

www.progresja.co

ul. Żelazna 9 40–851 Katowice Poland

+48 532 575 834

Additive Manufacturing Capabilities



Prepared by Adrian Kukofka **R&D Department**

AM Services and AM Design

Our expertise goes beyond just printing. We offer comprehensive design services specifically for parts that benefit from additive manufacturing. Our team of engineers will collaborate with you to create intricate, functional components that leverage the unique capabilities of 3D printing. With a build volume of 250x250x300 mm, and the ability to handle even larger designs with welding, we can turn your vision into reality.

We are focused on clients with very high-quality requirements and that is why our QC&QA offer is so wide.

Our AM system is also supplied with a Reduced Build Volume. A module capable of printing 68x68x60mm parts from low quantity powder samples. Used for development and testing of small quantities of novel and expensive materials – starting from 100 [g] samples.

Capabilities

Part Dimensions:

250x250x300 mm Min. hole diameter: 0,3mm Min. wall thickness: 0,2mm

Materials

Ti-6Al-4V AlSi10Mg AISI 316L 15-5PH Inconel 718/625 <u>Other on special request:</u> including Re, W, Mo alloys

Post Processing

Shot blasting 5-axis CNC machining Laser & Arc welding EDM – Cutting and Drilling (holes between 0.1 – 0.4mm) Heat treatment HIP (Hot Isostatic Pressing) PVD coating

Quality Control

VT / PT / MT / RT / UT 3D Scanning CMM Inspection CT Scanning Optical Profilometry Optical Microscopy SEM (EDS/WDS/EBSD) TEM Hardness Testing Tensile testing Impact testing High pressure cycle testing Outgassing testing Helium leak testing

AM Services





AM Services



CT Internal channels inspection





AM Services

Phase composition and crystal orientation evaluation









oram Regionalov







AM Development

In-Space Manufacturing (ESA_PLIIS)

eesa

The goal of the project was to investigate the possibilities for the application of laser additive manufacturing of metal parts with consumable feeding in the form of a wire, powder and metallic paste in the simulated space conditions, to determine their possibilities and technological limitations, and to determine the scope of application of each technique



Breadbord (reserarch stand) of AM system capable of simulation of various environmental conditions. Vacuum chamber is equiped with 3-axis CNC manipulator to manipulate the sample while the laser head is fixed outside the chamber. The test were conducted in vacuum od 1x10-3mbar while the substrate temperature was lowered to -60°C.

A unique research stand (breadboard) capable of providing high vacuum and low temperature was designed and manufactured by Progresja. Then test of Direct Energy Deposition AM process in various relations to gravity vector were conducted and accesed to provide information of possibilities of each technique. The most promissing technology will be further developed.