

The construction site of the future: digitized and networked – terrain handover for the reference construction site on Campus West

The Center Construction Robotics gives green light for joint research project under realistic conditions for academia and industry

Aachen, February 6, 2020 – RWTH Aachen University officially handed over a 10,000 square meter site to the Center Construction Robotics (CCR) in the Construction Cluster for its envisaged reference construction site. An interdisciplinary team of RWTH Aachen academics will use digitalization as its research basis in the Center Construction Robotics in conjunction with a European industry consortium at this construction site of the future – research topics will include many issues from pre-production of construction elements to fully automated construction sites. The reference construction site, a pilot project starting up temporarily on Campus West, will serve as a reality laboratory. New construction processes and products, networked machines, the implementation of robots, software solutions, as well as teaching, working and communication concepts will be tested under real construction site conditions here. The Federal Ministry of Education and Research is currently funding an initial research project. Main industry sponsors for the project include PORR, Liebherr Tower Cranes division, EIFFAGE, LEONHARD WEISS GmbH & Co. KG, HILTI AG and Autodesk GmbH. They provide financial and infrastructural support for the reference construction site.

Thomas Rachel (Parliamentary State Secretary in the Federal Ministry of Education and Research, Member of the German Bundestag), Dr. Jan Heinisch (State Secretary in the Ministry for Regional Identity, Communities and Local Government, Building and Gender Equality of the Land of North Rhine-Westphalia), Marcel Philipp (Lord Mayor of Aachen) and Professor Ulrich Rüdiger (Rector of RWTH Aachen University) praised the project headed by the Academic Director of the Center Construction Robotics, Professor Sigrid Brell-Cokcan. Other high-level representatives of four faculties involved in the research consortium Construction of RWTH Aachen – among them Professor Katharina Schmitz (Head of the Institute for Fluid Power Drives and Controls) and

Professor Markus Oeser (Decan of the Faculty of Civil Engineering) – attended the official start of this groundbreaking project.

Sponsors of the reference construction site

The Center Construction Robotics will be planning and coordinating operations of the reference construction site on Campus West. This collaborative project was made possible for the most part on the basis of a Crowdsourcing effort by all members of the Center Construction Robotics, members of the Center Mobile Machinery, the AACHEN BUILDING EXPERTS e. V. and a number of RWTH institutions. In addition to the main sponsors, various companies from a range of industry sectors are similarly involved in the reference construction site, including Doka GmbH, KUKA Deutschland GmbH, Saint-Gobain, Annen GmbH + Co.KG, Lamparter GmbH & Co. KG, Robots in Architecture Research UG, BROKK AB, Wurst Stahlbau GmbH, Volvo Construction Equipment Germany GmbH. Ralf Mosler, Leader BIM Transformation at Autodesk GmbH, one of the main sponsors of the reference construction site: “Under the scientific direction of the CCR, the construction site of the future can be studied right here in the presence. This is the first project of its kind in the world and is set to deliver valuable insights into the workflows and technologies of future construction processes. We have initiated what we call ‘The Opportunity of Better’ with the reference construction site on Campus West.”

Federal government funds first research project with 3.2 million euros

The first research project “Internet of Construction (IoC)” at the reference construction site is a joint venture of three institutes and seven industry partners. The Ministry of Education and Research is contributing 3.2 million euros within the scope of the research program “Innovations for Production, Services and Employment of Tomorrow”, which is scheduled to continue for three years. Thomas Rachel, Parliamentary State Secretary in the Federal Ministry of Education and Research, Member of the German Bundestag, explains: “The construction sector has always been one of the key industries in Germany and is therefore hugely important. We want to support industry efforts to master the challenges faced by digitalization. That is why the Federal Ministry of Education and Research is sponsoring the development and implementation of an innovative information network for the partners involved in the

construction. The project aims to improve adherence to schedules and construction quality in general. Furthermore, the project will generate new collaboration models for the construction sector of the future.”

Reference construction site in accordance with the excellence strategy of RWTH Aachen University

Professor Ulrich Rüdiger, Rector of RWTH Aachen University, highlighted the importance of the reference construction site in context with the excellence strategy: “The development of this reference construction site follows the concept of excellence here at RWTH Aachen. Infrastructures used jointly, will further the collaboration within RWTH and with our partners. A reality laboratory of this kind complies exactly with the central focal points of our application: Knowledge. Impact. Networks. In collaboration with many partners, we will be generating knowledge on the reference construction site with enormous social implications. This is the first step in a transformation process, which will trigger far-reaching positive developments.” Marcel Philipp, Lord mayor of Aachen, welcomed the temporary implementation of the reference construction site: “Over the coming years, we will be building the future of Aachen as a research location on Campus West. Initially, we will be focusing on the future of the construction sector. It will allow us to highlight the fact that all industries will be affected by the coming digital transformation. And fact is that many great solutions are created right here in Aachen.”

The goal: Development of a far-reaching network of strong partners

The reality laboratory forms the starting point for the development of a far-reaching European and regional network for research, industry and teaching joint ventures in the area of construction transformation. The reference construction site will bring together partners from all areas of the construction sector, as well as regional partners like AACHEN BUILDING EXPERTS e. V., educational institutions of the construction industry association (Bauindustrieverband), the Aachen Chamber of Trade (Handwerkskammer) and bauformstahl, the central industry association for construction involving steel in Germany, as a key component of that network. In effect, the network will allow the knowledge transfer of research results and teaching concepts directly to the industry by way of focused development and further education projects. The new international Master in Construction & Robotics at RWTH Aachen University will commence in April 2020 with Bachelor-level students from

four different disciplines: Mechanical Engineering, Computer Science, Civil Engineering and Architecture.

Fair use principle will allow access to the reference construction site for many stakeholders

“We find it very important to ensure that as many stakeholders as possible will be able to utilize the construction site as a ‘living lab’ for transformation”, explains Professor Sigrid Brell-Cokcan the philosophy behind the reality laboratory. “Start-ups, businesses, public stakeholders, private individuals or research institutions from the construction industry – everyone will be able to access the construction site facilities provided by industry partners and the outdoor areas as maker spaces as part of the fair-use principle.” Anyone contributing to or adding infrastructure to the joint venture project, will be given the opportunity to utilize the construction site facilities at a reduced cost or even free of charge for a specific amount of time with professional supervision. The temporary reference construction site will additionally be made available as a basis for various student projects and a variety of teaching formats across multiple faculties.

Go to the press release, press pictures and other quotes:

<https://construction-robotics.de/en/news/the-construction-site-of-the-future>

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RWTH Aachen Campus

RWTH Aachen Campus contributes significantly towards highlighting the research competence available at RWTH Aachen. The project creates a unique symbiosis of science and economics. 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.

www.rwth-campus.com/en

Construction Cluster

The Construction Cluster deals with innovations, new technologies and their implementation and introduction in the construction sector. One focus of the cluster is on the networking of devices and machinery to allow the digital mapping of increasingly complex construction processes in the context of Building Information Modeling (BIM) to effectively make construction processes more efficient, while optimally supporting strategy planning. The BIM Center Aachen, the Center Building and Infrastructure Engineering, as well as the Center Construction Robotics formulate the research interests of the Construction Cluster.

<https://www.rwth-campus.com/en/forschung/construction-cluster/>

Center Construction Robotics

An industry consortium, which includes industry leaders like Liebherr, KUKA and Autodesk, is conducting research in the area of Robotics for Construction in collaboration with an interdisciplinary team of academics. 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).

<https://construction-robotics.de/en/>

Reference Construction Site

The reference construction site, which will be created initially as a pilot project on a terrain of 10,000 square meters on Campus West, will serve as a reality laboratory. New construction processes, machines, software solutions, as well as teaching, working and communication concepts will be tested under real construction site conditions here. Primary and secondary industry sponsors provide financial and infrastructure support for the reference construction site.

Main sponsors of the reference construction site:

PORR AG, Liebherr Tower Cranes division, EIFFAGE, LEONHARD WEISS GmbH & Co. KG, HILTI AG, Autodesk GmbH

Secondary sponsors of the reference construction site:

AACHEN BUILDING EXPERTS e. V., Doka GmbH, KUKA Deutschland GmbH, BROKK AB, Bauindustrieverband Nordrhein-Westfalen e.V., Handwerkskammer Aachen, Volvo Construction Equipment Germany GmbH

Project stakeholders of the reference construction site:

Annen GmbH + Co.KG, Lamparter GmbH & Co. KG, Wurst Stahlbau GmbH, Saint-Gobain, Robots in Architecture Research UG, International Performance Research Institute gGmbH (IPRI), Laboratory for Machine Tools and Production Engineering WZL of RWTH Aachen, RWTH Aachen Chair of Individualized Production in Architecture, Institute for Fluid Power Drives and Controls of RWTH Aachen University

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Reference Construction Site | Center Construction Robotics

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