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Freek P. Bos
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Second RILEM International Conference on Concrete and Digital Fabrication

Digital Concrete 2020

Springer

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RILEM BOOKSERIES

Volume 28

RILEM, The International Union of Laboratories and Experts in Construction Materials, Systems and Structures, founded in 1947, is a non-governmental scientific association whose goal is to contribute to progress in the construction sciences, techniques and industries, essentially by means of the communication it fosters between research and practice. RILEM's focus is on construction materials and their use in building and civil engineering structures, covering all phases of the building process from manufacture to use and recycling of materials. More information on RILEM and its previous publications can be found on www.RILEM.net.
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ISSN 2211-0844 ISSN 2211-0852 (electronic)
RILEM Bookseries
ISBN 978-3-030-49915-0 ISBN 978-3-030-49916-7 (eBook)
https://doi.org/10.1007/978-3-030-49916-7

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

It is our great pride and pleasure to present to you the proceedings of *Digital Concrete 2020*, the 2nd RILEM International Conference on Concrete and Digital Fabrication. More than 100 papers await you, collected from around the globe.

Digital Concrete was initiated by the RILEM Technical Committee 276 Digital Fabrication with cement-based materials. Starting in 2016, this committee has stood at the cradle of an impetuously growing field of technologies and associated research. Driven by the promise of increased productivity and speed, reduced material use and cost, and enhanced geometrical freedom, digital fabrication methods with cement-based materials have taken a flight. The number of papers has tripled since the first *Digital Concrete* conference, held in September of 2018 at the ETH Zurich, Switzerland. Distinctive areas of research within the field are becoming discernable, such as mixture design, rheology & fresh state behaviour, hardened properties, and structural engineering. Technology, equipment and digital design strategies, is a particular field of research that more than ever plays a key role in the development of cement-based manufacturing. It builds new collaborations between previously unrelated fields of expertise. A significant number of contributions in each of these areas can be found in these proceedings. In addition, we also find papers aimed at applications, as well as studies on the impact of these technologies, such as life cycle and economic analyses. This mirrors the expansive growth of 'real' applications.

Professional associations are setting up and expanding working groups. Figuratively speaking, we are moving from childhood into adolescence. This means our capabilities are growing rapidly, and every day we can do more—better, faster, and higher. This brings joy and excitement. However, whilst our capabilities are growing, so are our responsibilities. Digital fabrication with cement-based materials will need to provide quality, safety, and sustainability. Academics and professionals need to reach out to make sure that scientific results, ranging from the quantification of 'printability' to shrinkage control, from low-emission binders to reinforcement, from interface properties to design methodology and many more, find their way into practice. Vice versa, lessons and needs from industry should guide research directions and priorities. *Digital Concrete* is the platform where this synergy is

forged. We extent a virtual warm welcome to you, as this 2020 edition proceeds online in tumultuous times when the COVID-19 virus shakes our world. In addition, we hope to see you in person too at the on-location *Digital Concrete 2020 (re) visited workshop* in Eindhoven in 2021.

Digital Concrete 2020 presents an outstanding line-up of keynote speakers that represent the state-of-the-art of research across the globe. Once again, *Digital Concrete* has teamed up with *Cement & Concrete Research* to deliver a dedicated special issue containing 13 papers from renowned experts in the field, including the keynote speakers. Furthermore, the Dutch magazine *Cement* publishes a theme issue in Dutch with selected proceedings papers, for the local professional market.

We would like to thank all the authors for their contributions: their excellent work provides the backbone of the conference and allows the world to learn and grow. We thank the keynote speakers and gratefully acknowledge the support of RILEM and the Scientific and Organizing Committees. A special word of gratitude goes to our sponsors, which at the time of writing included Saint Gobain Weber Beamix, Sika, and Twente Additive Manufacturing (platinum), Bekaert (gold), and BASF and Dow (Silver).

Finally, we thank you, reader and conference participant, and hope you will enjoy an inspiring conference.

July 2020

Freek Bos
Rob Wolfs
Sandra Lucas
Theo Salet

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