

January 2019

**Co-Operation between GEFERTEC and Linde**

**Choosing the right Gas for 3D-Printing**

Berlin, January 2019 – Additive manufacturing is a promising approach for timesaving production of parts in many industry sectors. The new methods are especially interesting for aerospace industries, when expensive materials like titanium are used. GEFERTEC GmbH established the new industrial standard for additive manufacturing – 3DMP®. This technology uses well-proven electric arc welding and is therefore benefiting from wire as original material. The near-net-shaped part is formed welding layer by welding layer. After 3D printing the part can be further machined by conventional milling. For larger parts, this technology is faster and more cost-effective compared to other methods based on powder as original material.

The result of the arc welding process depends heavily on various parameters – especially from the process gas. GEFERTEC GmbH and Linde AG started a joint research project, to investigate the influence of the process gas and the oxygen percentage on the 3D-printing process. Another partner in the research project is MT Aerospace AG, which will perform the mechanical tests of the produced parts. The actual 3D-printing will take place at the additive manufacturing laboratory of Fraunhofer IGCV – the fourth co-operation partner, where GEFERTEC installs the 3D-printing system. Subsequently, the influence of welding parameters and process gas on the parts will be examined. Final goal of the project is the production of lager parts at high production speed made of the titanium alloy Ti6Al4V, which meet the quality requirements of the aerospace industry.

More Information about the new technology can be found on [www.gefertec.de](http://www.gefertec.de) and on the company's youtube channel: [www.youtube.com/channel/UC\\_L47QAD-8UKKBL\\_I920c5A](https://www.youtube.com/channel/UC_L47QAD-8UKKBL_I920c5A).

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**3DMP®-Technology**

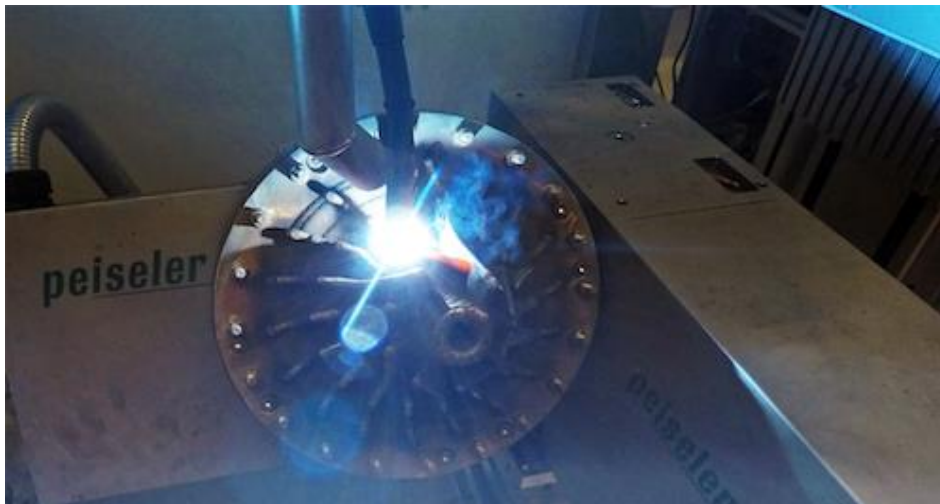
January 2019

Since 2017, GEFERTEC is offering machines, which work with the new industry standard 3DMP®. The arc series consist of four different types with maximum part sizes of to up 3 m<sup>3</sup>. A special 3DMP® CAM software calculates the data out of the CAD model, which enables the CNC unit to position the welding head with high precision. The machine produces the near-net-shape part fully automatically. GEFERTEC and Linde work closely together in the field of 3D printing. While GEFERTEC offers the arc machines, Linde's worldwide distribution network supplies the necessary process gases. This strong co-operation ensures the easy operation of the arc machines worldwide. FIT AG and ROLF Lenk GmbH already benefit from the co-operation. They are using arc machines in their day-to-day production, and Linde supplies the process gases.

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#### Picture



**Picture 1. (3DMP\_Prozess\_Impeller.jpg)**

Process: The 3DMP® technology uses wire as original material – the near-net-shaped part is formed welding layer by welding layer.

January 2019



**Picture 2. (3DMP\_Bauteil\_Impeller.jpg)**

Part: Near-net-shaped part after 3D printing.



**Picture 3. (arc605.jpg)**

Machine: GEFERTEC arc605

January 2019



**Picture 4. (DSC\_3520\_cut\_out\_ISOCoated\_v2)**

Linde ADDvance® O<sub>2</sub> precision measures oxygen percentage during 3D-printing process

#### **About GEFERTEC GmbH**

GEFERTEC invented the innovative 3DMP® method for additive manufacturing of metal parts, which offers completely new possibilities. The company is the first to offer modern machining centres based on this technology. GEFERTEC is part of the Berlin headquartered Berlin.Industrial.Group. (B.I.G.), which has around 300 employees and a turnover of approximately 45 million Euro.

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