Materialise Magics 29

What's new?



Materialise Magics 29 feature highlights

The additive manufacturing industry considers Magics the premier software for part and build preparation. In this release, we're enhancing Magics with the following updates:

Productivity

- Enable new applications by supporting *implicit geometries* in Magics and our Build Processors
- Leverage various *performance improvements* in data preparation and marking
- Handle new design iterations efficiently with the Replace Part or Transfer Support features

Simplicity

- Gain more control with the *new licensing* system
- Make use of native BREP parts during build preparation for an easier workflow and better accuracy
 - Seamlessly transition between scenes and save your progress during support generation with the *improved SG Mode*



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- Support generation
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General improvements



Licensing (1)

- In addition to our standard CCK-based licensing, Magics 29 will also feature a new ID-based licensing system. We'll contact you regarding this optional transition over the coming year, or you may contact us if you wish to have access sooner.
- The new licensing system aims to improve your experience when activating our software and provide you with more control over your licenses.
- Note: The new licensing system does not support Magics 27 and older versions



materialise

innovators you can count on



Licensing (2)

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	> MGX - Import module	Local	 Active 	49	Deactivate
	> MGX - Lattice module	Local	 Active 	49	Deactivate
	> MGX - MAGICS RP	Local	 Active 	49	Deactivate
	> MGX - Nester module	Local	 Active 	49	Deactivate
	> MGX - SG+	Local	 Active 	49	Deactivate
₽	> MGX - Slice module	Local	 Active 	49	Deactivate

- The new licensing system will replace CCKeys with Activation IDs
- Easily transfer your licenses to other computers with self-rehosting capabilities
- License updates will happen automatically, eliminating the need to reactivate when installing a new Magics version
- Your admin(s) will be able to manage licenses through the End-User Portal



Performance

- Rendering improvements on marked mesh parts:
 - Up to a 40% reduction in video memory usage
- Significant performance improvements in the following operations:
 - Extrude: up to 70% faster
 - Perforator: up to 50% faster
- The responsiveness of label tags during placement was also improved
- Importing multiple parts is up to 40% faster

Data preparation



Self-supporting Shell





- A new self-supporting algorithm brings more power to the Shell tool within the Hollow operation
- The new self-supporting algorithm makes use of additional (mesh) beams to make the volume self-supporting
- This new algorithm was made specifically with LPBF in mind but is relevant for other technologies as well



Honeycomb Lattice

- The new smooth honeycomb will round off the corners of the honeycomb hexagons
 - With the new smooth honeycomb, the new self-supporting algorithm has also been added. Otherwise, the original selfsupporting algorithm is still used.
- When using the self-supporting honeycomb, perforations can also be made self-supporting.
- By filtering partial honeycomb lattices, you will not generate partial hexagons
- With the new step size, you have more control over the translation or rotation of your honeycomb lattices



Lattice updates

Delete
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- Experience an updated UI for the Volume Mesh Lattice, Slice Based Volume Lattice, Tetrahedron Lattice, and Slice Based Tetrahedron Lattice functions
- The new unit cell preview and transparent view make it easier to anticipate your results
- The hollow and perforator results are now in line with the regular hollow and perforator functions

Build preparation





Replace Part

- With the Replace Part function, you can update a similar part or new design iteration in just a few clicks
- Complete an alignment with the current part to ensure proper orientation
- Transfer support from the current part, eliminating or significantly reducing the need to edit supports
- Replace single parts or all virtual copies as you see fit



Automatic Placement improvements





- The addition of profiles helps you work more quickly and reduce the risk of human error
- We added more center placement options for stereolithography so you can spread out parts in the center along the X or Y axis
- A new option allows parts to overhang in the placement
- Bounding box auto-placement in the part scene spreads out different parts

Implicit geometries





Introduction to implicit geometries

- Implicit geometries are complex organic shapes represented through mathematical equations, enabling an efficient data format with high precision.
- By supporting implicit parts in the Magics and Build Processor workflow, we can enable applications that were previously impossible. This also avoids discretizing these files to mesh, maintaining their required precision.



Courtesy of nTop

Implicit functionality (1)





The following functions for implicit parts help you manage build preparation:

- Multi-Section, Measurements, and Interlocking Analysis
- Translate, Rotate, Rescale, and Duplicate
- Automatic Placement
- 3D Nester, Subnester, and Sinterbox
- Saving to .magics and .MatAMX formats
- Exporting implicit parts to compatible Build Processors



Implicit functionality (2)

- Operations that aren't available for implicit parts will be grayed out. Some notable functions include Support Generation, Edit Mode, and Export Platform.
- While not ideal, you can convert your implicit geometries to mesh if needed.
- A new column in the part list indicates the type of part you're working with.
- Rendering options provide a clearer view of the part's appearance without impacting the accuracy.



Composed parts





- Create composed parts to combine different part representations (mesh, BREP, implicit, supports, lattices, etc.)
- With composed parts, you can manage build preparation for all components together
- Compatible Build Processors will consider the composed part as a single part and unify the slices of the different components
- To edit composed parts, you must first split them up

BREP parts on platforms





Introduction to BREP parts

- BREP, or boundary representation, represents a 3D part by defining its volume's limits. It is used in many CAD packages, like Siemens NX and Catia. Magics can import and process the main BREP files used in the industry.
- At some point in the process, BREP parts need to be discretized as mesh. The advantages of doing so later in the process are:
 - High accuracy of the final part
 - Reduced data and faster performance during data and build preparation
 - Minimized need for fixing
 - The ability to save parts as STEP files (e.g., to import them into CAM or back into CAD software)



BREP parts: functionality (1)



The following functionalities for BREP parts help you manage build preparation:

- Multi-Section, Measurements, Wall Thickness Analysis, and Interlocking Analysis
- Healing (repairing BREPs)
- Translate, Rotate, and Duplicate
- Automatic Placement
- **3D** Nester, Subnester, and Sinter box
- Saving to .stp, .magics, and .MatAMX



BREP parts: functionality (2)

- Operations that aren't available for BREP or implicit parts will be grayed out. Notable functions that don't work with non-mesh parts include Support Generation, Edit Mode, Export Platforms, and Build through Build Processors.
- When these functions are required, you can convert your part to mesh.
- A new column in the part list indicates what type of part you are working with.



Nester





3D Nester improvements



- Additional interlocking prevention options provide you with greater control over part handling, allowing you to manually place parts and increase the number of parts in your build
- Export nesting settings per part as a .csv file to facilitate quality control tracking



Sinter box improvements

- Fixed-height support is now preserved and taken into account with the subnester and sinter boxes
- The organic sinter box can now be created as beam lattices, enabling faster processing
 - These beam lattice sinter boxes offer the option to add break-off points, making them easier to break open
 - Convert the sinterbox to mesh afterwards if your printer or slicer can't process them as beam lattices



Support generation

Transfer Support improvements

- Both the algorithm and usability of the Transfer Support function have significantly improved
- You'll be provided with a few options when transferring support, with a clear view of what is and isn't transferred
- A list of supports helps you to review and handle the transfer results whose support surfaces may differ too much
- You can peruse the notes column in SG mode to see new and non-transferred support surfaces

SG mode improvements

- You can now move to other scenes while in SG mode, offering more flexibility in your work
- Upon repeated entry in the SG mode, performance will also improve for quicker transitions in and out of SG mode
- In SG mode, you can now save your project and resume right where you left off

Support preservation

- Magics 29 preserves your support structures during the following mesh editing operations:
 - Triangle reduction
 - Shells to parts
 - Milling offset
 - Prop Generation

Better support of edges

- The new edge angle parameter provides greater control over which edges need to be supported
 - This parameter is intended for edges that are part of the support surfaces
- A new option in the Tree* and Line* support allows placement either on the edge or next to the edge

Other support generation changes

- The quality of thickened support on corners has improved, particularly with perforations and teeth
- Volume support generation is faster, especially when generating support for multiple surfaces
- Exporting support now includes an 'Apply to all' option
- You can now opt to avoid the automatic generation of support on a graph

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