LMP 100v3

Industrial Metal Additive Manufacturing System

1 GENERAL SYSTEM DESCRIPTION

The Gekonn LMP100v3 is an industrial metal 3D printing system designed for demanding engineering applications where precision, repeatability, and process adaptability are critical. It is based on Laser Powder Bed Fusion (LPBF / SLM) technology and enables the production of complex metal components directly from a digital model, without the need for conventional manufacturing processes.

The system is specifically optimized for:
- tooling
- functional prototyping
- product development and validation
- small-batch and specialized production

2 INDUSTRIAL APPLICATIONS

Tooling
- production of injection molding inserts
- conformal cooling channels for improved thermal management
- rapid production of tools for pilot or test series
- repair and optimization of existing tools

Benefits:
- shorter development cycles
- improved tool productivity
- optimized service life

Functional prototyping
- mechanically loaded prototypes
- design validation before serial production
- manufacture of complex geometries without compromise

Benefits:
- real mechanical properties comparable to serial-production materials
- rapid development iteration
- reduced development costs

Small-batch production
- production of specialized metal components
- individualized products
- on-demand spare parts manufacturing

3 PROCESS TECHNOLOGY

Parameter	Description
Technology	Laser Powder Bed Fusion (LPBF)
Laser	Yb Fiber laser
Power	200 W
Beam diameter	~50 µm
Scanning speed	up to 7 m/s

The technology enables the production of topologically optimized structures, weight reduction, and the integration of multiple functions into a single part.

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4 PROCESNA FLEKSIBILNOST IN ODPRT SISTEM

The Gekonn LMP100v3 is designed as an open industrial system, clearly positioning it in the segment of advanced AM solutions.

Software compatibility
- compatible with most industrial slicer software on the market
- support for standard CAD/CAM formats (STL, 3MF)
- easy integration into existing production processes

Multi-level workflow

The system can be used according to the user's expertise and requirements:
- Operator level (production mode)
  - predefined materials and parameters;
  - stable and repeatable production
- Engineering level (engineering mode)
  - adjustment of the key process parameters;
  - optimization according to the application
- R&D level (open parameter access)
  - full access to process settings;
  - development of new materials and process

Process parameter customization
Users can individually adjust:
- laser power
- scanning speed
- hatch spacing
- scanning strategies
- layer thickness
- energy density

This enables:
- optimization of mechanical properties (strenght, density)
- control of material microstructure
- adaptation to specific industrial requirements

5 MATERIALS

Supported materials:
- tool steels (for tooling)
- stainless steels
- titanium alloys
- aluminum alloys
- CoCr
- nickel-based superalloys

Suitable for applications requiring:
- high strength
- wear resistance
- temperature stability

6 POWDER SYSTEM (INDUSTRIAL SAFETY)

Parameter	Description
Type	closed system
Atmosphere	internal
Gases	argon / nitrogen
O_2 level	≤ 100 ppm*
Material utilization	up to 95 %

*Optional installation of a laboratory ≤10 ppm

Ensures:
- safe handling of reactive materials
- stable powder quality
- production repeaability (process validation)

7 PRODUCTIVITY AND QUALITY

- layer thickness: 15 – 100 µm
- high material density
- fine surface quality
- high dimensional accuracy

The system enables the production of functional industrial components suitable for real-world use.

8 SYSTEM AND CONTROL

- HMI (touchscreen)
- integrated camera
- real-time monitoring
- remote access
- remote diagnostics

9 DIMENSIONS AND INTEGRATION

Parameter	Description
Dimensions	1590(l) × 605(d) × 620 mm(h)
Weight	~250 kg
Power	230 V, 50-60 Hz
Beam diameter	~2 kW

The compact design enables:
- easy integration into production
- use in laboratories or workshops
- rapid system installation

10 KEY INDUSTRIAL ADVANTAGES

- optimized for tooling and functional parts
- open system for development and research
- compatibility with industrial slicers
- multi-level use (operator -> R&D)
- high process repeatability
- reduced product development time
- cost-effective production of small series