

Technology



Printed Hybrid Electronics on 3D Objects

Fast Facts

- Research and development service provider (process and product development)
- Inkjet-printing on 3D
- Dispensing on 3D
- Pre- and post-treatment

Fraunhofer ENAS inkjet printing on complex 3D objects

- Smart systems on 3D objects
- Sensors on 3D objects
- Functional coatings on 3D objects
- Printed conductive patterns, paths, antennas, resistors on nearly every dielectric material / 3D objects
- Printed dielectric coatings on metal / 3D objects

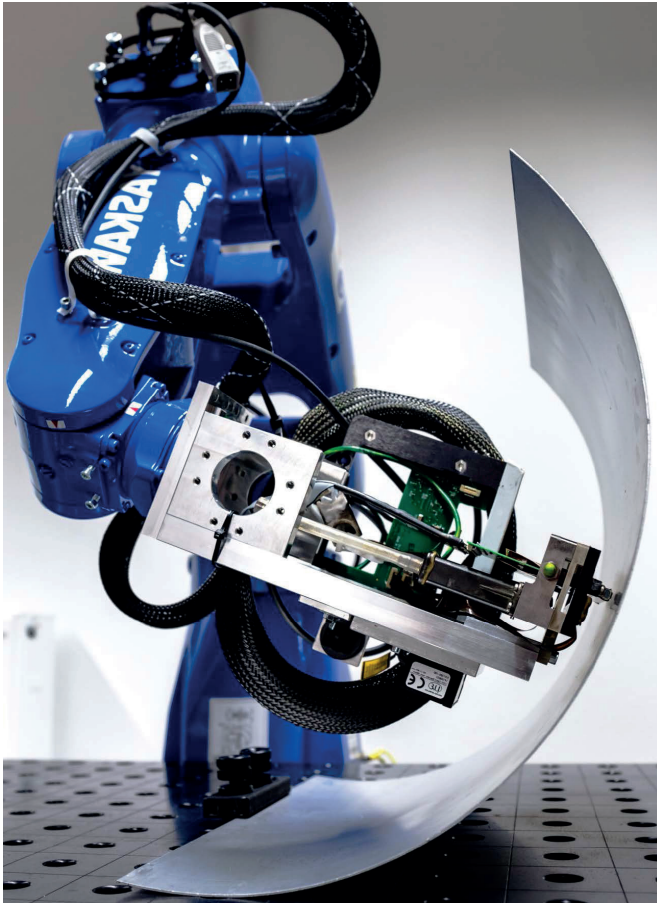
Parameter

Printable materials	Polymers, metals, ceramics, glass, stone, wood, ...
Dimension of printable 3D objects	1 m x 1 m x 1 m
Endeffector speed	2.5 cm/s
Continuous working distance	< 5 mm
Layer thickness of conductor lines	0.2 µm – 1 µm (multi-pass)
Minimum line width	250 µm

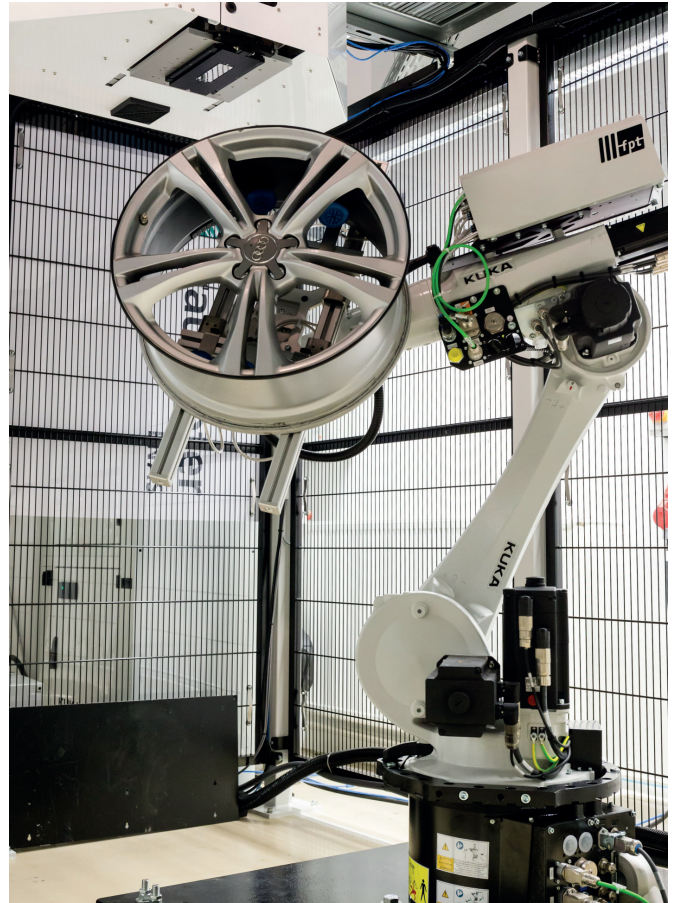
Robot guided Inkjet process for printed electronics

Equipment:

- System 1: 6 axis robot KUKA KR22 R1610 for handling everything which should be printed by an static inkjet system
- System 2: 6 axis robot Yaskawa GP8 for handling inkjet technology to print on static objects



System 1 – 20 inch aluminum car rim.



System 2 – printed UV curable dielectric layers on the inside of a cylindrical shaped metal part.

More about Printed Functionalities



Fraunhofer ENAS is part of



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Photo acknowledgments:
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