

RICOH
imagine. change.



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visit our website*

More than a
printer, a
partner.

rapidfab.ricoh-europe.com

Adding more to Additive Manufacturing.

Why choose Ricoh?

- 80 years' manufacturing experience
- All-star team of design engineers, technical specialists and material scientists
- Customisable manufacturing solutions, from one to one million parts
- End-to-end ISO certified service; from design to prototype to full production
- State-of-the-art facilities and equipment
- Global reach, with touchpoints across Europe and Asia



A vertical strip on the left side of the page shows a close-up of several black 3D printed parts. These parts have various shapes, including circular bases with holes and more complex, curved structures, demonstrating the capabilities of 3D printing.

Why choose 3D printing?

- Optimise the size, weight and functionality of your parts
- Produce complex geometries
- Product development cycle reduction, with rapid prototype iterations
- Streamlined production process, with on-demand printing
- Mass customisation
- Cost effective pricing structure
- Eliminate or reduce tooling costs
- Range of high performance materials
- Sustainable manufacturing method

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An aerial photograph of a vast, dense evergreen forest, likely a coniferous woodland. The trees are tightly packed, creating a textured green canopy. A white, rounded rectangular text box is positioned in the upper right quadrant of the image, containing the main heading and a paragraph of text. The overall tone is natural and sustainable.

Your partner in sustainability.

Our approach to sustainability touches every part of the company; from manufacturing to distribution, business sites to recycling and how we support our customers. As part of our global environmental goals, we have committed to using a minimum of 30% renewable energy by 2030 and 100% by 2050. We have also committed to reducing the use of new resources by 50% in 2030 and 93% in 2050. Our AM materials fall under the global Ricoh Green Procurement Standard which means you can be assured that when you work with Ricoh we're supporting you in reducing your environmental footprint.




Our supply chain documentation attests to non-use of substances contained in major laws and regulations including:

- EU REACH (Annex 17 restrictions)
- EU RoHS directive
- EU POP's (Persistent Organic Pollutants)
- Norwegian Act (PFOA - Perfluorooctanoic acid)
- Blue Angel Std (Halogenated polymers and halogenated organic compounds)

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“Ricoh have helped us discover what a 3D-printed design can really do. With the help of Ricoh’s engineering team we have succeeded in creating one of the world’s first production high performance 3D-printed products.”

Steve Rix, Future Engineering Developments Ltd.

Building innovation.

Core technologies

Selective
Laser Sintering
(SLS)

HP Multi Jet
Fusion (MJF)



*Scan to read
more about
our technologies*

Fused
Deposition
Modelling
(FDM)

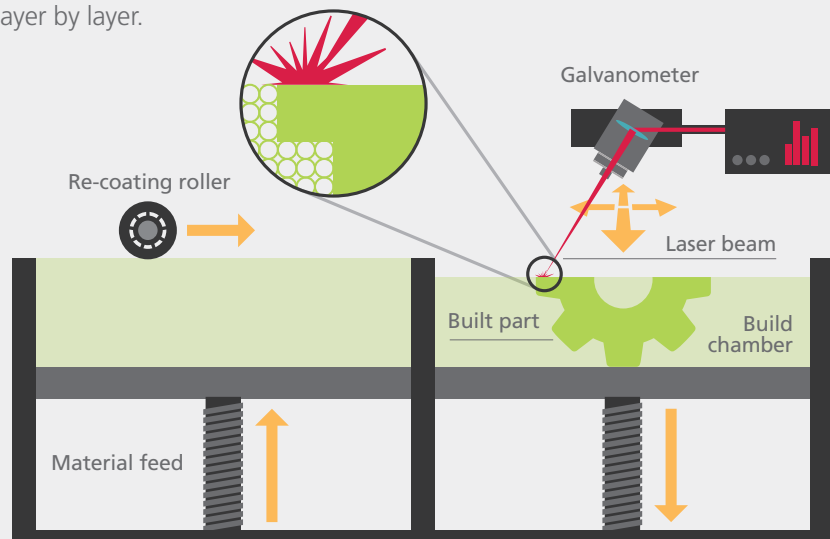
Injection
Moulding

Precision printing.

Looking to create complex geometrical designs? With exceptional speed? And without the need for costly moulds? Then look no further than Selective Laser Sintering (SLS). SLS enables you to produce highly accurate and functional end-use parts with minimal manufacturing waste.

How does SLS work?

Polymer powder is sintered together using a laser. Each particle is fused together to create a solid structure. The 3D object is then built layer by layer.



Why use SLS?

- Speed, precision and durability
- Shorter development cycle as parts can be produced and redesigned quickly
- No tooling cost
- Comparable properties to injection moulded components
- Large component manufacture
- Support material not required
- Thermoplastic materials for end-use applications
- Unsintered material can be recycled making the process more cost-effective and environmentally friendly
- Ability to manufacture multiple parts in one production cycle

Key SLS applications

- Functional end-use parts
- Manufacturing production volumes
- Prototyping
- Jigs
- Tooling



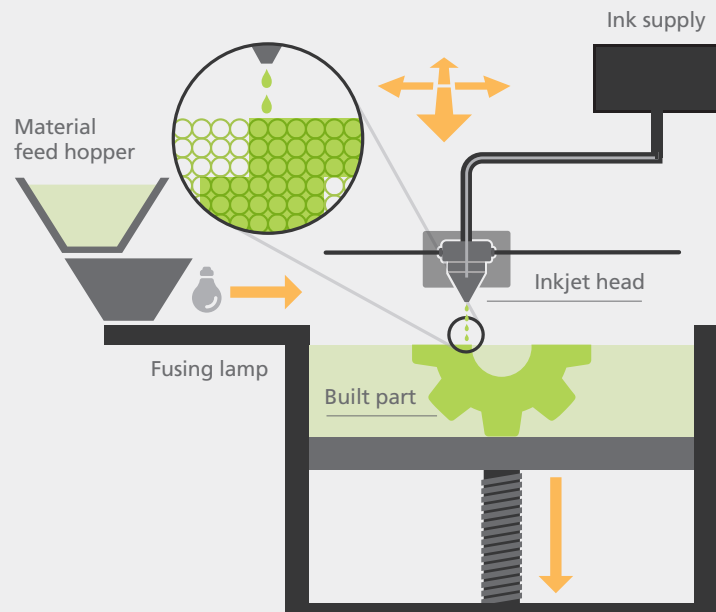
Layers without lasers.

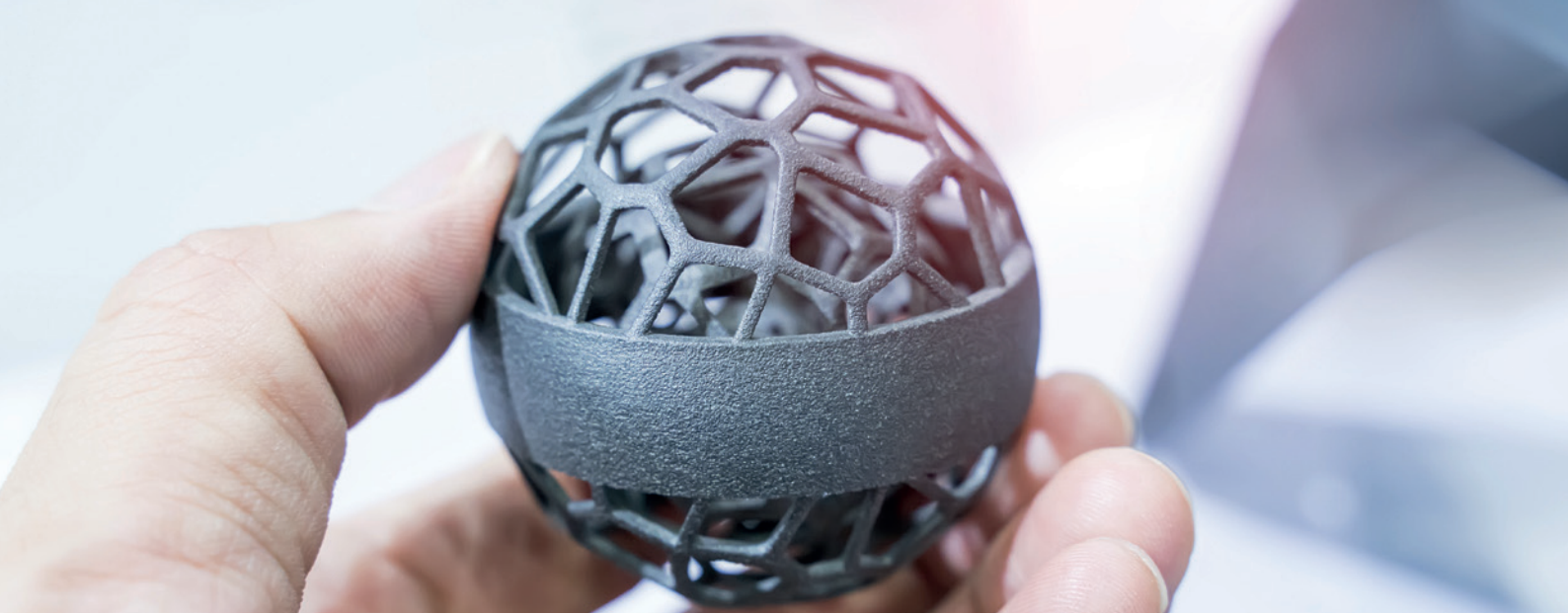
Faster parts cooling. Cleaner unpacking. Easier job preparation.

The benefits of HP Multi Jet Fusion quickly add up. Fitting really, as the process is up to 10 times faster than other 3D printing processes, which is why it's ideally suited to the manufacturing of high volume parts.

How does HP Multi Jet Fusion work?

MJF uses cutting-edge technology to combine the process of binder jetting with the material offerings of SLS printing. An ink jet head applies a heat-absorbent ink across the powder bed surface in the areas that are to be sintered to create parts. This ink then absorbs the heat from a series of heaters inside the printer to form 3D-printed parts.





Why use MJF?

- Up to 10 times faster than other 3D printing processes
- Removal of support material is not required
- No tooling required
- Freedom to rebuild on demand
- Better dimensional accuracy
- Enhanced isotropic mechanical properties

Key MJF applications

- Functional end-use parts
- High-volume manufacturing
- Prototyping

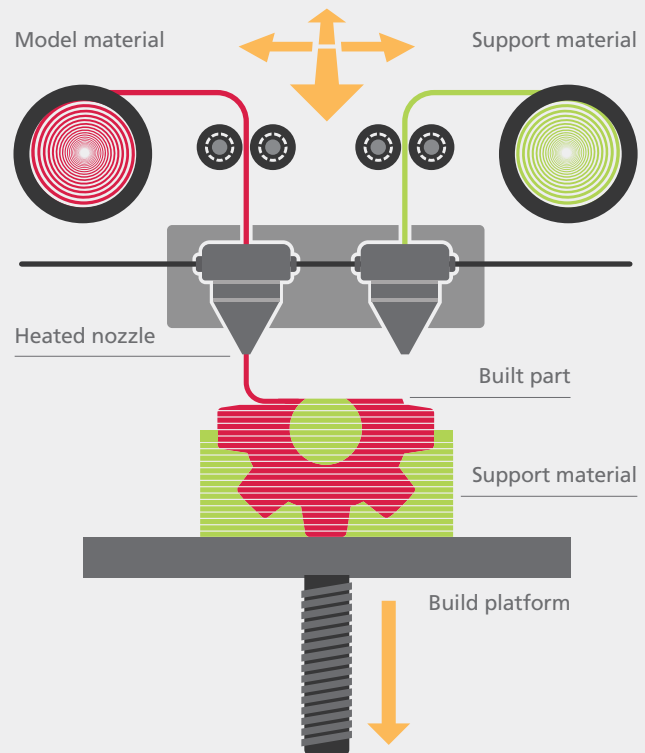


Proven production.

Widely considered the simplest method of 3D printing, Fused Deposition Modelling (FDM), with its wide range of materials and colours is perfectly suited to end-use applications.

How does FDM work?

FDM constructs parts by extruding polymer through a heated nozzle and depositing the melted material layer by layer.



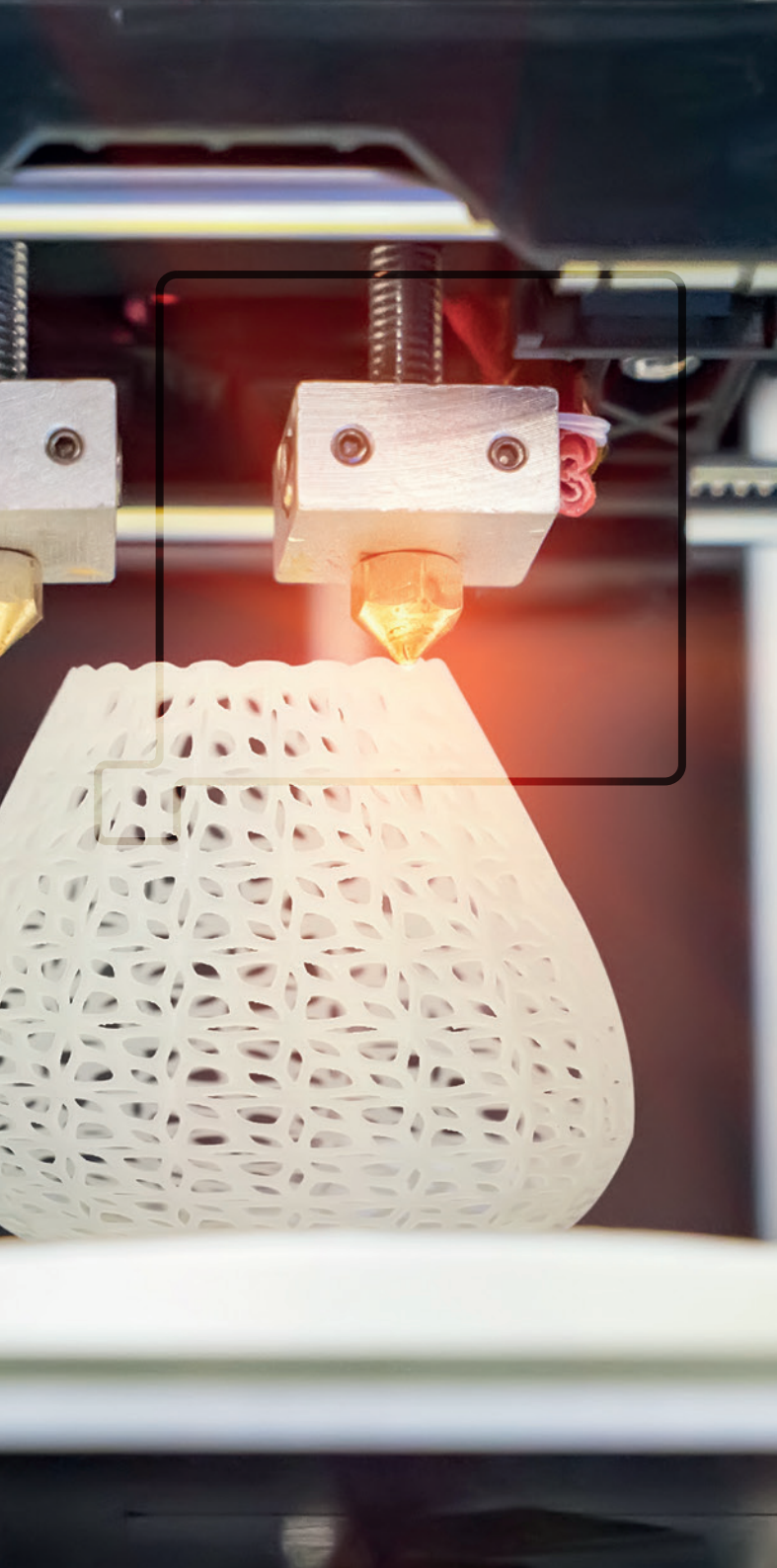
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Why use FDM?

- Highly cost-effective production process
- Ability to pause build to embed parts into the print e.g. metal inserts
- Internal 'honeycomb' structures can be created to reduce part weight
- Requires minimal post-processing
- Wide range of materials and colours
- Certified materials for aerospace, medical and food contact applications

Key FDM applications

- Prototyping
- Tool inserts
- Jigs
- End-use parts

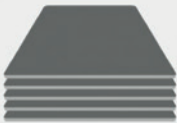
Stronger, lighter, low cost.

Composite-based additive manufacturing technology is the only process that combines long fibres of carbon with high performance polymer powders to make long fibre composite parts. This innovative 3D process uses only the material required with rapid processing time, creating more cost effective parts compared to other composite technologies.

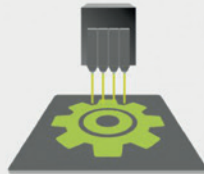
How does powder-based composite 3D printing work?

The technology uses high-speed inkjet printing methods to produce high-performance composite parts without tooling or messy resins.

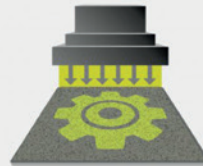
Step 1 Printing Process



Long-fibre sheets of carbon or fibreglass are fed into the printer.



Layered shapes from CAD slices are printed onto the fibre sheets using clear fluid and thermal inkjet technology.

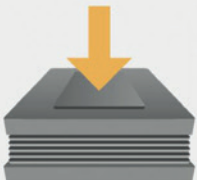


High performance polymer powder is applied to the fibre sheet, adhering to the printing fluid.



Excess powder is removed; leaving behind powder in the shape of the bitmap. The process is repeated for all layers.

Step 2 Heat & Press



Sheets are stacked then heated to the melting point of the polymer and compressed to consolidate the part to the designed height.

Step 3 Material Removed



Through a mechanical or chemical process, un-bonded portions of sheet fibres are removed, revealing the final part.

Final Finished Product



Higher performance composite parts.
STRONGER. LIGHTER. TOUGHER



Why use CBAM?

- True carbon fibre composite
- Extraordinary heat performance and flame retardancy
- Outstanding dimensional accuracy
- Exceptional strength-to-weight ratio: metal replacement
- Ability to create flat parts and feathered edges
- High impact and wear resistance
- No warping, curling or deformation of parts
- High strength-to-weight ratio

Key CBAM applications

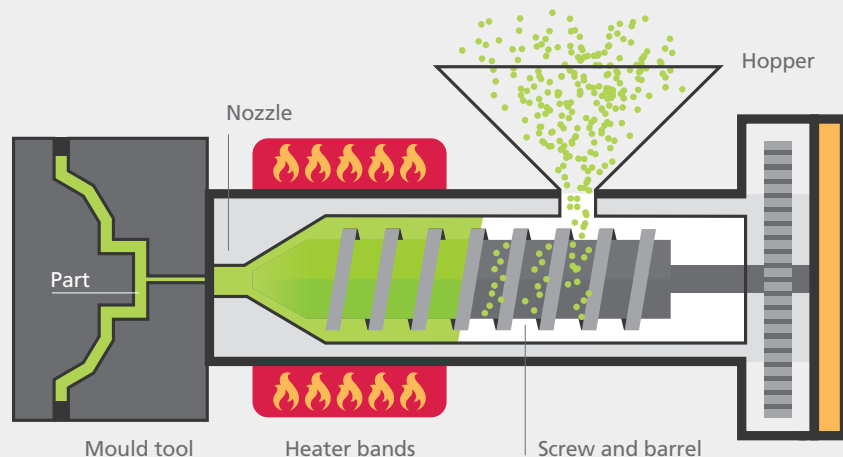
- Suitable for medical applications – compatible with autoclave sterilisation
- High strength lightweight applications in aerospace, automotive and motorsport
- Manufacturing tooling
- Industrial parts (oil, gas and energy)

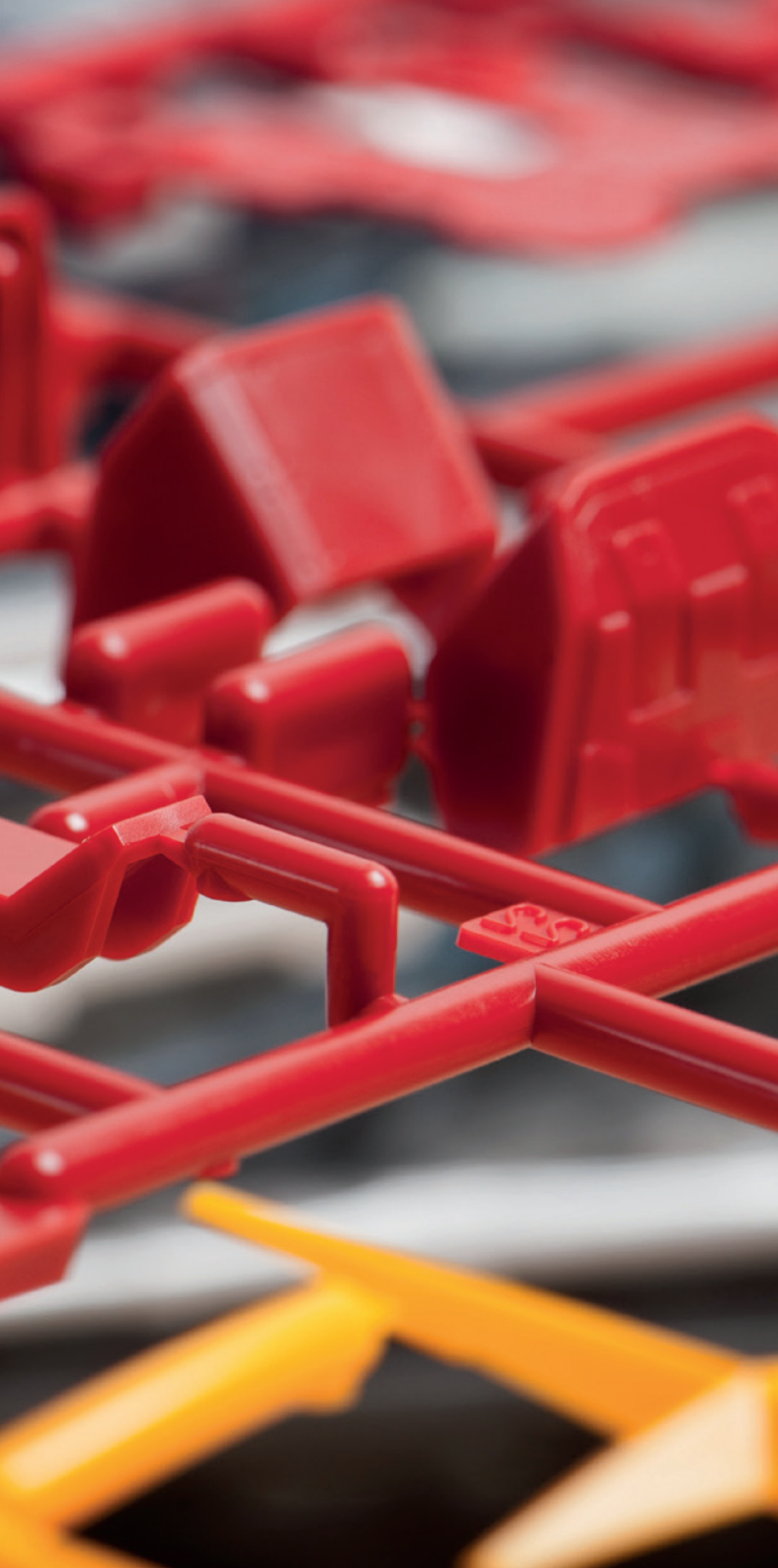
Consistent excellence.

We've been injection moulding on site in our state-of-the-art manufacturing facility located in Telford (UK) since the early 90s. This means we can advise when your project is better suited or more cost effective with injection moulding due to high volume or application requirements. We already produce millions of injection moulded parts each month for our core business so take advantage of our full manufacturing service today.

How does injection moulding work?

This process involves injecting molten polymer into a mould cavity. The malleable polymer fills and solidifies to create large numbers of parts, which are then carefully ejected from the mould.



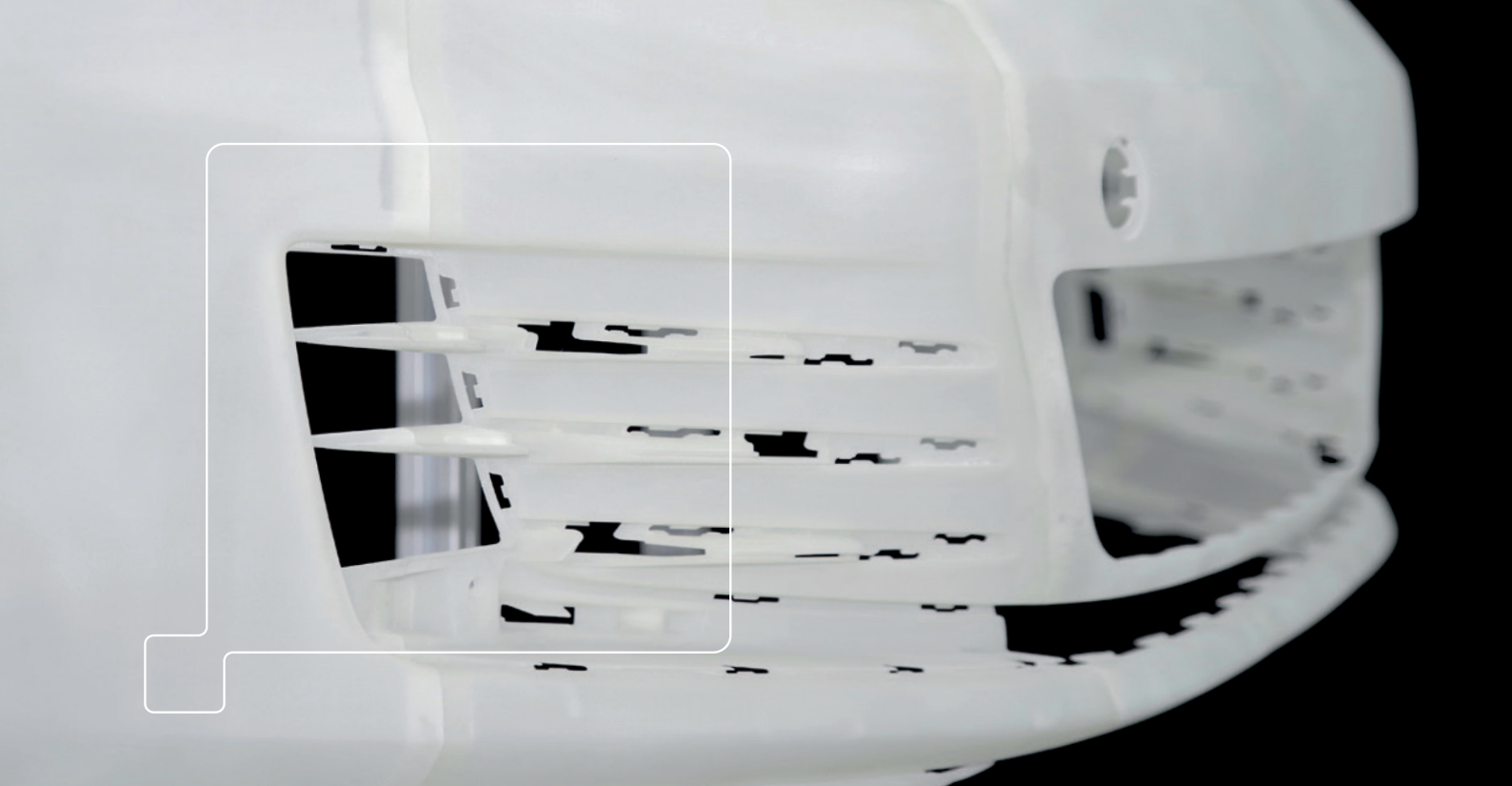


Why use injection moulding?

- Fast production
- Excellent repeatability
- Extensive range of materials and colours
- Low part cost
- Reduced waste
- Scalable production options

Key injection moulding applications

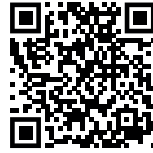
- Functional end-use parts
- Low to high volume manufacturing
- Packaging



“Ricoh is the only additive manufacturer that offers advanced Polypropylene material and specific SLS technologies with a full service. They are the only provider to be offering a complete end-to-end solution for this material.”

Dr. Manfred Schmid, Inspire AG

Strength in numbers.



*Scan for
technical data
on our range
of materials*

Core materials

We specialise in unique materials geared towards end-use manufacturing applications. Our vast range of materials offer flexibility, strength, durability and high heat resistance.

Selective Laser Sintering (SLS)

PP

Thermoset FR

HP Multi Jet Fusion

PA12

Fused Deposition Modelling (FDM)

ASA

ABS-ESD7 / ABS-M30 / ABS-M30i

NYLON 12 / NYLON 12 CF

ULTEM 9085 / ULTEM 1010

Composite Based Additive Manufacturing (CBAM)

Carbon Fibre PA12

Carbon Fibre PEEK

Glass Fibre PA12

Glass Fibre PEEK

Materials

Selective Laser Sintering (SLS)

Unlocking layers of invention.

Whether you're looking for flexibility or flame retardancy, our specialist range of engineering-grade materials, combined with the speed and precision of SLS, are suited to a wide range of applications. Our SLS materials include:

- PP (Polypropylene): lightweight, flexible, chemical resistant and WRAS-approved - best-in-class performance and unique to Ricoh.
- Thermoset FR: flame retardant material with good isotropic and mechanical properties, plus high chemical stability.





Materials

HP Multi Jet Fusion (MJF)

Form meets function.

HP Multi Jet Fusion technologies are particularly suited to applications where speed and volume are critical. This process combines with materials that offer good dimensional stability with balanced mechanical properties or flexibility. This technology bridges the gap between 3D printing for prototypes into manufacturing, due to its impressive cost efficiencies. Our materials include:

- PA12 (Nylon 12 – general purpose)

Materials

Fused Deposition Modelling (FDM)

Quick thinking, fast design.

FDM's wide range of materials with certifications make it well suited to all applications, from prototype to production. Our range includes:

- ABS-ESD7: general purpose electrostatic dissipative
- ABS-M30: general purpose
- ABS-M30i: general purpose biocompatible and compliant with ISO 10993
- ASA: general purpose weather resistant
- Nylon 12: weather resistant and tough
- Nylon 12 CF: carbon-filled and structurally strong
- ULTEM 1010: biocompatible (ISO 10993: USP Class VI) and chemical-resistant. General and certified grade available. Certified for food contact (NSF-51)
- ULTEM 9085: FST rated, heat and chemical resistant




Materials

Composite Based Additive Manufacturing (CBAM)

Long-fibre makes our composites stronger, lighter and tougher.

Powder-based composite manufacturing removes the barriers to printing parts which are stronger and lighter, with better dimensional accuracy and temperature performance for everything from aircraft and cars, to lightweight athletic gear. Our range includes:

- Carbon Fibre PA12: stronger parts at lower cost, with excellent surface finish and feature detail
- Carbon Fibre PEEK: extraordinary heat performance and chemical resistance, with high strength-to-weight ratios
- Glass Fibre PA12: stronger than many metals by weight at a lower cost than carbon fibre
- Glass Fibre PEEK: high strength with excellent temperature and heat performance, at a lower cost than carbon fibre



“Ricoch bring a wealth of additive manufacturing knowledge and experience that has helped guide our design process. Their willingness to suggest new ways forward has made our development progress much quicker than imagined.”

Keith Miller, ORLAU, NHS Foundation Trust

A true end-to-end service.

Manufacturing
services: from
prototype to
production

Post-Processing
Solutions

Technical
Services



Manufacturing services: from prototype to production

More than a printer.

We provide services for every stage of your product development cycle: from prototype to low and high volume production.

Our skilled and experienced engineering team have specialisms ranging from design to material testing to manufacturing. This enables us to apply a holistic approach to your needs and match the technology to your bespoke requirements.

Tried, tested, trusted.

At our state-of-the-art facility we have the latest in test equipment technology, allowing us to offer a comprehensive range of 3D material testing services that make us unique in the AM industry.

Our technical services include but are not limited to:

Design

Our experienced engineers are able to provide design consultation or even hands-on design via our professional CAD service for 3D printing and injection moulding.

3D Design Optimisation

The maximum benefit of 3D printing can only be realised through design optimisation tools, especially when looking for cost and weight savings.

Material Testing

At our state-of-the-art facility we have the latest in test equipment technology, allowing us to offer a comprehensive range of 3D material testing services that make us unique in the AM industry.

Metrology

A range of contact and non-contact metrology services enable us to provide measurement reports for all manufactured parts. We offer this through a range of technologies including a full CMM (Coordinate Measuring Machine) service.

Smother surfaces and striking finishes

Our post-processing services include:

Adhesion

By dividing a model, building and then bonding together we're able to create large products.

Smoothing

Using an automated process we're able to smooth parts to greatly enhance the surface finish.

Surface Finish

We offer a range of surface coatings in a variety of colours for all of our powder-based materials, including polypropylene.

Inserts

We are able to add threaded inserts into 3D printed parts where the application requires a higher thread strength than can be achieved through conventional drilling and tapping.



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The value of efficiency.

Looking at volume manufacturing?

We understand every project requirement is different; that sometimes a single part will suffice, while other times ten thousand may be needed. You'll find we're perfectly set up for all scenarios, with competitive discounts for series production or repeat components. Simply contact us to discuss your requirements.



How our quoting works.

To calculate part prices we take into consideration both the XYZ bounding box size and actual volume of material used. This quoting method means parts are priced based on the amount of material and waste powder used, along with the volume of space occupied within the machine build volume. Simply put, this means we do not penalise you for parts that have a large XYZ volume but a low physical volume.

To calculate the material price we apply a theoretical shrinkwrap to the parts. By comparing this shrinkwrap volume to the XYZ volume we're able to see if the unused material can be used for other parts, giving you the best price based on the material you use. If the unused volume within a design cannot be utilised by another part (i.e we cannot remove it) then the XYZ volume will be considered within the pricing.

Ask a member of our team for more information.

Working the right way, right away.

Our key certifications include:

- **Quality:** ISO 9001
- **Environment:** ISO 14001
- **Information Security:** ISO 27001
- **Health & Safety:** BS OHSAS 18001
- **Quality Management System for Medical Devices:** ISO 13485
- **Occupational Health & Safety:** ISO 45001
- **'Elite' Colour Quality Certification:** ISO 12647
- **UK Authorised Economic Operator (AEO)**
- **TÜV SÜD Product Certification:** Product Safety Management

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