



DMP Advanced Service Package

Maintenance & calibration Package for Additive Manufacturing machines

GF Machining Solutions offers a comprehensive package of maintenance and calibration procedures for its suite of Direct Metal Printing (DMP) systems, as an upgrade to the standard preventive maintenance. This Service Package includes documented measurement and calibration of all critical process parameters. As a result, this allows part manufacturers to comply with the latest standards and requirements for metal Additive Manufacturing in regulated industries such as Aerospace. Specifically, the Service Package adheres to the requirements defined in International Standards such as ISO/ASTM 52941 and AMS7003, as well as the NADCAP AC7110/14 accreditation requirements.



DMP Advanced Service Package Highlights

A Service Package offering complete control and documentation of all critical process parameters

In the standard preventive maintenance package, basic machine health and process parameters are checked and maintained. The DMP Advanced Service Package offers more extensive measurement, calibration and documentation of all critical process parameters. Robust procedures and state-of-the-art, calibrated measuring equipment are used by experienced Field Service Engineers to ensure accurate and reliable results.

The DMP Advanced Service Package includes:

Advanced Laser Beam Measurement & Control

Several laser beam measurements & calibrations are executed and documented to adhere to the specific requirements. These include:

- ✓ Beam power stability & focus stability at various power levels
- ✓ Beam caustic shape & stability
- ✓ Beam astigmatism & quality factor
- ✓ Beam defocusing accuracy
- ✓ Beam trajectory accuracy



Environment Measurement & Control

All sensors that monitor and control the build process environment are inspected and checked with calibrated tools. These sensors include:

- ✓ Temperature & humidity sensor
- ✓ Multiple pressure sensors (chamber, flow, filter)
- ✓ Oxygen sensors



Powder Deposition Measurement & Control

Uniform powder deposition is ensured and documented through measurement & calibration of the following powder dosing parameters:

- ✓ Powder dosing bi-directionally (left & right), in front, middle, and back of the build plate
- ✓ Parallelism of coater mechanism
- ✓ Coater speed



Build Platform Accuracy Measurement & Control

To ensure consistent layer thicknesses and accurate part dimensions, the following build platform movements are controlled:

- ✓ Step accuracy in unloaded & loaded conditions, at different positions of total build height
- ✓ Total travel accuracy in unloaded & loaded conditions



Planning for the DMP Advanced Service

Execution of the DMP Advanced Service Package procedures takes approximately 1 work week per machine, every 6 months, next to the standard preventive maintenance. Contact your GF Sales or Service representative for more details on the procedures and acceptance criteria, applicable standards, costs, and planning.