

JOANNEUM
RESEARCH
ROBOTICS



ROBOTICS

Institute for Robotics and Flexible Production



SHAPING THE FUTURE, TOGETHER

JOANNEUM RESEARCH Forschungsgesellschaft mbH

JOANNEUM RESEARCH develops solutions and technologies for business, industry and public authorities over a wide range of sectors and conducts applied cutting-edge research on an international level.

The company makes a significant contribution towards safeguarding the economic success of the region and assumes a key role in the transfer of technology and expertise into the economy.

Owners

80,75 %

State of Styria

14,25 %

BABEG Carinthian Agency for Investment
Promotion and Public Shareholding

5 %

Wirtschaftsagentur Burgenland
GmbH

Certifications

ISO 9001

Requirements for quality management systems

ISO 14001

Environmental management systems

ISO 13485

Medical devices – Quality management systems –
Requirements for regulatory purposes

ISO 14644

Cleanrooms and associated controlled environments

GLP

Good Laboratory Practice

Numbers – Data – Facts

around **500** employees (from over 30 nations)

7 research units

6 locations

around **56** million Euro of research services per year



Corporate Film



SYSTEM. TRAINING. EVALUATION.

»ROBOTICS researches on innovative and flexible automation solutions that address the needs of local businesses.

In the process, future-relevant technologies are developed that support advanced production.«

DI Christian Oswald

ROBOTICS

Institute for Robotics and Flexible Production

The Institute for Robotics and Flexible Production deals with industrial robot system technologies and production automation. For our clients, we act as a competent research and development partner to implement innovative, efficient and economic digitisation projects. The spectrum ranges from functional modelling and simulation, an economic evaluation to system realisation.

We support our project partners with the development of flexible production solutions, but also contribute our know-how in the area of performance optimisation and a valid robot safety assessment. In addition, there is the possibility to perform feasibility studies in the ROBOTICS Solution Center, to test the latest automation and digitalisation technologies and to qualify specialists in hands-on training courses.

Despite all the Technology: The Focus is on the Person

Robotic systems are used in economy rewarding applications and to obtain certain values, such as more safety for workers. Ultimately, robots act as direct bridges between the virtual, digital and the real environment and are thus key components in human-centred automation and digitalisation. Our research focuses on:

- Industrial Robot System Technologies
- Digitalised Production Automation
- Economy and Performance Optimisation
- Machine and Robot Safety
- Test Lab and Solution Center
- Hands-on Training Center



ROBOTICS Key Technologies

Key Technologies for your Company

Our combination of cutting-edge equipment and research infrastructure with the wide spectrum of topics and expertises enables the development of trendsetting solutions and the provision of innovative scientific services. Our key technologies include primarily innovation-driving industrial robot system technologies for the flexible process automation in manufacturing and professional service applications.



Robot System Technologies



ROBOTICS Evaluation Lab



ROBOTICS Training Center

Flexible Process Automation in Manufacturing and Professional Service Applications

Human-Robot Coexistence, Human-Robot Cooperation, Human-Robot Collaboration

Integration of Industrial Robot System Technologies

Solutions from an all-inclusive Mechatronic Perspective

Mobile Manipulation in Assembly and Intralogistics

Physical Robot Safety for Human-centred Applications

Robot System Technologies

The Research Group Industrial-Robotsystem-Technologies offers a wide technological portfolio for innovative robotics with a focus on robot assisted flexible production. We work on the main fundamental technological elements for innovative robots and intelligent systems in nationally and internationally funded research projects.

We design robot systems and robot system components in industrial research and experimental development for business and industry to demonstrate the systems in the appropriate environment. Furthermore, we develop optimised and safe robot assisted manufacturing systems at higher TRLs (Technology Readiness Levels) in cooperation with end users and system integration partners. The broad expanse of expertise in the team enables tailored solutions to be offered for the use of modern robot technologies.

Our core competences:

- Modern, sensitive, lightweight robotics, industrial robots and mobile robot systems
- Overarching portfolio of mechatronic robotics
- Robot kinematics and control theory
- Sensor systems and perception
- Complex functional, secure software systems for the comprehensive system integration
- Production automation and economy
- Mathematical modelling, simulation and optimisation of robot-based automation



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ROBOTICS Evaluation Lab

More information ...



The ROBOTICS Evaluation Lab (REL) is a specially equipped measurement laboratory. Human and robot contact situations are measured and evaluated both validly and traceably regarding biofidelity forces. State-of-the-art, calibrated measurement equipment is used and the entire testing process is executed according to quality assurance measures ISO/IEC-17025.

Furthermore, the REL offers supporting services for business and industry. It provides industry with safety services, such as measurement and testing services, consulting activities and the development of software tools.

The REL is an accredited test lab for the determination of biomechanical forces and their conformity evaluation according to ISO/TS 15066.

Our services:

- Traceable and valid measurement of force
- Conformity evaluation according to ISO/TS 15066
- Quality assurance measures according to ISO 17025

REL – Overview of Safety Services

Our offer for safe human-robot collaboration includes:

- **REL-Force:** Determination of biomechanical forces and their conformity with ISO/TS 15066
- **REL-Pressure:** Determination of pressure loads and their spatial and temporal behaviour during contact situations
- **REL-Consulting:** Human-robot collaboration from the initial concept of the robot system up to the CE mark
- **REL-Analysis:** Risk analysis and comprehensive evaluation using simulation and verification methods
- **REL-Training:** Development of expertise in the area of robot safety for system developers and safety officers

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ROBOTICS Training Center



More information ...

Modern robot technologies require knowledge of the latest technology available in the field of robotics and of the opportunities and limitations of their use.

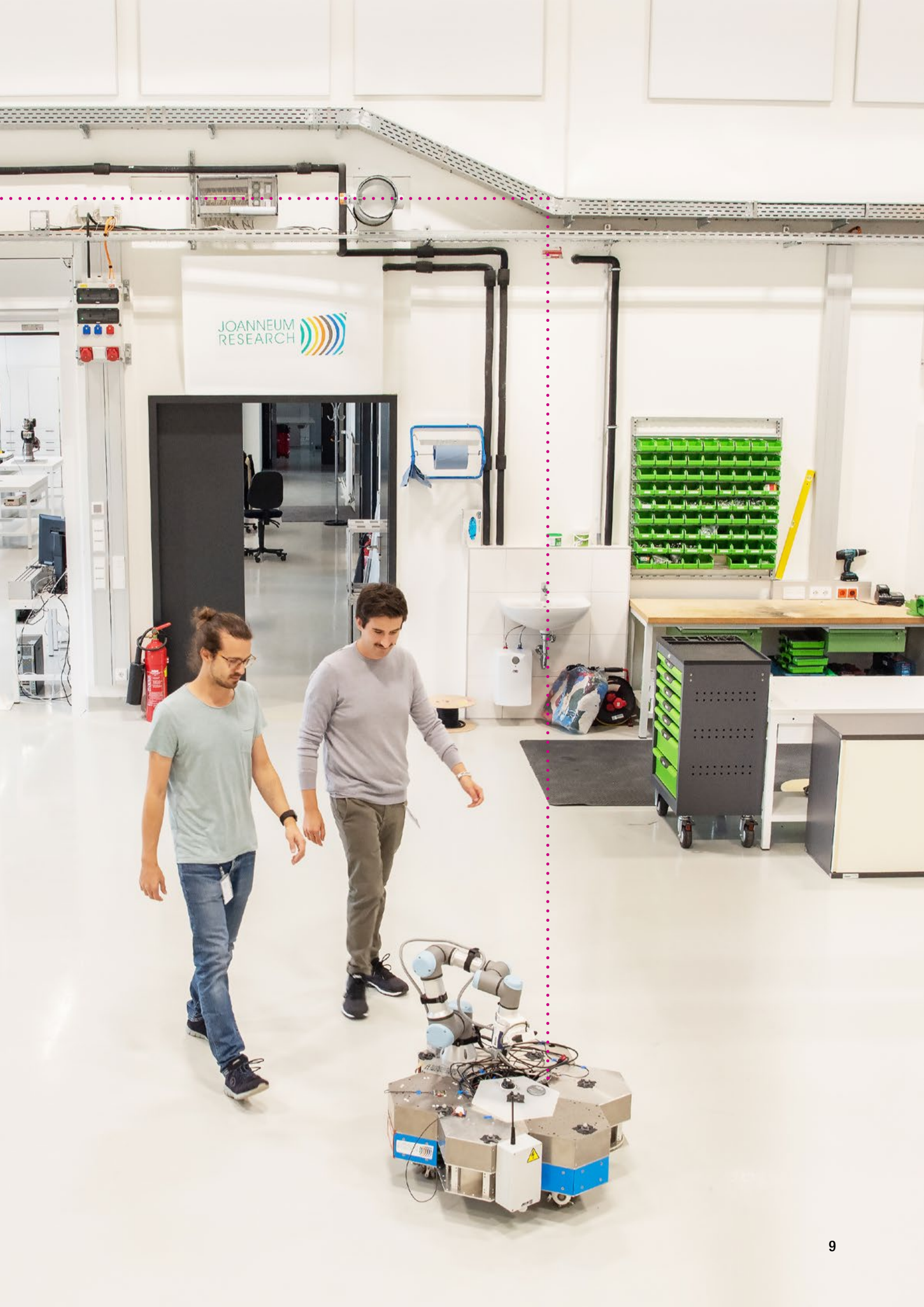
The establishment of the **ROBOTICS Trainings Center (RTC)** enables us to react to current business and industrial requirements for qualifications in the field of robotics. For this purpose, all trainings use the unique laboratory infrastructure such as our hands-on area which offers the latest robot and automation systems ready to be used for practice- and demand-oriented training. The RTC thus supports a long-term transfer of technology from research to practical application.

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JOANNEUM
RESEARCH

Research Infrastructure



More information ...

Strong Partner for Industry and Research

Our new research building connects well-equipped laboratory infrastructure even closer to business and industry. Research activities are raised to a higher Technology Readiness Level (TRL) and make us an innovative and application-oriented

partner for companies. The neighbouring **drone flight hall** at the Alpen-Adria University of Klagenfurt offers an ideal joint research space for intensive cooperation.



1,200 m²

of space for research
and development



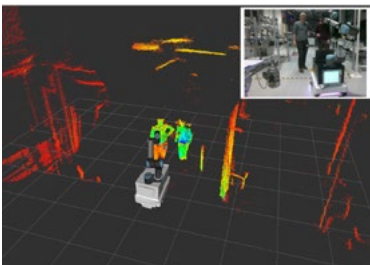
ROBOTICS Solution Center

for application-oriented robot
and automation systems



Hands-on Area

for robot-based
manufacturing



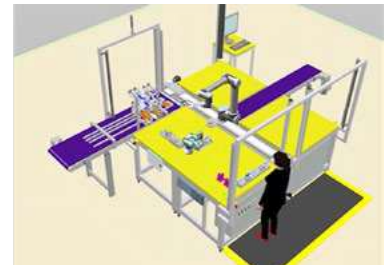
5G Playground

for high-performance networks
in manufacturing



**Robot Systems from
a Range of OEMs**

for lightweight, industrial,
specialized robotics and
mobile systems



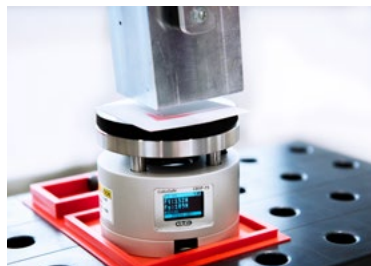
Digital Twins

for the digitalisation
of manufacturing



**Innovative Sensors
and Actuators**

for human-robot interaction



**Cutting-edge Measurement
and Calibration Systems**

for force and pressure measurement



Accredited Test Laboratory

for verifying impact-forces in
human-robot collaboration



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