RenAM 500E
additive manufacturing system
Metal additive manufacturing (AM) is helping innovators create new product designs and develop new business opportunities. If you are new to AM, adopting AM technology requires a thorough evaluation of your business needs and a considered approach to choosing your first system. You may be a researcher or an existing AM user who wants a more flexible system to help develop your understanding of AM performance factors.

The RenAM 500E is Renishaw’s Explorer AM system. It is designed to offer value to new users, who want a safe starting point to develop their AM skills and understanding. It also offers expandability to add sensors and features to create a more advanced system for research and development purposes.

All Renishaw AM systems offer open access to parameter settings via our QuantAM build preparation software, empowering users to choose between our standard parameter sets and providing the ability to edit and create new settings tailored to individual requirements.
Features and benefits of the RenAM 500E

Optical system and control platform
The RenAM 500E builds on the operational principles of Renishaw’s AM 400 system whilst incorporating enhancements based on RenAM 500Q technology. At the heart of the RenAM 500E is the Renishaw designed and built optical system featuring a single 500 W Ytterbium fibre laser and dynamic focusing. When coupled to Renishaw’s advanced digital control system, also found on the RenAM 500Q multi-laser AM system, users benefit from a familiar system control architecture across all platforms in the RenAM range.

Intelligent gas flow
Effective gas flow across the powder bed is vital to maintain consistent energy transmission. Intelligent gas flow efficiently removes process emissions in a stream of inert argon gas leaving a clean build chamber – ensuring consistent high-quality processing, improving safety and minimising turn around time.

Process emissions are pre-filtered to separate larger particles, before depositing finer particles in Renishaw’s patented SafeChange™ filter for safe disposal under inert conditions. A differential pressure sensor ensures a constant flow of process gas at all times, helping extend filter life and maintaining stable processing conditions throughout the build.

Flexibility
The RenAM 500E is designed to offer users the ability to change between different materials for the purposes of experimentation and process flexibility. A material change kit is available for users who wish to minimise turnaround time when changing materials.

Safety
AM carries a number of identifiable risks that must be understood and managed for it to bring benefits to your organisation. As a machinery manufacturer, Renishaw is committed to minimising these risks through machinery design and safe operating practices. Our products are independently assessed for compliance against applicable standards.
RenAM 500E builds on the safety capabilities of previous Renishaw products and has the following safety features as standard:

- Patented large SafeChange™ filter
- Sealed inert argon atmosphere
- Safety controller with multi-sensor safety interlocks, including door switch, pressure and oxygen sensors
- Vacuum build preparation
- System powder handling via the glove box
- Class 1 laser safety in accordance with the relevant standards under normal operation
- SIL rated oxygen sensor

All these features help to protect the user and minimise risk of contact with materials, process emissions and other hazards.

Key features

Fusion optical system

Fusion is Renishaw’s in-house designed and built optical system with dynamic focussing. It is tightly integrated with the advanced digital control system to unlock multiple processing modes, allowing both modulated processing for fine lattices and detailed features, and continuous processing to unlock higher productivity and the potential to process in thicker layers.

The dynamic focussing capability also allows users to develop processing parameters for larger spot sizes to further increase productivity at maximum power. Both processing modes are accessed via the latest QuantAM build preparation software.

Vacuum build preparation

RenAM 500E features a patented vacuum build preparation system to rapidly reduce the oxygen level in the build chamber, before re-pressurising the system with inert processing gas, creating class-leading processing conditions. A robust build chamber and sealing system prevents process gas pressure loss, leading to unmatched low process gas consumption.

Recoater mounting

A kinematic recoater mounting allows rapid and precise recoater changes and reduces operator error. Fitted with Renishaw’s flexible recoater blade, the recoater can be removed without special tools and enables both solid and lattice geometries to be built.

High performance fluid transfer manifold manufactured in titanium Ti6Al4V.
Accessories and upgrades

Accessories

A range of accessories is available for the RenAM 500E including the following:

- QuantAM software, a dedicated build preparation tool for Renishaw additive manufacturing (AM) systems.
- InfiniAM Central software, Renishaw’s AM workflow planning and process monitoring software solution, enabling remote monitoring of your AM systems and processes.
- Silo lifter for lifting the silo, heavy build plates and the SafeChange™ filter when filled with water.
- Material change kits are available for users who wish to minimise turnaround time when changing between material types.
- Operating accessories including a range of metal powders, ancillary equipment, expert advice, global support services and training to support you as you explore the possibilities of using metal AM in your organisation.

Upgrades

Innovation is in our DNA and we are always developing and improving our systems and software. Stay in contact with your account manager to keep up-to-date with the latest upgrades available for your AM system, system software and software tools.

Future planned retrofittable upgrades include the following:

- CameraVIEW build chamber camera enables visual monitoring and recording of pre and post layer images.
- Extra large overflow with a capacity of 20 l (1220 cu/in).
About Renishaw

Renishaw is an established world leader in engineering technologies, with a strong history of innovation in product development and manufacturing. Since its formation in 1973, the company has supplied leading-edge products that increase process productivity, improve product quality and deliver cost-effective automation solutions.

A worldwide network of subsidiary companies and distributors provides exceptional service and support for its customers.

Products include:

- Additive manufacturing and vacuum casting technologies for design, prototyping, and production applications
- Dental CAD/CAM scanning systems and supply of dental structures
- Encoder systems for high-accuracy linear, angle and rotary position feedback
- Fixturing for CMMs (co-ordinate measuring machines) and gauging systems
- Gauging systems for comparative measurement of machined parts
- High-speed laser measurement and surveying systems for use in extreme environments
- Laser and ballbar systems for performance measurement and calibration of machines
- Medical devices for neurosurgical applications
- Probe systems and software for job set-up, tool setting and inspection on CNC machine tools
- Raman spectroscopy systems for non-destructive material analysis
- Sensor systems and software for measurement on CMMs
- Styli for CMM and machine tool probe applications

For worldwide contact details, visit www.renishaw.com/contact