

Robotics for the building industry

Liebherr, KUKA and Autodesk join with RWTH institutes in the Center Construction Robotics to research the automation of construction

Aachen, July 20, 2018 – Liebherr, with the division Tower Cranes, KUKA as provider for automation solutions, the software developer Autodesk and RWTH Aachen University with three of its chairs (Individualized Production in Architecture, Lightweight Metal Construction, Laboratory for Machine Tools and Production Engineering (WZL) | Production Metrology and Quality Management) have announced their collaboration in the area of robotics for construction today. The industry consortium will conduct research in collaboration with the interdisciplinary research team of the newly founded Center Construction Robotics on RWTH Aachen Campus. The center is under the scientific direction of Professor Sigrid Brell-Cokcan (Chair of Individualized Production in Architecture), Professor Robert Schmitt (Laboratory for Machine Tools and Production Engineering (WZL) | Production Metrology and Quality Management) and Professor Markus Kuhnhenne (Institute of Steel Construction | Chair for Lightweight Metal Construction).

The construction sector has great potential in terms of robot-based automation. Using the example of large scale and complex facade elements and their production, a previously non-existent continuous digital chain from planning to manufacture and subsequent installation will be demonstrated. The declared objective of the Center Construction Robotics is to develop the construction site of the future by way of digitalization: from preproduction to a common value creation chain, all the way to a partially automated construction site. "We identify disruptive processes at the Center Construction Robotics and will then also develop new matching business models. Here we collaborate closely with market-leading platform and technology enablers", explains Professor Sigrid



Brell-Cokcan, Chair of Individualized Production in Architecture at RWTH Aachen.

Dominique Tasch, Managing Director for Technology & Development, Liebherr-Werk Biberach GmbH, comments about the involvement of his company in the newly founded center on RWTH Aachen Campus: "In Aachen and in the idea of the Center Construction Robotics we have found a very promising environment that allows all participants to take on a shaping role in the development of the digital construction site. Given the renowned collaborators Liebherr sees a good chance to make the vision of the construction site of the future a reality."

KUKA and Autodesk share this enthusiastic view of the collaboration. "A new age is dawning. Increasing digitalization is changing the business world – also on construction sites. The past ten years have seen hardly any increase in productivity in the German construction sector. Completely new approaches in the construction and manufacture of buildings offer the unique possibility of introducing high-performance, flexible and digital fabrication methods directly to the construction site by way of robot-based automation", says Alois Buchstab, Vice President Advanced Robotic Applications, KUKA.

Ralf Moser, Leader BIM Transformation, AEC Digital Expert Group, Autodesk GmbH, adds: "We want to identify BIM use cases for construction robotics as part of our syndicated research at RWTH. With Autodesk FORGE, we offer a technology platform that allows the integration of BIM and robotics and which is also open to all companies in the construction sector that create digital value."



Founding of the Construction Robotics Center on RWTH Aachen Campus
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WZL research hall of the Chair of Production Metrology and Quality Management,
RWTH Aachen
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Further images

<https://gigamove.rz.rwth-aachen.de/download/id/RvzYJzRUG92o6f>

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- New large robotics hall of the Chair of Individualized Production in Architecture, RWTH Aachen University
- Wind tunnel in the steel construction hall of the Chair of Steel Construction (Prof. Feldmann), RWTH Aachen University
- Prof. Sigrid Brell-Cokcan, Chair of Individualized Production in Architecture, RWTH Aachen
- Dominique Tasch, Managing Director Technology & Development, Liebherr-Werk Biberach GmbH
- Alois Buchstab Vice President Advanced Robotic Applications, KUKA
- Ralf Mosler, Leader BIM Transformation, AEC Digital Expert Group

RWTH Aachen University

With its 260 institutes in nine faculties, RWTH Aachen is among the leading European scientific and research institutions and is one of the Universities of Excellence in Germany. 45,000 students in 150 courses of study are registered for the winter semester of 2017/18, including 9,000 international students from 120 countries. Teaching at RWTH Aachen is first and foremost application-oriented. Its graduates are therefore sought-after as junior executives and leaders in business and industry.

www.rwth-aachen.de

RWTH Aachen Campus

The Campus project creates a unique symbiosis of science and industry. Here, experts research specifically defined, relevant topics. Long-term areas of research are represented in clusters. These clusters are subdivided into centers, in which interdisciplinary teams and industry consortia work jointly on specific issues of the future and develop visionary solution approaches.

<http://www.rwth-campus.com/en/>

Liebherr, Tower Cranes Division

The invention of the mobile tower crane in 1949 marked the start of Liebherr Tower Cranes. This product division within the Liebherr Group of Companies is now the leading global manufacturer of mobile construction and tower cranes and has five production plants in Germany, Spain, India, Brazil and Russia. Its range of products includes an extensive program of high-quality tower cranes featuring all systems and size classes. These include fast-erecting, top-slewing, luffing jib and special cranes. The flexible fast-erecting cranes and powerful top-slewing cranes are ideal for residential as well as industry applications and for large projects all over the world.

www.liebherr.com

KUKA

KUKA is a global automation corporation with sales of around 3,5 billion euros and roughly 14,200 employees. As one of the world's leading suppliers of intelligent automation solutions, KUKA offers customers everything they need from a single source: from individual components through robot cells to fully automated systems for the automotive, electronics, consumer goods, metalworking, logistics/e-commerce, healthcare and service robotics industries. The Group is headquartered in Augsburg.

www.kuka.com



Autodesk

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Chair of Individualized Production in Architecture, RWTH Aachen

The Chair of Individualized Production in Architecture develops intuitive systems for programming robots for use in the construction industry, from design to prefabrication and assembly to disassembly. Automation of construction processes and technical consulting for industrial partners complement this field of work.

www.ip.rwth-aachen.de

Institute of Steel Construction | Chair for Lightweight Metal Construction, RWTH Aachen

In addition to conventional steel construction and composite construction tasks, the Institute of Steel Construction also investigates wind engineering, structural timber and glass construction as well as lightweight metal construction. One focus is on the development and research of innovative and multifunctional building envelope systems.

www.stb.rwth-aachen.de

Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen | Chair Production Metrology and Quality Management

One focal point of the Chair Production Metrology and Quality Management at the Laboratory for Machine Tools and Production Engineering (WZL) at RWTH Aachen is the integrated production metrology and flexibly automated installation of large-scale construction elements. Technical competences for the localisation in large construction spaces, image processing and sensor technology are supplemented with quality and information management systems.

www.wzl.rwth-aachen.de/

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