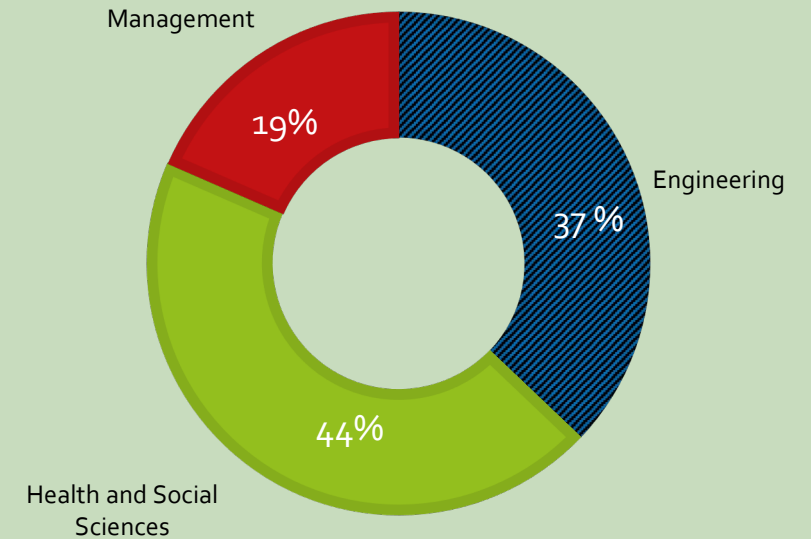
students

- total ~ 3.416 Students
 - Austrian – 79 % from Carinthia
 - 327 internationals from 67 nations
- 3 core fields
- Bachelor & Master degree
- 10.870 graduates

Internationale students	327
Germany	66
EU	51
Non-EU European countries	49
Africa	27
Asia	117
America	17



Status: 15.11.2023





Additive Manufacturing at Carinthia University of Applied Sciences

Mathias Brandstötter: Head of Research Center **ADMIRE**

Additive manufacturing of polymeric systems, smart robotics and engineering.



Roland Willmann: Head of Research Group **AMAVIS²**

Additive Manufacturing in Agile Virtual Systems for Product Design and Production Process Design focusing on metals.

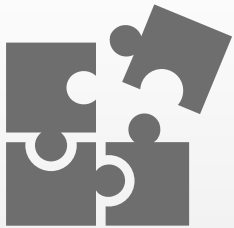


Pascal Nicolay: Head of Research Center **CiSMAT**

Innovative solutions based on Smart Materials, for the industry and society of the future.







ADMIRE - specialized in **AD**ditive **M**anufacturing, intelligent **R**obotics and **E**ngineering

Team:

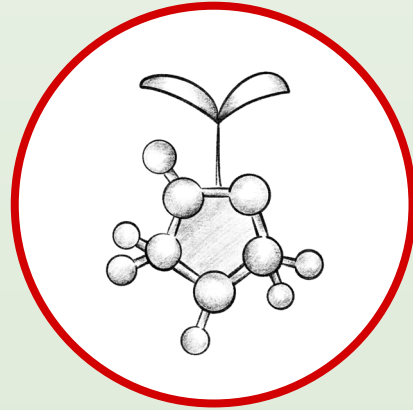
- 11 fix employees
 - PhD candidates
 - junior & senior researchers
- associate professors
- student assistants (student projects, bachelor & master theses)

Focus:

- extrusion based additive manufacturing
- joining robotics and additive manufacturing
- bio-based & biodegradable and recycled materials
- transfer & sharing of knowledge

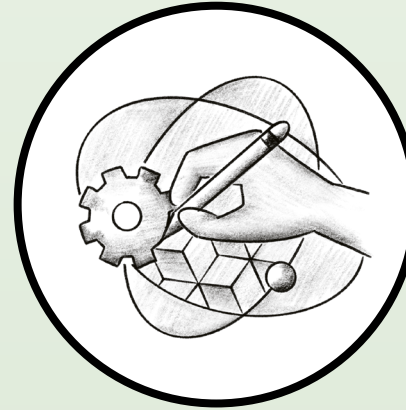
Material

innovative materials
recycling & reuse
selection & testing



Design

topology optimization & generative design
path planning
process simulation



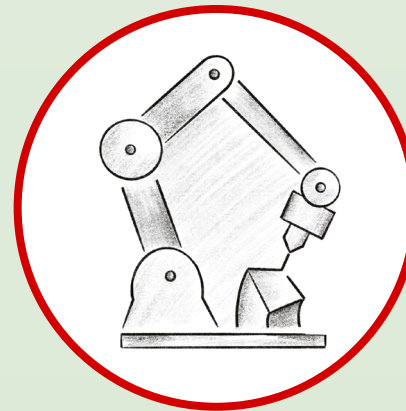
Application

sustainability
functionalisation
modularisation



Process

optimization & qualification
3D - & multi-axis-printing
polymer printing



Infrastructure

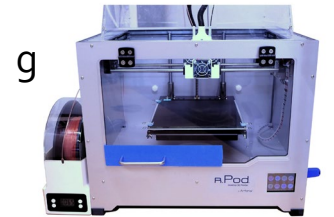
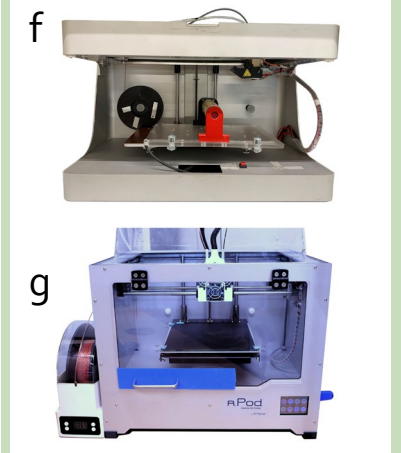
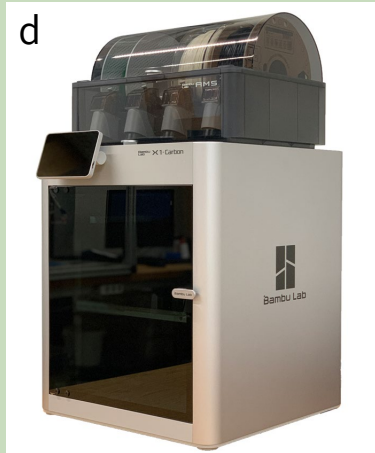
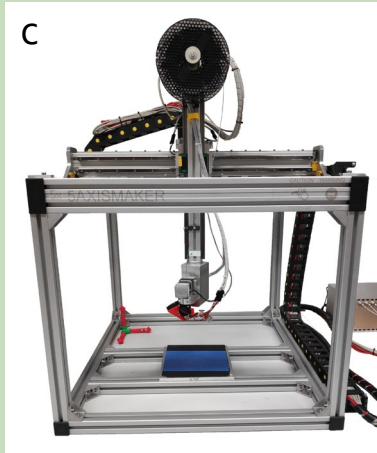
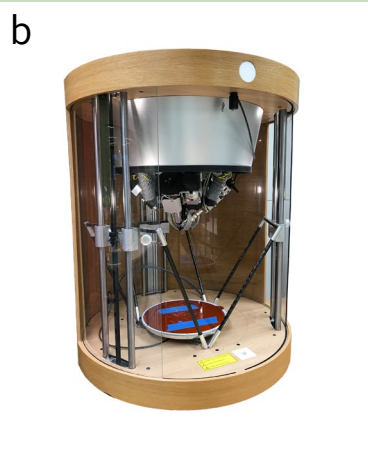


Infrastructure



Printers

- a) Hage3D 1750L-B – multi-module printer for filament and pellet materials, 3D- & 5D printing, different print heads
- b) Pollen New Pam Series P – 4 pellet print heads, suited for soft thermoplastic elastomers
- c) 5AXISMAKER 5xm600 – 5-axis CNC milling machine & 3D printer
- d) Bambu Lab X1-Carbon with automatic material changer, fiber reinforced and multi material printing
- e) Prusa XL with automatic material changer with 5 extruderheads, modular heated print bed
- f) Markforged Mark One - converted with a rotary axis, with 2 nozzels, one for continuous fibers
- g) Arfona R.Pod – Dental 3D printer with 2 nozzles
 - Prusa i3 MK3S+
 - Creality Ender 3 Pro – modified for continuous natural fibers

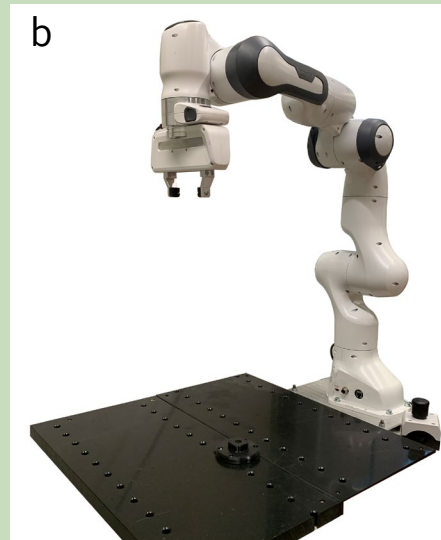
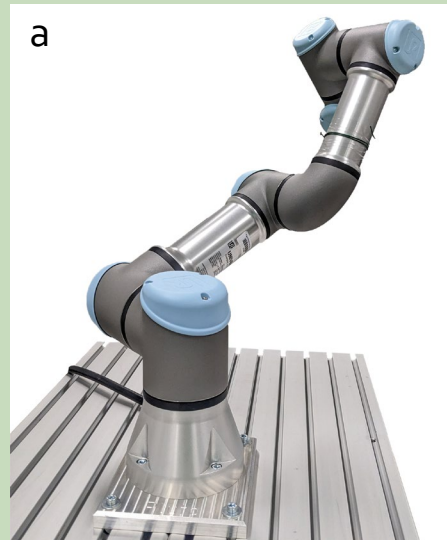


Infrastructure



Robots

- a) Universal Robots UR3e – cobot with 6 DoF, 3 kg payload capacity
- b) Franka Emika Panda – robot arm with two-finger parallel gripper, 7 DoF, 3 kg payload capacity
- c) „CHIMERA” MiR100 platform equipped with an UR10e – equipped with 2 laser scanners for navigation, for flexible applications, usable in industrial environments and outside industrial facilities
- d) Fairino FR10 – cobot with 6 DoF, 10 kg payload capacity



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<https://frtech.fr/>

Infrastructure



other equipment

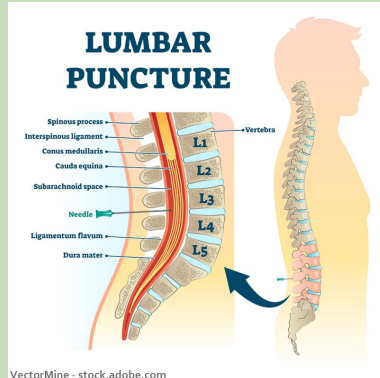
- a) Speedgoat – performance real-time target machine, for hardware-in-the-loop (HIL) simulation & rapid control prototyping
- b) Schunk SVH right – 5-finger servo-electric gripping hand, 20 DoF, for mobile application fields, picking & transporting different pieces and objects with a complex structure
- c) UBIROS Gentle Pro – 4 soft finger gripper (silicone, FDA approved), payload >1500 g, compatible with all cobots
- d) Kinova KG-3 – 3 finger gripper, gripping force 40 N
- e) 3D SYSTEMS Touch – haptic device, for applications like simulation, training, virtual assembly, robot control etc.



Projects



Projects



VectorMine - stock.adobe.com

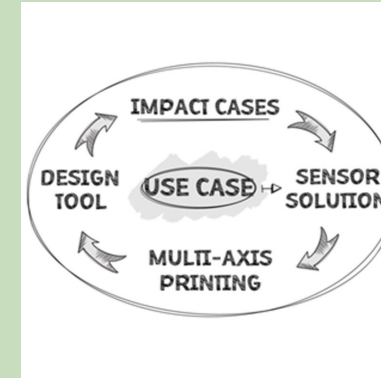
Facilitate

Technology Platform
for Sensorized Bio-
Based Multi-Material
Additive
Manufacturing



PURE₃D

Particle analysis for
cleanroom
applications from the
3D printer



ESMA

Enhanced Smart
Materials and
Applications



Interreg
Italia – Österreich



Co-funded by
the European Union

MICRO-ALPS

MICRO-ALPS

Reduction of
microplastics from
industrial activities in
Alpine waters



Interreg
Italia – Österreich



Co-funded by
the European Union

BeSoGreat

BeSoGreat

Brewer's spent grain
biocomposites for
biodegradable plastic
products through
injection molding &
3D printing



Interreg



Sofinancira
EVROPSKA UNIJA
Kofinancirani von
der EUROPÄISCHEN UNION

Slovenija – Österreich

ADDCIRCLES

ADDCIRCLES

Promoting
sustainable regional
development through
additive
manufacturing – a
cross-border initiative
for a resilient and
circular economy

Projects



PROTEA

Prostheses and medical aids with enhanced user acceptance through 3D-printing and functionalization



Flake and Print

3D printing of recycled plastic flakes and granules for visual and mechanical complement of furniture elements



Symbiotic RGB

Integration of robotics, horticulture and renewable energy into a sustainable ecosystem.



Nanogoes3D

Nanomaterials and additive fabrication of adaptive structures for smart human device interfaces



5D-CF

5-axis printed continuous fibers on a rotating mold



iL3aD

Lightweight functional and hybrid 3D-printing for medical assistive devices



AMASE

Additively manufactured sensorized prosthetic liner systems



exoATwork

Exoskeletons for manual workstations



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Thank you!



