



News Release

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Master Builders Solutions[®] presents 3D-printed formworks

- » Formwork for walls or facades with integrated patterns can be produced by 3D-printing
- » BASF applications technicians will demonstrate 3D-printed formworks and concrete casted parts

At the first International Conference on Concrete and Digital Fabrication, which is being held in Zürich, Switzerland, from September 9 to 13, 2018, BASF is presenting its versatile portfolio of innovative solutions under the brand name of Master Builders Solutions[®]. In addition to a variety of exhibits, BASF experts will be available for specialist discussions. Participants will be also able to witness a demonstration of 3D-printed formworks and concrete casted parts, presented by BASF application technicians.

Visitors will be able to see how 3D-printed formwork can be used in practice, thanks to an innovative system and adapted concrete materials. The concrete additives and grouts from Master Builders Solutions, optimized for the filling of 3D-printed formworks can already be used on projects today.

3D-printing is an additive manufacturing process in which workpieces are built up in layers in a computer-controlled process. This way, highly complex shapes can be generated, including formworks for concrete casting. With 3D-printing, formworks

are fabricated for walls or facades with integrated patterns which otherwise could not be produced conventionally or only with considerable effort.

In a validation project, Heidelberg-based BASF 3D Printing Solutions together with BASF's Construction Chemicals division and the Innovation Department NOWlab of Berlin-based BigRep have demonstrated technical feasibility of a series of concrete formworks with the aid of large-format 3D printing.

There are almost no limits to the possible applications of this technology, especially if the formwork is to provide more complex shapes rather than the relatively simple today's geometries. "Apart from the countless possibilities of templates, 3D-printed formwork can also be used for irregular organic shapes or difficult connecting elements of the type we need in concrete construction," said Sebastian Dittmar, Head of Applications Technology Germany with Master Builders Solutions. "The facade element is scanned and can then be precisely reproduced by the 3D-printer. This way, it is possible to produce almost any shape you need."

Further information on innovative concrete additives from Master Builders Solutions is available at: www.master-builders-solutions.basf.com. For registration to the conference, please go to: <http://digitalconcrete2018.ethz.ch/>

About the Construction Chemicals division

BASF's Construction Chemicals division offers advanced chemical solutions under the global umbrella brand Master Builders Solutions for the construction, maintenance, repair and renovation of structures. The brand is built on more than 100 years of experience in the construction industry. Our comprehensive portfolio encompasses concrete admixtures, cement additives, chemical solutions for underground construction, waterproofing systems, sealants, concrete repair & protection systems, performance grouts, performance flooring systems, tile-fixing systems, expansion joints & control systems and wood protection solutions.

The Construction Chemicals division's approximately 6,500 employees form a global community of building experts. To solve our customers' specific construction challenges from conception through to completion of a project, we draw on our specialist know-how, regional expertise and the experience gained in countless constructions projects worldwide. We leverage global BASF technologies and our in-depth knowledge of local building needs to develop innovations that help make our customers more successful and drive sustainable construction.

The division operates production sites and sales offices in more than 60 countries and achieved sales of about €2.4 billion in 2017.

About BASF 3D Printing Solutions

BASF 3D Printing Solutions GmbH (B3DPS), headquartered in Heidelberg, Germany, is a 100% subsidiary of BASF New Business GmbH. It focuses on establishing and expanding the business with materials, system solutions, components and services in the field of 3D printing. It works in agile, startup-like structures to serve customers in the dynamic 3D printing markets. To develop sustainable solutions B3DPS works closely with BASF's global research platforms and application engineers in the divisions. In addition, B3DPS cooperates with research institutes, universities, startups and industrial partners. Further information at www.basf-new-business.com

About BigRep

BigRep is a technology start-up based in Berlin with offices in Boston, New York and Singapore, which develops and manufactures the world's largest 3D printers. One of the ground-breaking developments of the company founded in 2014 is the BigRep ONE, which is supplemented by the smaller BigRep STUDIO. Interdisciplinarity and well-founded experience in the field of additive manufacturing characterizes the multinational team of BigRep, now comprised of more than 90 employees. In addition to new products, the Berlin company is now concentrating on complete solutions for industrial customers in the form of integrated additive manufacturing systems. The goal of the highly innovative engineering company is to revolutionize design, prototyping and industrial production from the ground up.

About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The more than 115,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas. BASF generated sales of €64.5 billion in 2017. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (BAS). Further information at www.basf.com.