DAfStb/DBV/RILEM international workshop

“Digital Fabrication with Concrete”

The international workshop “Digital Fabrication with Concrete” took place on 30th January 2020 in Berlin and was organised by DBV (German Society for Concrete and Construction Technology) and DAfStb (German Committee for Structural Concrete). The workshop was arranged in collaboration with the researchers of the RILEM Technical Committee “Digital Fabrication with Cement Based Materials” (TC 276-DFC), who have previously organised four workshops on this topic in the years 2017, 2018 and 2019. However, the workshop in Berlin was unprecedented, since it was the first one initiated and organised by industry. This does not only reflect the current extreme increase in interest of the industries for this theme, but also gives an important indication that digital fabrication in the construction sector is gradually growing out of its “infancy”. The event brought together the 3D printing pioneers from academia and industry “on stage” and more than 130 participants from 15 countries in attendance.

Moderated by **Lars Meyer**, the workshop thematically focused on the state-of-the-art in digital fabrication with cement-based materials, with emphasis on best-known technologies for large-scale additive manufacturing with concrete. In her introduction lecture, **Ksenija Vasilic** gave a short overview of the most developed concrete additive manufacturing technologies and briefly addressed the challenges encountered by these technologies towards practical application.

In the first session, the international experts from academia: **Freek Bos, Dirk Lowke and Norman Hack** provided a comprehensive insight into the extrusion, particle bed and shotcrete based 3D Printing technologies, respectively. The presentations showed that the research developments are rising exponentially and some sophisticated printing solutions are already being developed worldwide.

However, there are still challenges and open technical questions, as well as a high research demand towards practical applications. These challenges were the topic of the second session, where **Nicolas Roussel**, **Viktor Mechtcherine** and **Richard Buswell** addressed the rheological requirements of printable concretes, integration of reinforcement into printed structures and challenges foreseen when moving from ideas to reality, respectively.

In the third session, the speakers from the industry: **Raphael Zöller**, **Henrik Lund-Nielsen** and **Fabian Meyer-Brötz** focused on successful large-scale case studies and on the practitioners' point of view. The concluding presentation by **Udo Wiens** summarised the workshop and discussed "The German way forward" from the DBV and DAfStB's perspective. This presentation also brought about open questions, which lead to a lively discussion and confrontation of different points of view. In summary, the workshop created an opportunity for researchers to present their high quality technical concepts to a versatile audience, but also enabled bidirectional exchange between academia and industry. Such an exchange is crucial for the success of this emerging technology in the concrete sector; therefore, we believe that this event was the first of many to come.

by Ksenija Vasilic, DBV, Berlin
Photos: © DBV, Berlin