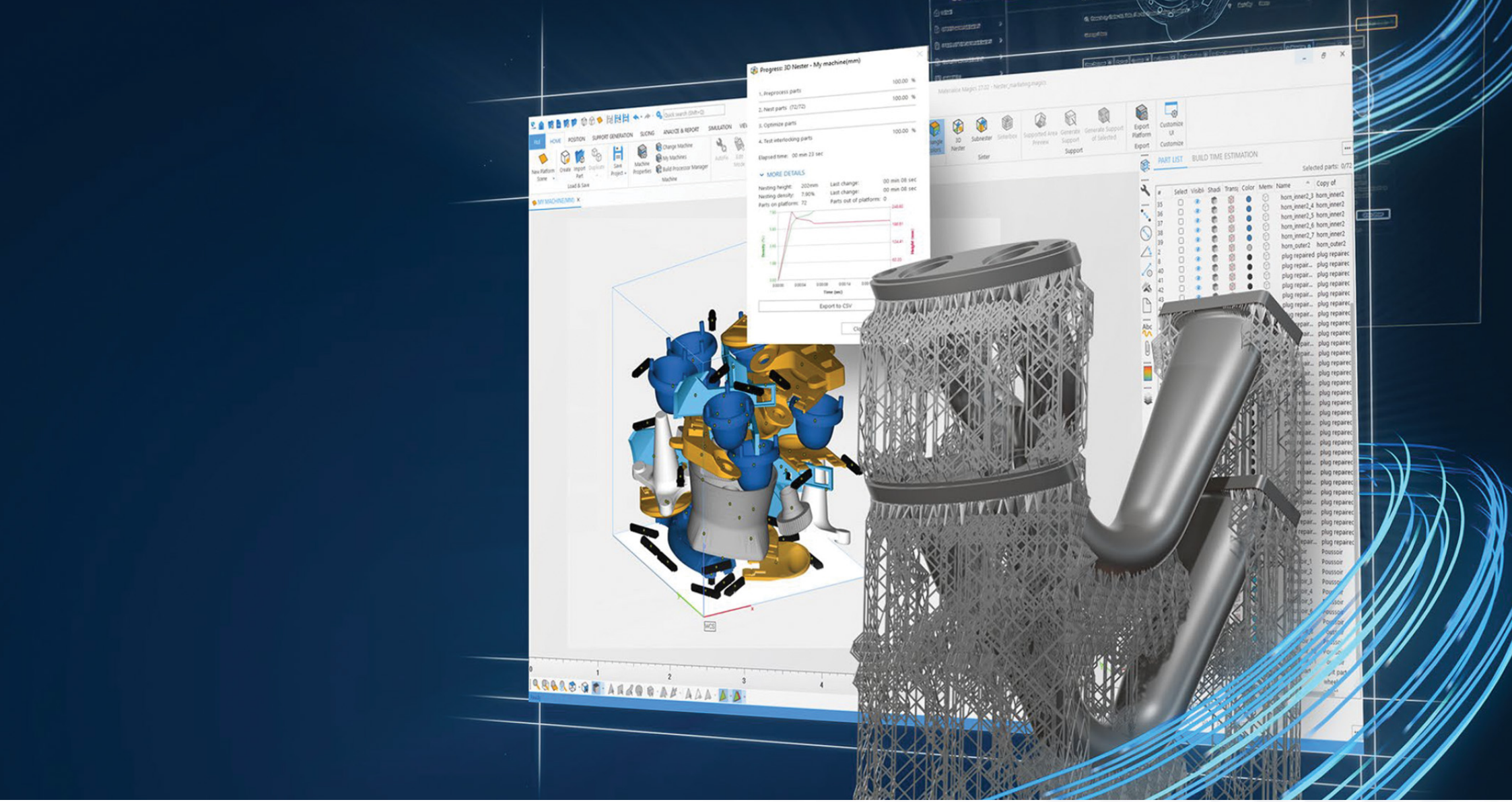

Materialise Magics

The most **powerful data and build preparation software** for additive manufacturing

materialise magics
3D print suite

Magics

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All features and modules available in Magics are primarily focused on the additive manufacturing (AM) industry, providing you with parameters to customize your 3D printing (3DP) needs while ensuring optimal printability.

Import and export

Most industry-standard, mesh-based file formats can be imported and exported, including textures and colors. By default, you can also import STEP, Rhinoceros, and Sketchup files — and export 3D PDF files. With the Import module, you are able to import even more CAD file formats like CATIA, NX, and SOLIDWORKS. After preparing your build platform, you can export all parts and supports either separately or simultaneously.

Fixing

Magics provides state-of-the-art automatic and manual fixing tools to ensure your mesh files are suitable for AM, providing you with parameters to customize to your 3DP needs.

Editing

The software provides an extensive toolset to quickly and affordably make all necessary adjustments for CAD and mesh designs and optimize printability, including offset, fillet, hollow, cut, and label tools.

Build preparation

When your part is ready to print, the next step is loading it onto a build platform. Magics offers an extensive library of fully customizable machine platforms. On the platform, you can arrange multiple parts using the placement and orientation tools to help you find the optimal placement and ensure part quality. This minimizes time spent on manual placement and reduces printing time by optimizing the build volume usage.

Analysis

Use analysis tools in Magics to ensure parts are printable and high quality as well as optimize the platform setup. You can, for example, measure aspects of your part and analyze the wall thickness or look for interlocking and colliding parts or parts outside your build volume. These tools will reduce scrap rate, saving you time and money.

Reporting

Extract nearly any parameter from Magics to set up a fully customized quote or report. You can use a comprehensive set of Excel and Word templates to verify and compare printed parts to your initial design or customize information such as measurements, nesting density, and cost estimation.

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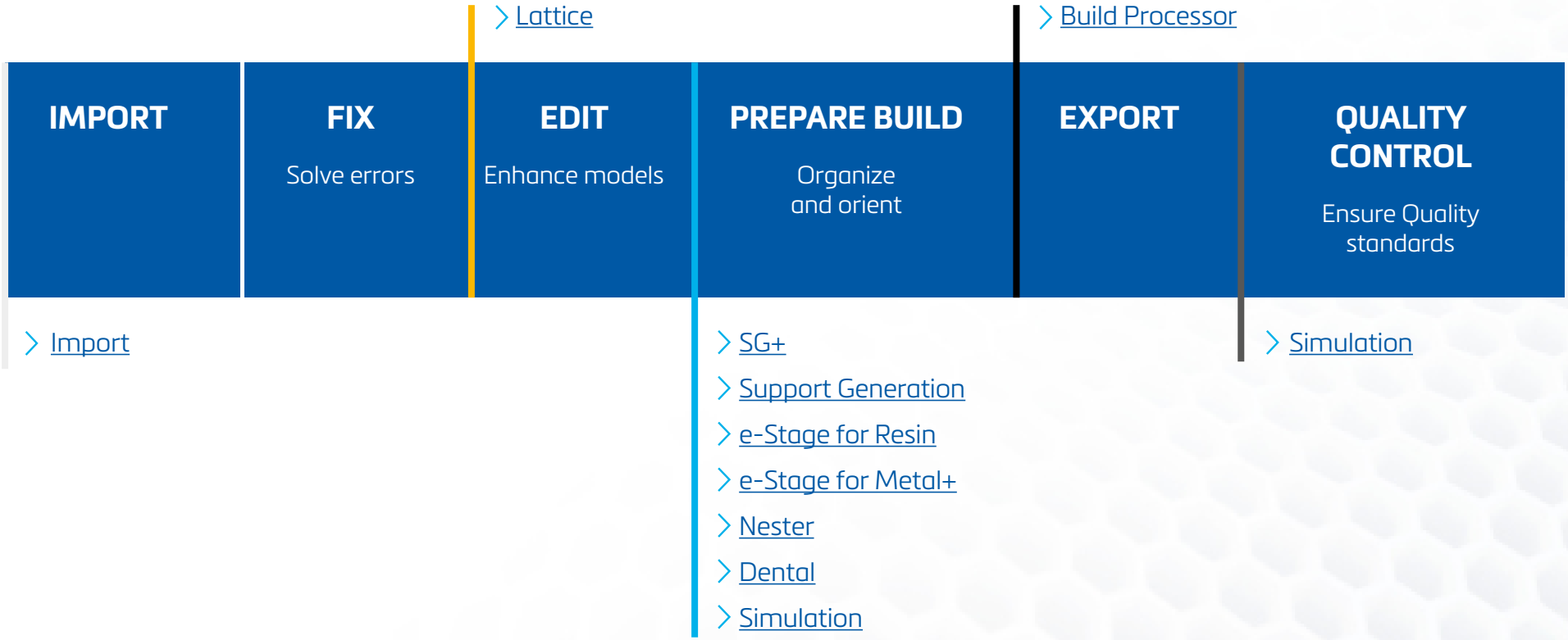
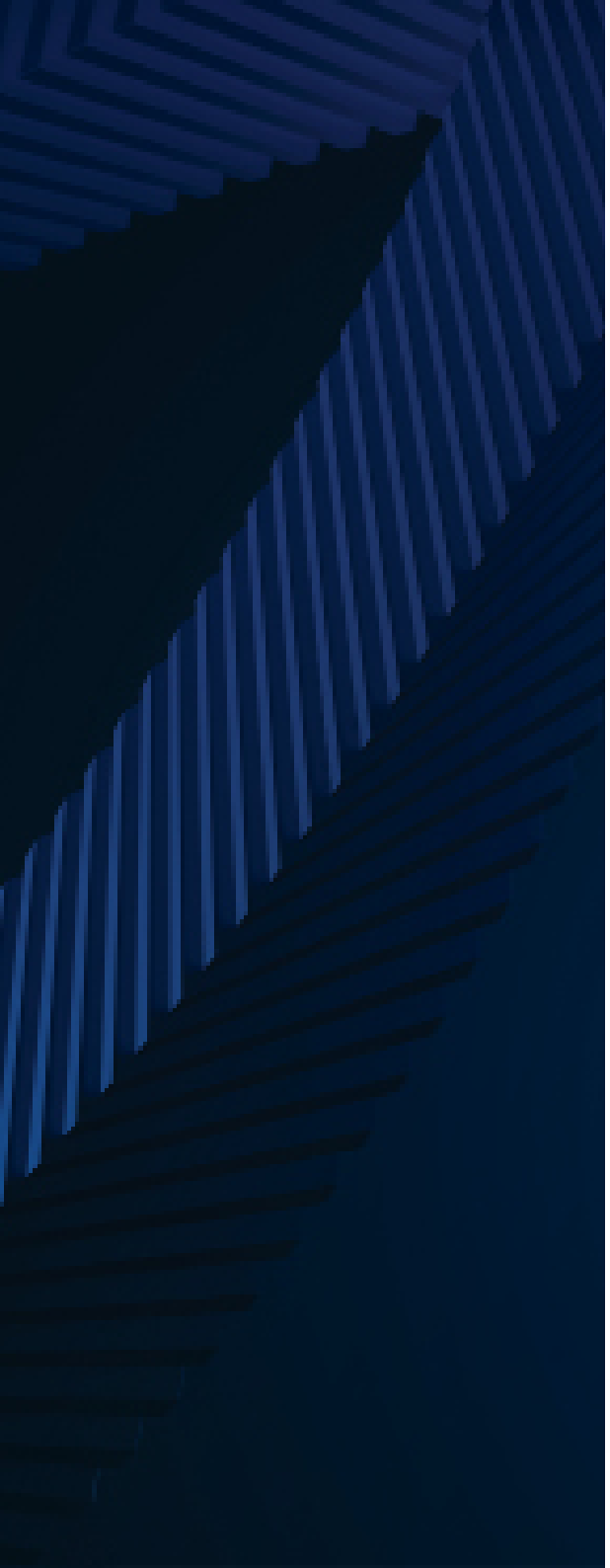
Modules overview





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Import module

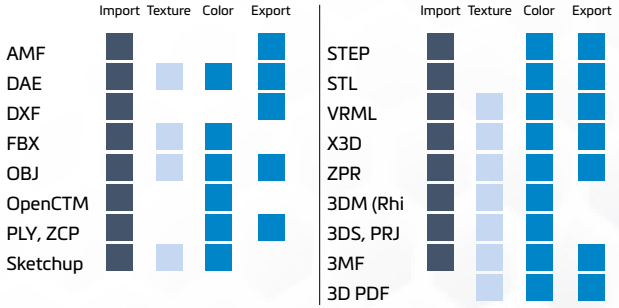
The Import module lets you import common CAD files, as shown in the image below:

IGES, CATIA5, CATIA6, JT, Inventor, NX (Unigraphics), Parasolid, Pro/Engineer, Revit (no color support), SAT, Solid Edge, SOLIDWORKS, VDA (no color support).

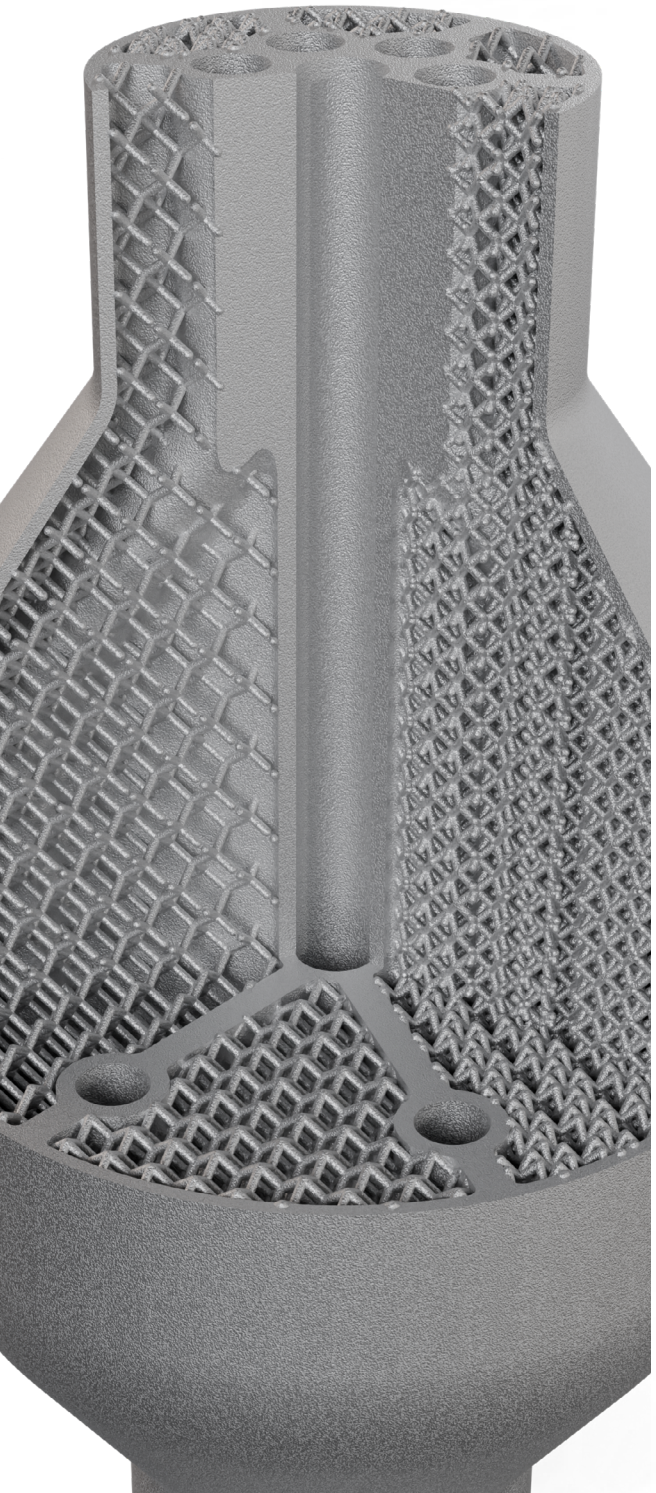
Functionalities:

> After importing a CAD file, the parameter pop-up allows you to determine the surface accuracy, edge length, number of triangles, import colors, automatic fixing options, and more when converting the part to mesh
>
> Convert a CAD file to BREP in Magics to use BREP tools

Magics base module



Magics import module



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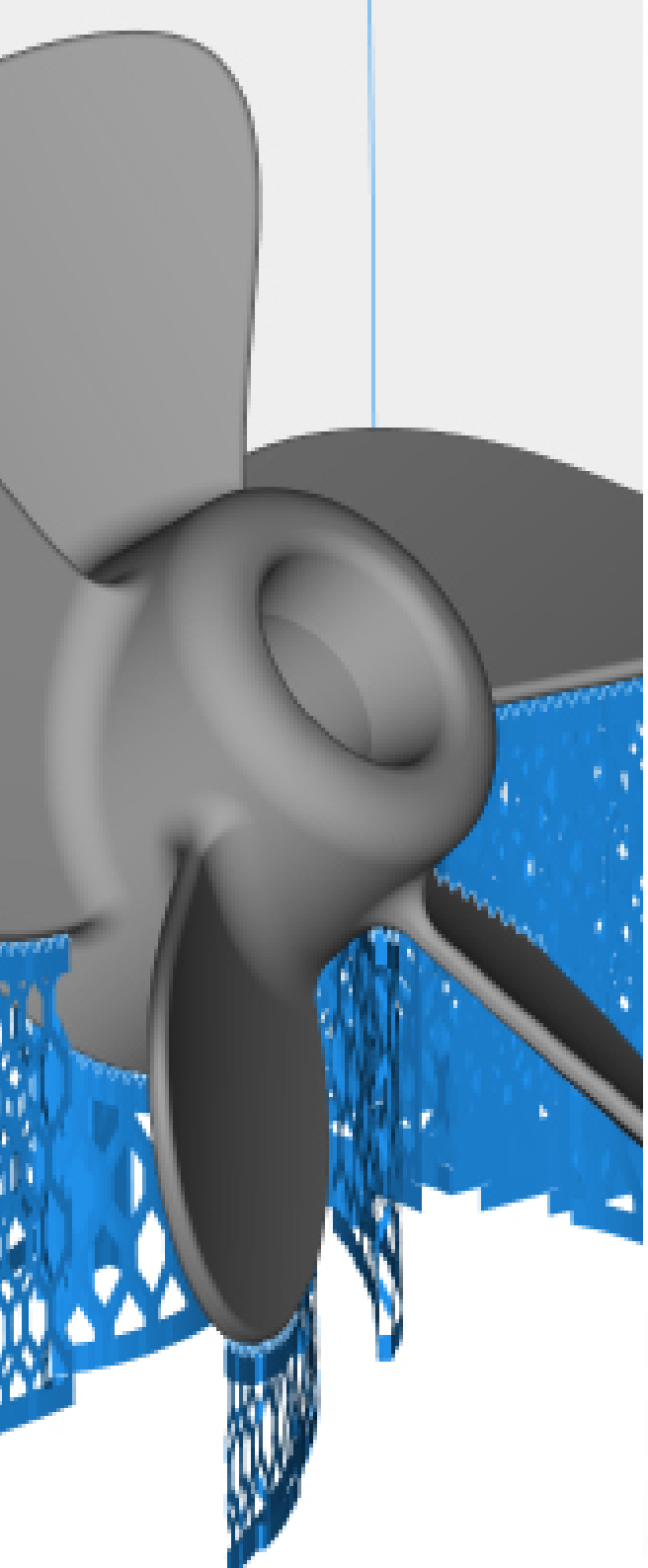
Lattice module

Reduce part weight while preserving strength with the Lattice module. Integrating lattices into your designs helps reduce material costs, printing time, and heat buildup. By offering various lattice types and more control over your final result, this module supports you with applications for heat exchange, shock absorption, and casting in industries like aerospace and healthcare.

Functionalities:

- Add lattices inside your hollow part or replace your entire part with lattices
- Use one of the unit cells from our unit cell libraries or add your own
- Add tetrahedron lattices to your resin part specifically aimed at casting
- Keep your lattices slice-based to reduce file size and slice them with Materialise Build Processors or the Magics Slice Module



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Support Generation resin module

Support Generation (SG) provides an extensive toolbox for SLA machines. Customizable, non-solid support structures will automatically reinforce your parts, reducing build failures and scraps while optimizing the surface and part quality. With custom support profiles, you can adjust the settings to ensure good part quality and reduce post-processing time and material consumption (e.g., perforations aid in resin removability, small contact points to minimize post-processing time, etc.).

Functionalities:

- Customizable, non-solid supports (point, web, block, line, contour, and gusset)
- Set up reusable support profiles
- Use the Transfer Support function to automatically position and support parts of similar geometry based on a master part

Compatible technologies: Stereolithography (SLA), Digital light processing (DLP), Electron-beam melting (EBM)

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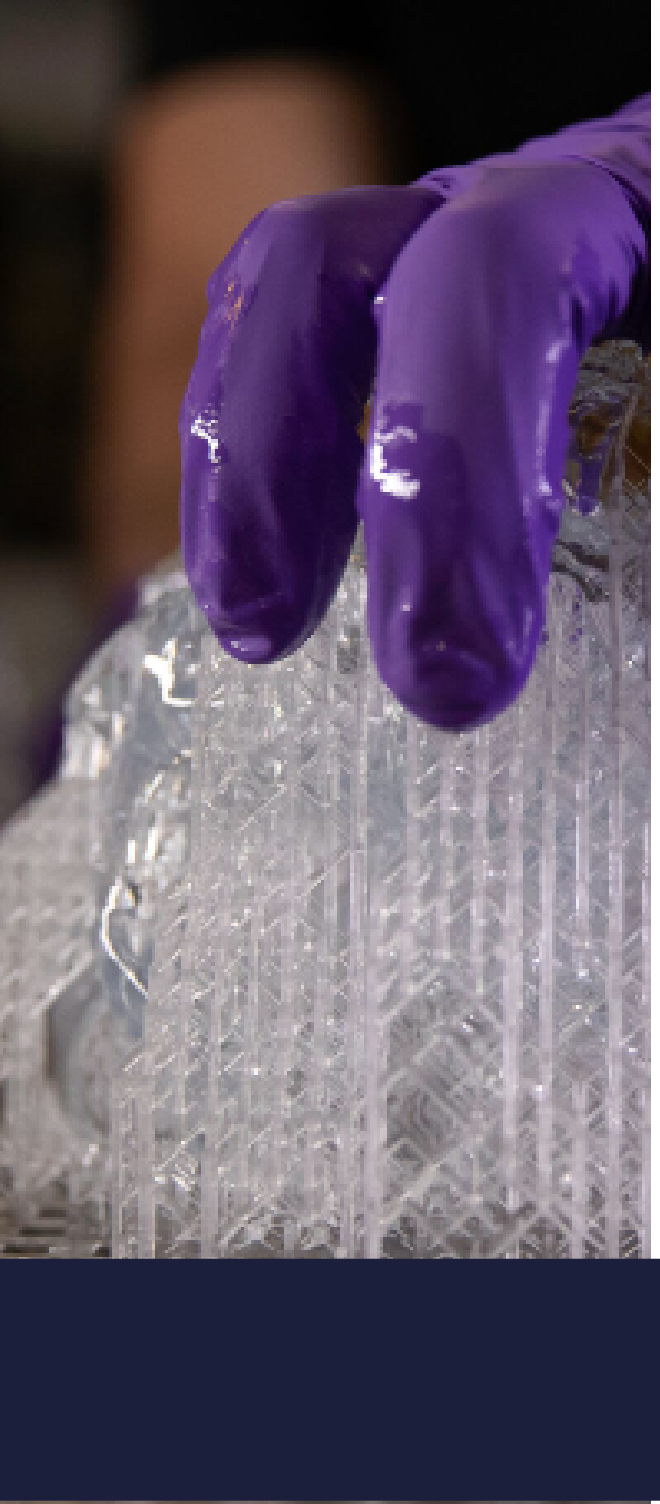
Support Generation metal module

The Support Generation metal module (SG+) provides an extensive toolbox to maximize the productivity of your machine. With the combination of customizable non-solid and solid structures, you can optimize support and heat transfer to avoid detachment or warpage. This minimizes build failures and ensures excellent part quality. Perforations in the support also allow for better powder recuperation.

Functionalities:

- All support type parameters are fully customizable; plus, save your preferences as a profile
- Non-solid supports exist in multiple geometries to support your part
- Solid supports such as cones and trees allow for heat transfer
- Angle and rescale supports with an interactive user interface
- Use the Transfer Support function to automatically position and support parts of similar geometry based on a master part

Compatible technologies: Metal 3D printing (SLM and DMLS)



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e-Stage for Resin module

The e-Stage for Resin module automates your support generation process for SLA and DLP technologies. Achieve time and cost savings in one click — creating an optimal support structure with needle-shaped contact points that are easily removed. And decrease your time spent on support design by up to 90%. Our customers have also decreased their resin consumption by up to 50% thanks to e-Stage's open diamond structure, which prevents resin from being trapped within the support structure.

Functionalities:

- Automatically generates support structures
- Extensive parameter list enables you to tweak the algorithm to your machine and specific needs

Compatible technologies: Stereolithography (SLA), Digital light processing (DLP)

READ THE CASE STUDY >
Shree Rapid Technologies (SRT) is an industry leader in providing end-to-end solutions for digitalworkflows, ranging from 3D scanning to 3D printing. Previously, although support generation was automatic, the process needed to be cross-checked by trained engineers. Now, SRT has fully automated the process using e-Stage for Resin. Plus, the software's algorithm and extensive parameter set reduced the material used for support structures by 50%, saving printing time.

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e-Stage for Metal+ module

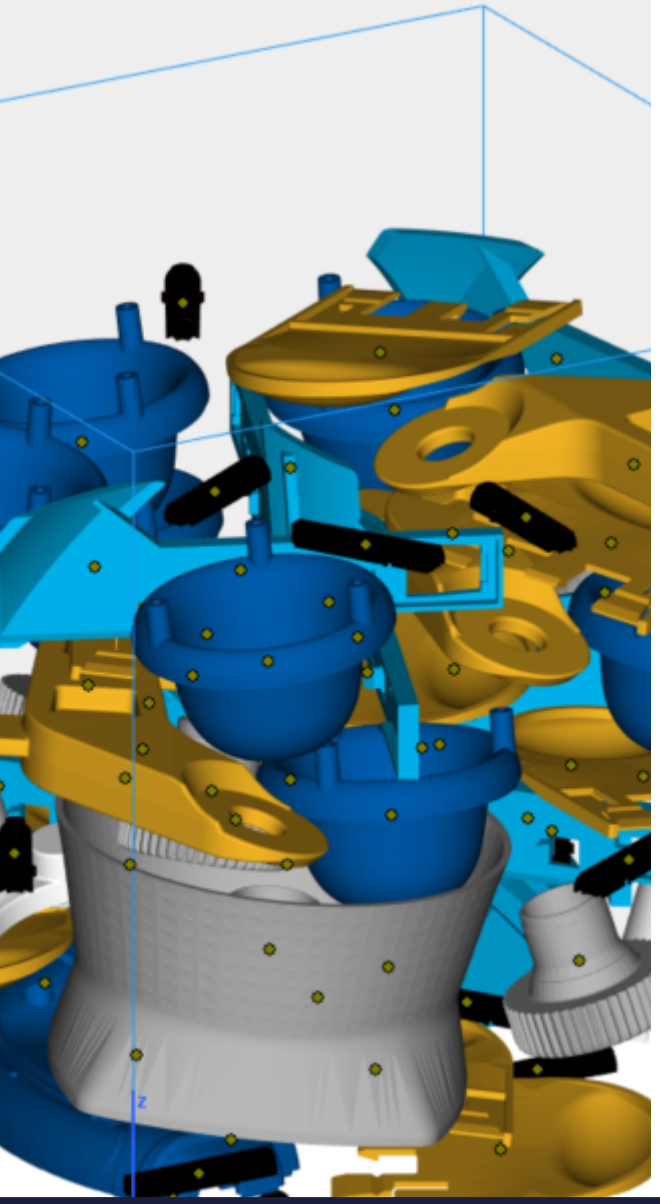
Keep costs low, part quality high, and ensure an economically viable metal 3D printing production with e-Stage for Metal+. Fully automate support generation without compromising part quality and post-processing costs — and positively impact the metal printing process at every stage of your operation.

Functionalities:

- Use automatic support generation based on physics-based modeling to produce high-quality parts in a consistent and repeatable way
- Create open structures that allow for easy depowdering, reducing health and safety issues
- Produce fine structures that can be easily removed with hand tools, reducing high machining costs

Compatible technologies: Metal 3D printing (Laser powder bed fusion (LPBF), SLM and DMLS)

WATCH THE WEBINAR >
Don't let traditional build preparation methods keep you from optimizing post-processing efficiency. In this on-demand webinar, you'll learn how e-Stage for Metal+ helps you avoid unforeseen complications and increased expenses during the production process.



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Nester module

The Nester module allows you to nest your 3D models in a controlled way. Alongside advanced algorithms and speed, this 3D nester offers options to protect small parts, indicate no-build zones, and print on multiple machines. Rely on Magics' powerful, accurate, high-speed, and multi-core nesting algorithms to adapt parameter settings for every situation. The slice volume optimizer reduces variation in the surface area of each layer, leading to less temperature variation and shrinkage — and better part quality. Increase the nesting density to include more parts in one build to save time, reduce powder usage, and avoid scrap.

Functionalities:

- Geometry 3D nesting algorithm
- Slice volume optimization
- Multi-platform placement
- Sinter boxes and sub-nester for delicate parts
- Add nesting zones for even more control

Compatible technologies: Selective laser sintering (SLS), Multi Jet Fusion (MJF), Electron-beam melting (EBM), Binder jetting (metal and sand)

READ THE CASE STUDY >
Nissan switched from manual placement to the Nester module. This increased the capacity of a single build job while reducing the number of labor hours, the printer occupancy time for operations — such as data preparation, printing time, and cooling time — and the amount of wasted raw materials. As a result, the entire 3D printing process is now more efficient!

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Dental module

The Dental module performs the entire data preparation workflow for printing metal dental parts. Crowns, bridges, and partial bases are automatically classified, and you can fix, orient, label, support, and nest the imported models in one click according to this classification. Lastly, you can generate reports for maximum traceability.

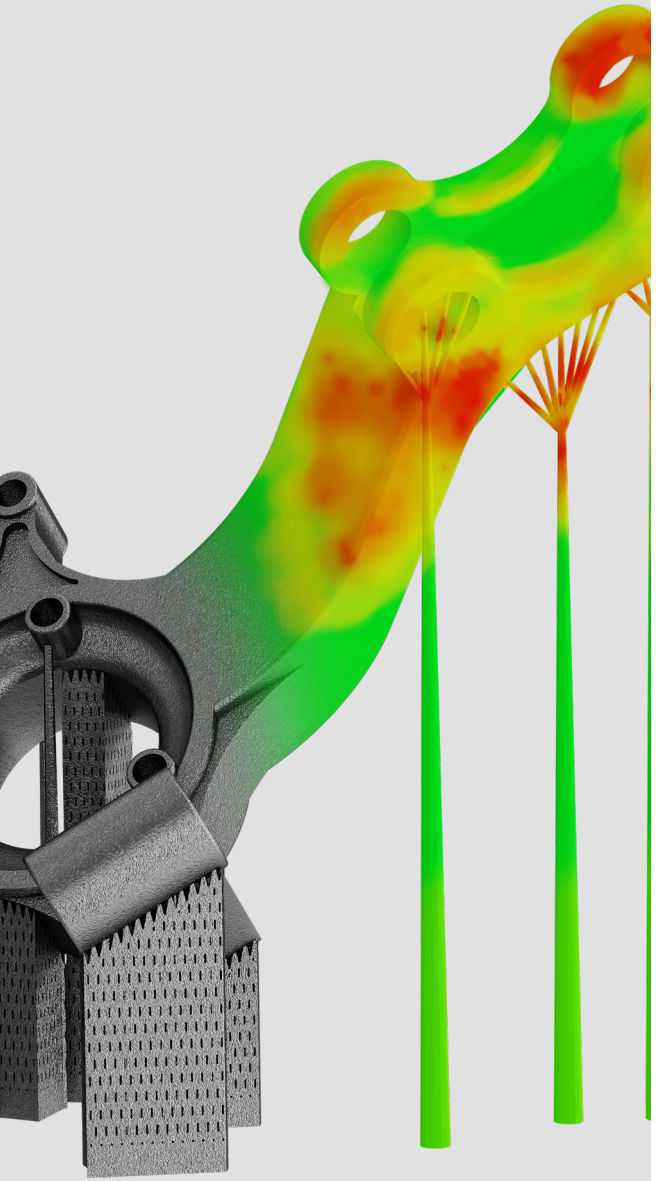
Functionalities:

- Complete platform automation for metal dental printing applications
- Set up custom profiles for your specific requirements and part types

Compatible technologies: Metal 3D printing (SLM and DMLS)

WATCH THE WEBINAR >

"3D printing has become well established within dentistry. Today, many dental labs have their own printers and create custom parts for dental restoration daily. Their next goal is optimizing the workflow, so dental specialists can reduce the amount of time spent manually preparing designs to be printed. With automated tools, specialists can instead use this time on other valuable responsibilities, such as meeting with patients."
- Volker Schillen, Market Innovation Manager, Materialise Medical



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Ansys Simulation module

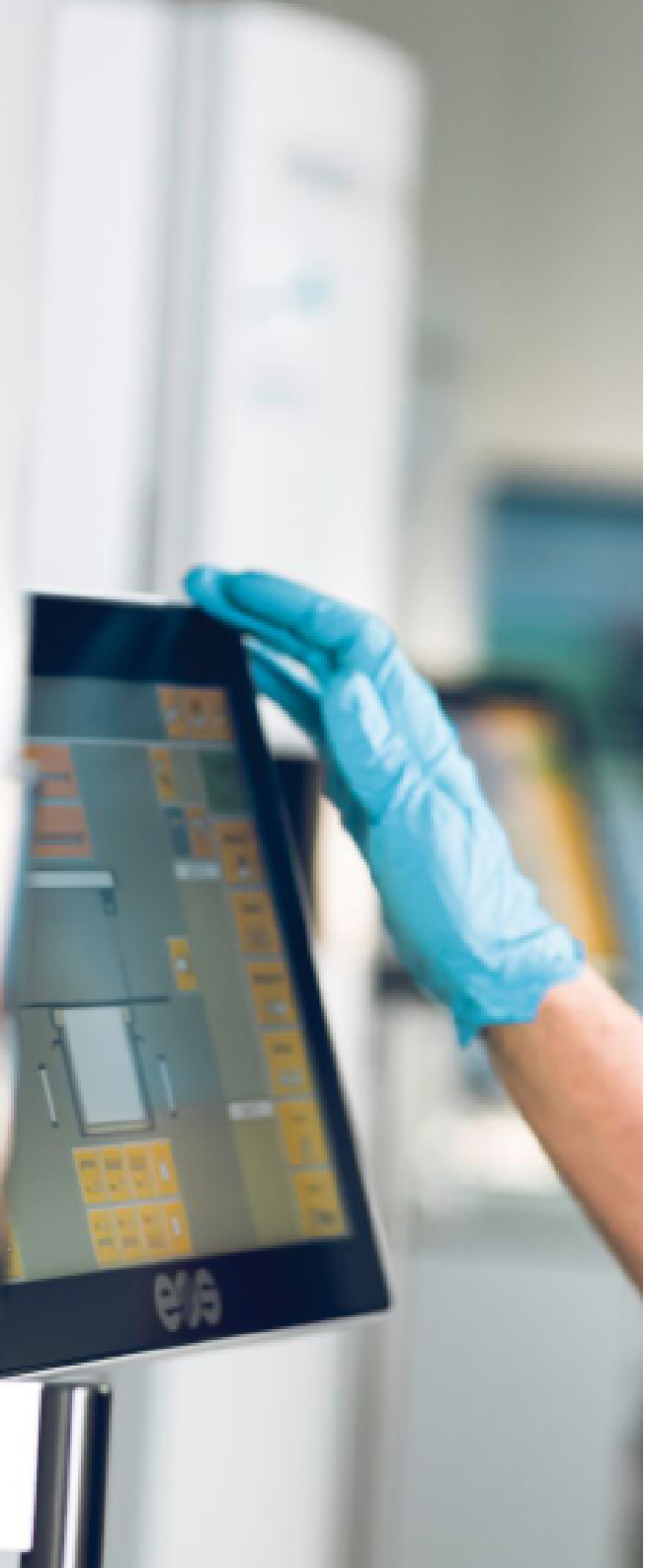
The Ansys Simulation module is a tool that allows you to predict possible printing risks and part artifacts of your SLM and DMLS builds before printing. It also helps you understand previous build failures. Mechanical and thermal simulations help you interpret part behavior during printing (deformation, shrink lines, recoater collision, overheating, etc.).

Simulation is an easy-to-use tool and does not require expertise. The same person can prepare the build and run the simulation, saving time and reducing costs. The simulation results help you improve your design and support so you can print it right the first time and minimize time-to-market.

Functionalities:

- Run thermal and mechanical simulations (calibrated to your machine and material)
- Automatic part modification to compensate for distortion

Compatible technologies : Metal 3D printing (SLM and DMLS)



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Build Processors

You need a powerful engine to perform your toolpath calculations before 3D printing — software that unambiguously communicates part data to the 3D printer.

Materialise collaborates with leading machine OEMs to develop Build Processors that provide a seamless connection between software and hardware, helping machine owners get the most out of each 3D printer. Simplify the printing process and improve productivity with our Build Processors. For machines without a dedicated Build Processor, use the Slice module to export to .slc and .cli files.

Functionalities:

- Optimize process parameters
- Integrates seamlessly into workflows
- Robust processing keeps file sizes small
- Communicates printing information
- Monitors machine parks
- Developed with machine builders

Compatible technologies: Stereolithography (SLA), Selective laser sintering (SLS), Multi Jet Fusion (MJF), Metal 3D printing (SLM and DMLS), Digital light processing (DLP), Electron-beam melting (EBM), Binder jetting (metal and sand)

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Magics Trainings Overview

Materialise Magics has been recognized as the standard, go-to software solution for the AM industry for more than 30 years and is used by companies around the globe. Our engineers have incorporated knowledge from our AM factories that produce prototypes, small series, customized wearables, certified aerospace parts, and personalized medical devices to develop software that makes a difference — helping you to reach your AM ambitions.

Our flexible online, live or hybrid software and AM courses are designed to flatten your learning curve and support you throughout the entire AM journey.

Optimize your use and understanding of Magics, explore its features, and learn effective workflows directly from our passionate experts.

Check the calendar for AM data and build preparation training >

MAGICS UPDATE TRAINING >

Free	Online	In person

Level: Basic to advanced

Take full advantage of the latest updates and features in Magics. Following this free training will shorten your learning curve so you can apply the new features immediately. This course is available to all Magics customers through the Materialise learning platform. Register today to follow an online session or book your seat for an in-person session.

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MAGICS ONBOARDING TRAINING >

Free	Online

Level: Basic

This course helps you get started with the software, including a clear overview of Magics' features and what the software can do for you and your business.

MAGICS FUNDAMENTALS TRAINING >

Paid	Online	In person	Certification

Level: Basic to intermediate

This instructor-led training course is ideal for those new to data and build preparation for AM or Materialise Magics users looking to expand their knowledge. You'll gain a comprehensive understanding of how to prepare a build for 3D printing from A to Z using Magics. Over two months, you'll have access to more than 50 videos, helpful exercises, and live sessions with our application engineers.

MAGICS EXPERT TRAINING (Coming soon) >

Paid	Online	Certification

Level: Advanced

Our highly skilled professionals designed this course to give you the knowledge to become an expert in file and build preparation for 3D printing. After completion, you'll be able to handle even the most challenging parts and platforms.

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AM has become an integral part of the manufacturing world. However, the lack of expert professionals in AM is often mentioned as one of the biggest obstacles to greater technology adoption. After 30+ years in the business, we know it takes a lot of time and effort to understand the software and processes needed to implement AM successfully. That's why we have put in place a variety of training courses, webinars, and consultancy services to assist professionals and companies entering into the industry or looking at enhancing their knowledge of AM.

Visit the Materialise Academy for a complete overview of our educational offering. Let's make a difference together.