

Robotics Research Kickoff

Robotics Research Project Holds First Meeting

19 October 2018

DUBAI – The CTBUH Robotics in Tall Building Construction research project steering committee held its initial kickoff meeting, just ahead of the 2018 Middle East Conference. The 24-month project, kindly funded by Schindler, will explore the new and promising realm of tall building robotics, identifying areas where the quality and speed of building construction could be enhanced through the use of such technologies, while maintaining the highest degree of on-site safety.

CTBUH Research Manager Dario Trabucco introduced the mission and parameters of the project, noting that the construction site is still fairly conservative in terms of its technological investment relative to automobile and aeronautics manufacturing – much physical labor is still involved. Part of the research will be to examine specifically why robotics have not been used very much to date in construction. Trabucco also indicated the relative importance of research in robotics to the industry, as demonstrated in CTBUH's *Roadmap on the Future Research Needs of Tall Buildings*, published in 2014. The industry survey determined that research into robotic construction would be “very important” but is also “very immature” at this stage.

A general discussion about the state of the art in construction robotics ensued, with Christian Schulz, Schindler's Head of Operations, noting that fully introducing robots into tall building construction would be a revolution akin to the effect of the automobile's introduction to the world of the horse and carriage – a new infrastructure, and potentially new types of wall systems, would have to be introduced.

It quickly developed that the initial research would be a widely cast net at first, with focus then becoming more precise on three scales: AW responded that the research project needs to be undertaken at three scales: to capture “the now” – current practices of robotic construction, mostly in low-rise buildings, but also in non-building areas such as ship and aircraft assembly; to identify obvious areas that can be automated, both on- and off-site; and to consider theoretical long-range applications, such as a completely automated construction site.

Christian Studer, Schindler's Head of New Technologies, represented Schindler's interest in the research project, first by demonstrating its current state of development on the RISE (Robotic Installation System for Elevators). RISE is a self-climbing robot that reconciles the inputs from digital building models with the built reality of the concrete elevator shaft, then climbs floor-to-floor, drilling holes and placing anchor bolts for the elevator running rails, which are then installed by human labor.

The group then viewed a presentation by Dr. Thomas Bock, Chair, Building Realization & Robotics, Technical University of Munich, who has consulted on and delivered robotic construction projects around the world for the past three decades. Many in the room were only somewhat aware of many of the projects he showed, which further illustrated the large scope of the research ahead of the team.

The next steps for the group will be to reflect and refine more clearly the roles of the committee and the direction of the research, and to expand the reach of the committee to include more expertise among individuals, companies and related institutions.

Attendees

Surname	First Name	Company	Title	Location
Wood	Antony	CTBUH	Chief Executive Officer	Chicago, USA
Trabucco	Dario	CTBUH	Research Manager	Venice, Italy
Du	Peng	CTBUH	China Office Director & Academic Coordinator	Chicago, USA
Safarik	Daniel	CTBUH	Editor	Chicago, USA
Dobler	Michael	Schindler	Senior Vice President, Global KAM & Large Projects	Lucerne, Switzerland
Schulz	Christian	Schindler	Head of Operations, Member of the Group Executive Committee	Lucerne, Switzerland
Studer	Christian	Schindler	Head of New Technologies	Lucerne, Switzerland
Kleiss	Michael	Clemson University	Associate Professor of Architecture	Clemson, USA
Odeh	Ibrahim	Columbia University	Founding Director, Global Leaders in Construction Management	New York City, USA
Singh	Gurjit	Dubai World Trade Center	Senior Vice President - Real Estate	Dubai, UAE
Standard	Ilkay C.	GenX Design & Technology Consulting	Innovation Manager	New York City, USA
Piper	Ben	Killa Architectural Design	Partner & Design Principal	Dubai, UAE
Bakker	Ron	PLP Architecture	Founding Partner	London, UK
Mills	Shonn	Ramboll Group	Global High Rise Director	Copenhagen, Denmark
Rinomato	Ernie	Residential Construction Council of Ontario	Board of Directors	Toronto, Canada
Bock	Thomas	Technical University of Munich	Chair, Building Realization & Robotics	Munich, Germany
Walker	Evan	Turner International LLC	Pre-Construction Manager	Mumbai, India
Mendis	Priyan	University of Melbourne	Professor of Civil Engineering, Director of ARC Center for Prefab Housing	Melbourne, Australia
McCabe	Brenda	University of Toronto	Professor	Toronto, Canada