

November 7, 2022

**Nidec Machine Tool to Unveil a New Nozzle with the Largest Gas Shielding Region in the World at formnext2022 in Frankfurt, Germany from November 15<sup>th</sup> to 18<sup>th</sup>**

**Additionally, visitors can see original “LAMDA Series” 3D Metal Printers Exhibits: among them a sample of a rocket engine nozzle (500mm in diameter, 1mm thick) in exceptional quality**

**Engineering experts will be present to explain details about the improved product lineup, such as the new DED-type 5-axis metal 3D printer, “LAMDA500”**

Nidec Machine Tool Corporation (“Nidec Machine Tool” or the “Company”) announced today that it will exhibit its “LAMDA series” deposition-type (DED-type) metal 3D printer technology at Formnext2022, an exhibition exclusively to Additive Manufacturing to be held in Frankfurt, Germany from November 15 – 18.

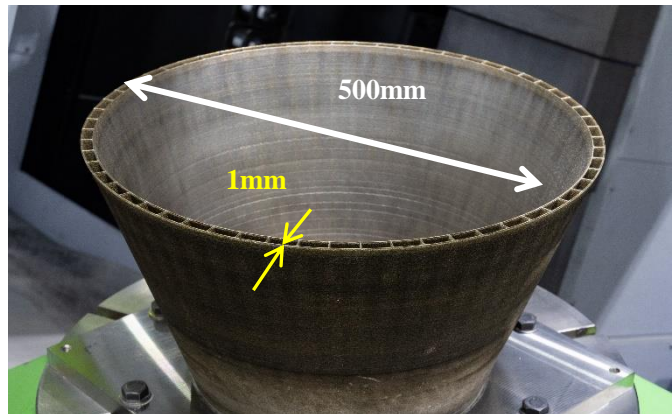
At this event, the Company will exhibit its own developments, the local shield nozzle and the monitoring feedback system, both of which continue to evolve since their debut in 2019.

Applying both technologies enable Nidec Machine Tool’s 3D-Printers to create large objects, stabilize their quality, and improve the geometrical accuracy, all without installing an atmospheric chamber. Furthermore, the technologies are highly practical in coating dissimilar metals and making prototypes by using functional gradient materials.

At Formnext2022, the Company will display samples that demonstrate the LAMDA series printers’ capabilities with appeal to aerospace, energy, and automotive industries.



**The new local shield nozzle improved a shielding region up to 45x larger**



**A high-precision additive fabrication sample modeled after a rocket engine is 500mm in diameter and has a wall thickness of 1mm**

**Samples exhibited to the public for the first time ever at formnext 2022 include:**

1. A design sample of a complex-shaped rocket engine nozzle (1/2 in size)  
Utilizing the 5-axis additive fabrication technology and the monitoring feedback function to create large, complex-shaped components with high accuracy
2. An aluminum alloy-based fabrication sample – one of the largest of its kind in the world  
Using LAMDA2000, a larger 3D metal printer, to fabricate a 1,160mm tall structure of aluminum alloy
3. A cutting-edge local shield nozzle with improved shielding performance  
The optimized shield gas spraying function expands the shield region area by a factor of 45 compared to conventional products.

**The LAMDA series’ features**

1. The powder DED method is a technology to consecutively spray powder from a nozzle and irradiate the powder with a laser to melt/coagulate it. This technology can create a structure more than 10 times faster than the powder bed method, which creates parts by filling a tank (bed) with metal powder. –Since there is no need to use a metal powder tank, the powder DED method can create large shapes that exceed the capabilities of the powder bed method. In addition to these technologies, one can better stabilize the molding

- quality and make large-size components by utilizing the monitoring feedback and local shield functions that Nidec Machine Tool has developed independently.
2. The local shield function, which eliminates oxygen in an ambient environment during a shape-forming process to prevent oxidation of metals, such as titanium, aluminum, and other oxygen-averse materials, without the use of an atmospheric chamber.
  3. The monitoring feedback function uses a camera and a sensor to monitor build-up conditions, and, based on analytic results, control laser output and other building conditions in real-time, to ensure a stable melting and coagulation of the materials. This function automatically optimizes modeling parameters, minimizing the time for trial and error required to finalize printing conditions.
  4. The AI technology adopted for use in the LAMDA-Series Printers supports the ability to detect problems in processes and prevent equipment malfunctions.

**Formnext2022's official website:** <https://formnext.mesago.com/frankfurt/en.html>

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