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**Press Release**

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# Largest workpiece size Φ1,010 mm × 3,702 mm Laser Metal Additive Manufacturing Machine "LASERTEC 6600 *3D hybrid*" for Rocket Engines and Oil-well Pipes Released

DMG MORI CO., LTD. (hereinafter called DMG MORI) released a laser metal additive manufacturing machine "LASERTEC 6600 *3D hybrid*" featuring a large build area. The machine was an integration of a mill-turn machine and additive manufacturing (AM) which is the laser metal deposition technology.

The AM market has drastically grown to this date, but the use of additive manufacturing machines was relatively limited to the production of prototype parts and small components that were difficult to cut by the conventional cutting method. The LASERTEC 6600 *3D hybrid* with a large build area achieves both metal additive manufacturing and subtractive machining on one machine; therefore, the machine can enable far more advanced machining in addition to realizing what was impossible before.

For example, the LASERTEC 6600 *3D hybrid* can ensure a short build time and allow the deposition of multiple kinds of metal powders because the machine employs the Directed Energy Deposition method by which metal powder injection and laser irradiation are carried out simultaneously to deposit and melt the material at the same time. Different kinds of metal powders are layered little by little to complete one mixed-material component.

The AM nozzle mounted on the tool spindle for injecting metal powder materials and irradiating lasers at the same time realizes 5-axis additive manufacturing including the B-axis. This makes possible the whole deposition process in one chucking, ensuring automatic and continuous additive manufacturing for long hours.

<Main Features>

1. Large Build Area
   - Up to 1,040 mm on the X-axis, -280 mm to +330 mm on the Y-axis, 3,890 mm on the Z-axis
   - Largest workpiece size: Φ1,010 mm × 3,702 mm
   - Suited for large workpieces including rocket engines for the aerospace industry, oil-well pipes for the energy industry and shafts for transport aircrafts

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2. Hybrid of metal additive manufacturing technology and subtractive machining
   - Efficient metal additive manufacturing and subtractive manufacturing on one machine with the linear axes (X-, Y-, and Z-axis), the B-axis (tool spindle) and the C-axis (Spindle 1 and Spindle 2)
   - Synchronized operation of Spindle 1 and Spindle 2 that transfers workpieces between the two spindles to achieve streamlined additive manufacturing processes
   - Deposition on the end surface possible by turning the AM nozzle
   - Tool spindle equipped with the AM head and AM nozzle to carry out metal powder injection and laser irradiation simultaneously
   - Two types of AM nozzles available*: “Single nozzle” with less interference with workpieces and “multi-jet nozzle” with higher build rates. *Standard: one nozzle only
   - AM nozzle stocker for automatic replacement of the AM nozzle. Long-hour deposition possible by use of different nozzles according to purpose and by replacement with a spare nozzle (option)
   - AM nozzle stocker for individually storing the AM nozzle to prevent chips, coolant and metal powder from adhering to its optical system

3. Extensive maintenance functions
   - Movable and high-performance dust collection duct to prevent dust powder from scattering
   - Zero Sludge Coolant Tank that effectively collects fine sludge inside the coolant tank as standard
   - Laser sensor installed on the machine cover and window to detect laser before it penetrates the cover and stop it
   - Powder feeder mounted on the machine front to control powder supply

DMG MORI will continue to launch the products that are equipped with a higher degree of reliability and functionality, and worthy of investment in the market.

| Item | Laser metal additive manufacturing machine |
|---|---|
| Model Name | LASERTEC 6600 *3D hybrid* |
| Market | Aerospace, energy, transport aircraft, etc. |

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LASERTEC 6600 *3D hybrid*

LASERTEC 6600 *3D hybrid*: Image of internal view

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Powder feeder on the machine front



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