



3D Pioneers Challenge Rapid.Tech 3D, Messe Erfurt

Hyperloop break „Bellow rail brake“ wins the 3D Pioneers Challenge 2022

(Erfurt 19. Mai 2022 Erfurt)

Zurich-Erfurt, 440km in 20 min - at Hyperloop speed to Erfurt.

The 3D Pioneers Challenge selected the winners of the international design award for Additive Manufacturing and Advanced Technologies in a brilliant final. In Thuringia, the spirit of Silicon Valley hovered over Rapid.Tech 3D at Messe Erfurt for three days with the 3DPC 2022 exhibition.

After two years of online events, the winners were finally awarded again on-site in Erfurt. This year, projects from 27 countries and five continents were submitted, of which 37 were now in the final. The participants came from all over the world to the award ceremony in Erfurt.

The main prize winner this year was in the Mobility category. The team around the project "Bellow rail brake" developed a brake for the high-speed transport system Hyperloop taking advantage of 3D printing and thus come a big step closer to the vision of sustainable mobility.

The cross-category sustainability award won WASP 3D from Italy. Here, the material for the large-format printing of a house is obtained entirely from local soil. It is therefore carbon-neutral and can be adapted to any climate and context.

The 3DPC exhibition represented the current developments in Advanced Technologies. A clear trend is material developments and technology processes with a focus on multi-layered sustainability.

For example, the winning project "GeoSlate" shows how to deal with residues from industrial production processes and thus reduces waste in traditional slate production.

In the vertical Design, the e-boat "Tanaruz" scored points by not producing new polymers to print the boats. Circular economy until the end, when the boat itself can be recycled.

Other projects use robotic arms. These have the advantage of printing in three-dimensional space. This means that the material is always applied at the optimal, vector-based angle. For example, in the "Striatum" project by the ETH Zurich, Block Research Group and Zaha Hadid Architects, or in "FormWork" by the MIT, concrete can be reduced with the same load-bearing capacity.

The multi-axis robot-based bioprinting system enables the winner in the MedTech category to print long-term viable heart tissue, all directional cell printing,.

The winner of the Digital category symbolises the central theme of this year's competition "Convergence" - the merging of established and disruptive technologies: „PartBox- Click&Print“. The team uses their printer directly on the production line and can stream and produce the new robotic gripper for the packaging industry at the touch of a button.

Moderator Anja Lange led the award ceremony at the very well-visited booth. At her side were Simone and Christoph Völcker, initiators of the 3D Pioneers Challenge.

Jurors of the 30-member, international and high-class jury announced the winners of the categories. Karsten Hauser, Siemens AG, said: "I am very happy to be part of this year's jury of the 3D Pioneers Challenge and about the numerous innovative submissions. This helps to strengthen our ecosystem and shape a responsible future!"

The best projects from the categories Mobility, MedTech, Design, Architecture, Material, FashionTech, Electronics, Digital as well as cross-disciplinary Sustainability were honoured. Prizes with a total value of over 150,000 euros were awarded. These included software licences from NTopology and 3D printers



from Ultimaker, Formlabs and Makerbot. The prize money in the amount of 35,000 euros was provided by the Thuringian Ministry of Economic Affairs, Science and Digital Society.

The main prize winner in 2022 is the "Bellow Rail Brake" team from ETH Zurich and inspire AG. In addition to the prize money of 10,000 euros and the Formlabs Printer Form 3, they received the limited design object, the 3DPC Trophy. Urs Hofmann: „We are happy that our design has convinced the jury of the 3D pioneers challenge. The design demonstrates the large potential of AM for function integration in the mobility sector.“

The winners in the other categories received prize money of 3,000 euros each.

The students of Burg Giebichenstein Kunsthochschule Halle, Shuyun Liu and Stefanie Putsch from "Glasklar", were awarded the "Best Student Award". They won 1,000 euros and the Makerbot Sketch 3D printer.

The Swiss project "Bellow Rail Brake", "Geoslate" from the Netherlands and "FLOWall" from Denmark were selected for the "Special Mention by Autodesk Technology Centers“.

On the evening of 18 May, the winners were honoured at the Rapid.Tech 3D gala event in the creative environment of the InnovationsHub KONTOR by Minister for Economic Wolfgang Tiefensee and Exhibition Director Michael Kynast: "The 3D Pioneers Challenge has been an integral part of our Rapid.Tech 3D for seven years and is a real enrichment. We congratulate all the winners and are looking forward to seeing which collaborations the finalists will be able to establish at the trade fair.“

The competition is considered an annual highlight of the scene, which also provide a trend radar for industry and politics. The winners will now be presented in a roadshow exhibition in the German Bundestag, among other places.

3D Pioneers Challenge 2023

Call for entries for 3DPC 2023 will be published in November 2022.

Save te date: Rapid.Tech3D 2023, Messe Erfurt: 09 – 11 May 2023

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Winners 3DPC 2022 and Jury comments:

(detailed descriptions see www.3dpc.io, for further pictures, please contact us)

„3DPC2022 Winner Mobility“ // Main winner : **Bellow rail brake – Functionally integrated fail-safe-closed AM brake for Hyperloop**

ETH Zürich, inspire AG

Urs Hofmann, Julian Ferchow, Philipp Keller, Lukas Rother, Konstantinos Sarigiannidis, Aurel Schüpbach, Michael Zanetti, Mirko Meboldt

SWITZERLAND

- The novel lightweight brake design consists of one component and brings the vision of sustainable mobility one step closer.

// 10.000 EUR, 3DPC Trophy, Formlabs Form3 Printer, Special Mention by Autodesk

Jurystatement: "A fantastic contribution to climate-friendly mobility - the safety aspect comes into focus here to enable hyperloop speeds, new solutions for braking technologies through advanced technologies."

„3DPC2022 Winner Architecture and Sustainability“:

WASP TECLA, the eco-sustainable 3D printed habitat / Dior Concept Store

3DWasp

Wasp / MC A – Mario Cucinella Architects / MC A and WASP, supported by Mapei, Milan Ingegneria, Capoferri, Frassinago, RiceHouse, Lucifero's.

ITALY

- TECLA, the eco-sustainable 3D printed habitat. / On Dubai's Jumeirah beach the unique Dior installation crafted from natural materials.

// 6.000 EUR

Jurystatement: "WASP, pioneer of the 3D-printed house, is convincing in its use of local clay and with the archaic principle of building a house from the ground. It's good to see global brands like Dior putting a focus on this sustainable principle and making it a reality for everyone to grasp."

„3DPC2022 Best student“: **GlasKlar**

Burg Giebichenstein Kunsthochschule Halle

Shuyun Liu, Stefanie Putsch

GERMANY

- Creating a 3D Habitat for Bacteria

// 1.000 EUR, Makerbot Sketch 3D printer

Jurystatement:

„It proposes an interesting living material whereby a printed material acts a host for useful microbial bacteria. This application looks beyond usual applications.“

„3DPC2022 Winner Design“: **Tanaruz Boats**

RAW Idea

Alexey Shifman (Co-owner), Hans Franke (Co-owner), Lars Breugelmans (Design and Production Engineer)

THE NETHERLANDS

- Tanaruz Boats is a creation of RAW Idea. Tanaruz boats are 3D-printed using reclaimed polymers, equipped with 100% electric engines and are recyclable

// 3.000 EUR, Ultimaker S5 Pro Bundle

Jurystatement: "The overall concept is convincing: in the sense of an alternative and sustainable mobility concept of the future today! A successful design, with resource-saving use of materials, electric drive and customised production on demand."



„3DPC2022 Winner MedTech“: Multi-axis robot-based bioprinting system supporting natural cell function preservation and cardiac tissue fabrication

*Institute of Genetics and Developmental Biology, Innovation Academy of Seed Design, Chinese Academy of Sciences, Beijing CHINA // University of Manchester UK // Beijing National Research Center for Information Science and Technology, Department of Computer Science and Technology, Tsinghua University, Beijing CHINA
Zeyu Zhang, Chenming Wu, Chengkai Dai, Qingqing Shi, Guoxin Fang, Dongfang Xie, Xiangjie Zhao, Yong-Jin Liu, Charlie C.L. Wang, Xiu-Jie Wang
CHINA, UK*

- A novel six-axis robot-based 3D bioprinting system enables all directional cell printing, vascularization and long-term survival of printed cells.

// 3.000 EUR

Jurystatement: "This development convinced the jury with the combination of different advanced technologies that can map cells in complex structures in a vector-based and thus sustainable functional way. With the use of several robotic arms, different tissues can be combined with each other in the future and thus complex tissues, organs and limbs can be printed. For the jury, this is a milestone in medical technology."

„3DPC2022 Winner FashionTech“: Setae Jacket for Chro- Morpho Collection by Stratasys

Julia Koerner | JK Design GmbH

*Designer: Julia Koerner | JK Design GmbH, Director of Operations: Kais Al-Rawi Design, Team: Eunice Han, Chenming Jiang, William Qian, 3D Printed by: Stratasys Stratasys, Creative Director: Naomi Kaempfer
USA*

- Julia Koerner SETAE Jacket - for Chro Morpho Collection by Stratasys 2019 - Multi-color 3D-Printing on Denim

// 3.000 EUR

Jurystatement: "Desirable design, advanced technologies at their best. Trend-setting in what is possible in the combination of 3D printing and textiles - the jury also appreciates the numerous applications in addition to fashion, for example, also in the automotive industry- in the sense of a resource-saving material."

„3DPC2022 Winner Digital“: Partbox - Click and Print

Schubert Additive Solutions GmbH

*Conrad Zanzinger, Janis Heidel, Ann-Kathrin Müller, Moritz Schmitz, Jörg Brenner, Marcus Schindler
GERMANY*

- PARTBOX is the world's first part streaming platform consisting of Printer, Operations System and Material. Customers only pay for each printing hour

// 3.000 EUR, nTopology Lizenz

Jurystatement: "The beautifully designed black box with sustainable impact - a shout out of convergence: Intelligent implementation of Advanced Technologies into established industrial manufacturing methods. The entire process chain is considered for customers that now can click & print successfully their customized product right at the production line on demand – from grippers for robots to spareparts - streamed, with secure digital rights management."

„3DPC2022 Winner Electronics“: Future Electric Motor Systems 3 (FEMS3) - Aerospace Motor

Manufacturing Technology Centre

Ollie Hartfield, Stuart Watt, Dan Walton, Laura Drake, Elliot Brooks, Thomas Thorpe, Matt Rawlins.

UK

- FEMS 3 explored the advancement of electric motors using AM, producing casing and rotor designs with minimised mass and textured cooling channels

// 3.000 EUR, nTopology Lizenz



Jurystatement: "Leveraging the advantages of additive manufacturing to design and manufacture a bespoke element of a complex product and thus system integration at such a high level is very impressive. Weight reduction of a functional electric motor - sustainability in the overall concept. Motors consume a huge portion of energy in industry. Ideas to improve electric motors by additive manufacturing is a great lever towards higher performance and thus improved sustainability."

„3DPC2022 Winner Material“: Geo Slate

CONCR3DE_ Studio Mixtura

Daria Biryukova, Eric Geboers, Matteo Baldassari, Peter Hoendermis

THE NETHERLANDS

- In this project we turn slate waste sludge in a mineral 3D printing material. We have 3D printed stone roof tiles for the restoration of a castle.

// 3.000 EUR

Jurystatement: "This is an excellent example how 3D printing can facilitate convergence of processes and materials and thereby help to reduce our ecological footprint by upcycling. A sustainable paradigm for construction sector - creating building materials out of waste. Great idea to proceed towards a more sustainable world we all want to live in."

Facts 3DPC 2022

Jury 3DPC 2022

Frank Beckmann_Fraunhofer IAPT

Prof. Christiane Beyer_OVGU University Magdeburg

Zoé Bezpalko_Autodesk Sustainability

Shajay Bhooshan_Zaha Hadid Architects

Mario Brandenburg_Member of Parliament

Stefanie Brickwede_DB, Mobility goes Additive

Alejandro Delgado_Hugo Boss

Lutz Dietzold_German Design Council

Diana Drewes_Haute Innovation

Carsten Feller_Thuringian Ministry of Economic Affairs Science and Digital Society TMWWDG

Pia Harlaß_DyeMansion

Arno Held_AMVentures

Dr. Karsten Heuser_Siemens Digital Industries

Thomas Hundt_Jangled Nerves

Gil Lavi_3D Alliances

Carina Lebsack_Adolf Würth GmbH & Co. KG

Marie-Lucie Linde_Sustainable Natives

Ross Lovegrove_Lovegrove Studio

Dr. Cora Lüders-Theuerkauf_Medical goes Additive e.V.

Prof. Shlomo Magdassi_Hebrew University of Jerusalem

Joris Peels_SmarTech Analysis, 3DPrint.com

Michael Petch_3D Printing Industry

Sonja Rasch_Materialise

Victoria San Fratello_Emerging Objects

Prof. Patrik Schumacher_Zaha Hadid Architects

Dr. Dirk Simon_FARSOON Europe

Matthew Spemulli_Autodesk Technology Centers

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Christoph Völcker_Innovation Lab AM, Würth Elektronik

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About Rapid.Tech 3D

Rapid.Tech 3D is the pioneering event for the AM scene at Messe Erfurt. The event offers a successful triad of trade congress, trade fair and networking opportunities for the AM industry.

Rapid.Tech 3D is a creative meeting place for start-ups as well as experts and industry leaders in additive manufacturing. In addition to a high-class and strongly user-oriented trade congress, the trade fair will convince with the 3D Printing Conference or the Start-Up and Workshop Area with suitable opportunities for networking and presentation of ideas within the framework of Rapid.Tech 3D.

About 3D Pioneers Challenge

The international design competition for Additive Manufacturing processes and Advanced Technologies is the most prestigious award of its kind and is one of the most highly endowed worldwide. The annual announcement and presentation of the finalists is considered to be the innovation monitor of the industry. Unique in its structure, the competition has been addressing specialists who think outside the box since 2015 - pushing boundaries!

About 3DPC Platform

Over the years, the Challenge has become a platform with a worldwide network and is an interface for creative future-makers, pioneers of advanced technologies and innovators from research and industry.

About „3DPC & Friends“

Under the umbrella of „3DPC & Friends“, 3DPC brings together the creative minds and high-tech pioneers of the 3DPC platform in an interdisciplinary way, resulting in new, groundbreaking projects in which everyone can contribute and live out their expertise - design rethought! The 3DPC shows today what tomorrow will bring - pushing boundaries.

About d.sign21

The design and consultancy company with a wealth of experience in developing and organising design challenges. Its expertise in design, additive technologies and the global network supports the 3D Pioneers Challenge.