

AM Tool Library

The compact tool head is designed for integration into standard machine tool magazines and compatibility with common tool holders (e.g., BT, BBT, HSK), enabling rapid switching between additive and subtractive processes. It incorporates a folding swing-arm design with dual zero-point positioning. This system ensures high repeatability during tool changes while minimizing workspace interference and preventing cable entanglement. Pneumatic control enables quick and effortless installation and deployment.

Control System

The K-Box intelligent controller, equipped with the lungoPNT Client, serves as the core control unit specifically designed for integrating various 3D printing equipment. Via its built-in smart adaptation engine, it efficiently parses additive path and process data from software like lungoPNT and directly converts it into precise control commands for machine tools, robots, welding power sources, and other hardware.

Inverter Power Technology

Utilizes fully digital inverter power technology to enhance the reliability and stability of the additive process. The technology synergizes with wire feed motion to detach molten droplets, ensuring deposition accuracy. It provides a cooling phase for the molten pool and continuously agitates it with the filler wire, effectively suppressing defects like porosity and lack of fusion, thereby optimizing build quality. Through intelligent current polarity switching, it actively intervenes in droplet transfer, achieving alternating cold-hot output. This results in higher cladding efficiency with significantly lower heat input.

System Digitalization

- High-Dynamic Monitoring & Analysis**
The system is configurable with the TARDIS IGNIS MP200GS, a high-definition, high-frame-rate molten pool camera, for real-time viewing, tracing of pool status, assessing droplet transfer stability, and analyzing parameters like pool size. It is also configurable with the TARDIS WLSADA, a high-speed, high-precision parameter acquisition and monitoring system, enabling precise observation and analysis of the AM process. This system also monitors and controls shielding gas flow, reducing gas consumption costs.
- Fully Digital Process Quality Monitoring & Tracing: lungoQMC**
Comprehensively monitors, records, and traces all aspects, including part information, paths, process parameters, environmental data, and molten pool status. Its open interfaces support customized visualization of online monitoring data (e.g., 3D scanning, temperature field).
- Dedicated Multi-Axis CAM Software for DED: lungoPNT (Optional)**
Features parametric configuration and automatic path generation, making additive programming accessible even for beginners. Leveraging the characteristics of DED-arc process, it intelligently optimizes programs for entire parts and specific features (e.g., overlaps, corners, thin walls, varying wall thicknesses) through path optimization, arc start/stop optimization, and speed optimization to minimize printing defects. It is compatible with various actuators and supports additive-subtractive hybridization.

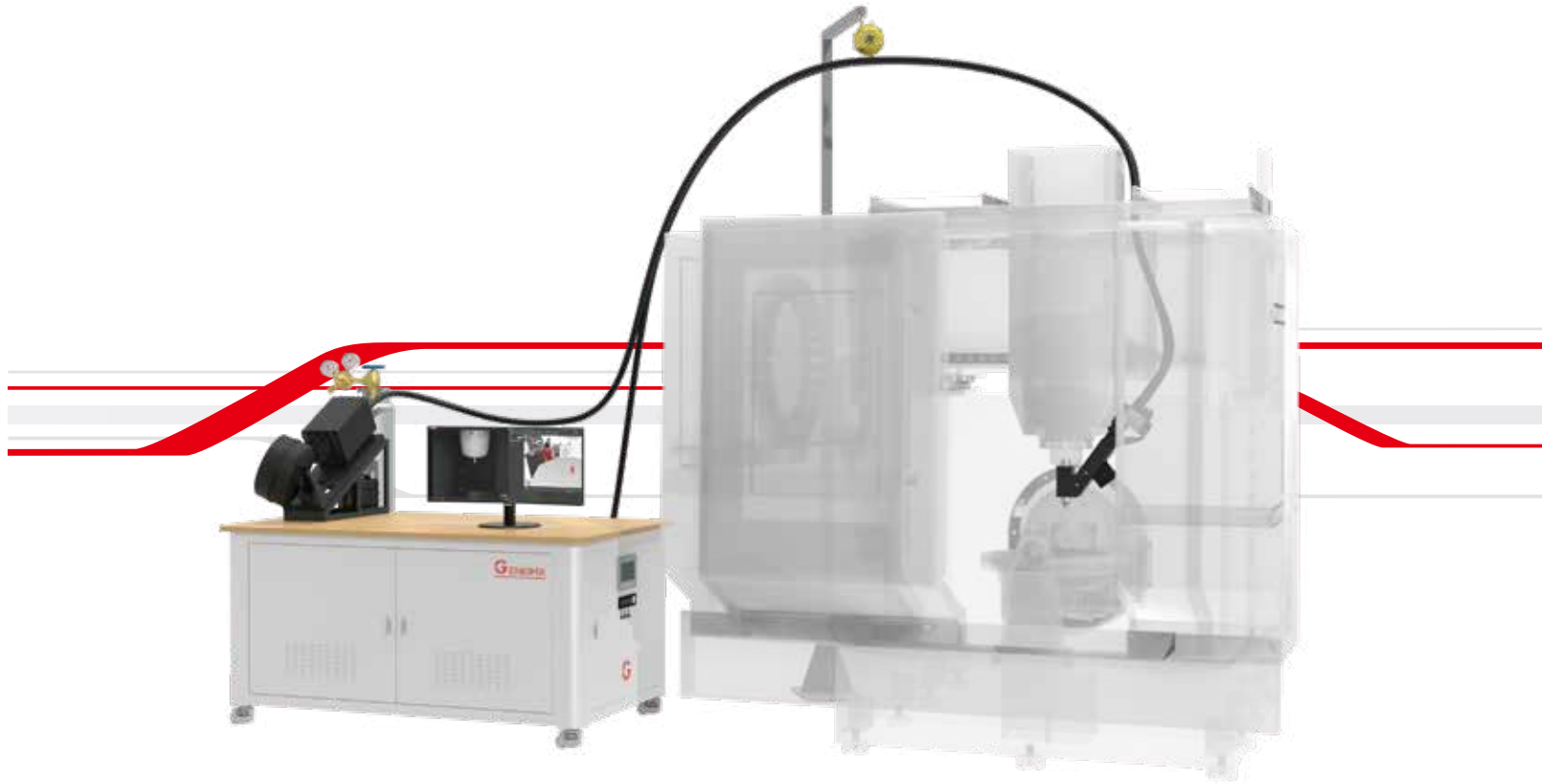
Specification

 Control hardware K-Box	 Control software lungoPNT Client	 Monitoring Software lungoQMC	 AM head cooling water cooling	 AM head weight 10kg
 Deposition rate 50-1085cm ³ /h	 Wire Diameter 0.8/0.9/1.0/1.2/1.6mm	 AM process DED-Arc	 Gas supply 0.4-0.6Mpa	 Fume extraction Kit V Only
 Power supply 380V±10% 50Hz±2%	 Rated Power Kit V: 20kW Kit M: 19.5kW	 Operating Environment Ambient Temperature: 0-45°C; Relative Humidity < 85%	 Compatible materials Aluminum / Magnesium / Titanium / Nickel / Copper alloys, Stainless Steel, Carbon Steel, etc.	

Application



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ArcMan Kit
ADD On CNC

南京英尼格玛工业自动化技术有限公司
NANJING ENIGMA AUTOMATION CO.,LTD



ArcMan Kit

ArcMan Kit delivers a cost-effective, modular DED-Arc AM solution for existing CNC machines.

It allows rapid deployment to upgrade existing CNCs into in-situ additive and subtractive hybrid manufacturing systems through standardized interfaces, significantly shortening process chains and unlocking unprecedented design freedom.

Extended compatibility with industrial robots, cobots, and multi-axis actuators, fully covers DED-arc integration scenarios.

Hybrid Manufacturing

Unlocking design freedom

Directly machining hard-to-reach areas (deep cavities, internal channels, etc.) during AM process, breaks geometric barriers, enabling integrated fabrication of supremely complex structures.

Shorten process chain

Enables consolidated deposition and finishing at a single station without repositioning of the work piece, significantly cutting overall lead time.

Parts reconditioning

Integrated machining pretreatment, AM restoration/feature addition, and in-situ finishing on a single station, achieve a closed-loop process for simultaneous damage repair and functional enhancement.

Product Highlights

Revitalize Idle Assets with Minimum Investment

Transform legacy equipment into hybrid manufacturing systems with a minimal investment — unlocking limitless applications.

Universal adaptation to 3/4/5-axis CNCs, industrial robots, cobots, and multi-axis actuators.

Compact, All-in-One Integration

This system revolutionizes traditional decentralized setups by housing core components – control unit, power supply, fume extraction, and cooling system – within a single cabinet. This integrated approach slashes footprint and commissioning time dramatically.

Key components are enclosed in individually sealed chambers for reliable operation in harsh workshop environments.

The wire feeder is externally mounted on the main cabinet, following ergonomic principles for optimal accessibility. It features an end-of-wire sensor for easy monitoring and hassle-free wire replacement.

The main unit's top panel utilizes a flip-open cover, providing exceptional convenience for routine maintenance and secondary development.

High-Vacuum Fume Extraction (Kit V Only)

This system creates a powerful negative pressure environment directly at the fume source or along its diffusion path, ensuring highly efficient capture. The strong and stable suction precisely collects metal particles of varying sizes, preventing degraded air quality and potential respiratory health risks to operators caused by residual dust.

3-Axis

Multi-axis

5-Axis

ABB

SIEMENS

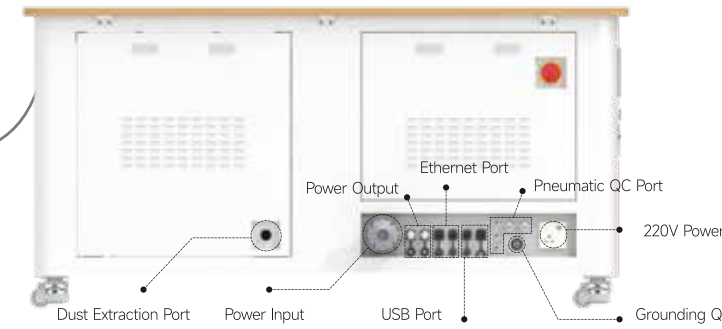
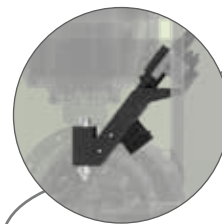
CROBOT 卡诺普

KUKA

GSK

华中数控

FANUC



Plug-and-play deployment

This system eliminates complex wiring and streamlines setup through standardized cable interfaces that support multiple communication protocols.

Dimensions

Kit V



Kit M

