

RenAM 500M industrial additive manufacturing system



Additive manufacturing (AM) for industrial production

Designed and engineered with serialised production manufacturing in mind, the Renishaw RenAM 500M builds complex metallic components directly from CAD using metal powder bed fusion technology, in a range of materials.

The RenAM 500M additive manufacturing system combines over 10 years of metal powder bed fusion development and experience, with state of the art Renishaw manufacturing expertise to create a platform technology for successful part production. The system is the first in a family of products based around Renishaw optical systems and control technology. RenAM 500M is founded on our core skills in optical engineering, motion control and high volume, high quality manufacturing from over 40 years experience producing industrial high technology products.

The RenAM 500M system builds on the advantages of the Renishaw AM system platform. Features such as low gas consumption and patented atmosphere generation, coupled to a minimal factory footprint, lead to class leading low cost of ownership; delivering increased productivity and performance without compromising feature definition and part quality.

The system is designed to significantly reduce operator touch time through efficient materials handling via the on board sieving and powder recirculation system. Process emissions are safely handled via the patented dual SafeChange™ filter, automatically sensing and redirecting recirculation gas to maintain optimal performance and chamber cleanliness.

- Renishaw designed and engineered optical system with dynamic focusing
- Automated powder sieving and recirculation
- Intuitive 19 inch (480 mm) touch screen operator interface
- 500 W ytterbium fibre laser
- Build volume 250 mm x 250 mm x 350 mm
- Patented high capacity dual filter system
- Ergonomically located load hopper
- Open access material parameter editing



Aluminium automotive intercooler



Titanium bracket for space applications

Additive manufacturing benefits

- Component weight reduction - only build material where required for optimised part functionality
- Rapid design iterations
- Bespoke or customised items
- Multiple parts consolidation
- Reduce tooling costs
- Build complex geometries such as thin walls, lattices and internal features
- Increased design freedom - AM is not constrained by traditional design rules



Quality engineering

Decades of investment in technology, expertise and manufacturing infrastructure places Renishaw in a unique position to engineer and manufacture our products from the ground up, starting with the fundamentals. From high precision laser interferometers, to tightly packaged encoder readheads and ground breaking five axis high precision co-ordinate metrology products like REVO®, Renishaw invests for the long term to build superior products.

With a Renishaw designed and engineered optical module coupled to our advanced control system and user interface at its heart, RenAM 500M is no exception. The optical system features dynamic focussing to achieve a flat field correction of the scan area. It is already prepared to adopt both on- and off-axis sensing technologies to gather data about the process, ensuring your machine is ready to evolve in line with our future technology developments. The system also benefits from a state of the art 500 W ytterbium fibre OEM laser which is fully integrated into the RenAM 500M control system.

Serialised production

The RenAM 500M has been designed and manufactured with serialised production in mind. Each system is intended to be dedicated to a single material type for a lights-out manufacturing environment.

Intuitive

The large 19 inch (480 mm) robust touchscreen user interface and machine control software has been designed to be intuitive. Based on a Windows® operating system with a dedicated user interface, large icons show the build set-up workflow for ease of navigation through the various process steps.

Future proof

The RenAM 500M has been designed and manufactured to accept future upgrades – this ethos is prevalent throughout all of Renishaw's product lines ensuring that once you have invested with us there is always a pathway to future performance upgrades.

Efficient and ergonomic

In-line sieving allows powder to be recycled and re-used in a single process under an inert atmosphere, reducing user interaction and turnaround time.

Metallic powder is loaded into the machine hopper at the front of the system and sieved ultrasonically. Any un-melted material is returned to the hopper and passes through the ultrasonic sieve before being processed. Sieved powder is pneumatically transferred in a flow of high purity argon gas into the powder delivery silo.



Open access

A range of standard material files is available to all our users, but we recognise that many users will require greater access to process parameter settings. Renishaw follows an open parameter ethos with all of our AM systems, allowing our customers the freedom to optimise machine settings specifically for their component geometry and production requirements.

Smart and safe

The RenAM 500M features a patented high capacity twin SafeChange™ filter system enabling builds to be run for long periods whilst in a stable and controlled atmosphere. The filters capture process emissions in a safe and efficient manner. The machine's intelligent control system actively senses the condition of the filter and automatically redirects the gas circuit to the clean filter before the process conditions deteriorate. The user is then alerted to change the filter cartridge following the correct safety procedures of wetting the filter to render the process emissions inert.

Economical

Maintaining low cost of ownership year after year can have a significant impact on the overall cost of your AM facility. Patented inert atmosphere generation process, efficient gas recirculation and exceptional machine integrity lead to class-leading low argon consumption in all our AM systems. As manufacturers ourselves we also recognise the significant impact of factory floor space on your fixed costs. With the smallest factory footprint in its class, coupled to careful consideration for machine touch points, the RenAM 500M ensures the most efficient use of factory floor space, particularly where multiple systems are installed.

Renishaw plc
Stone Business Park,
Brooms Road, Stone
Staffordshire, ST15 0SH
United Kingdom

T +44 (0) 1785 285000
F +44 (0) 1785 285001
E additive@renishaw.com
www.renishaw.com

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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

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1-800-445-1088
tech-labs.com

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