ADDITIVE MANUFACTURING CAPABILITIES IN CREO

CREO CLOSES THE GAP BETWEEN 3D CAD AND ADDITIVE MANUFACTURING.
WITH CREO, WHAT YOU DESIGN IS ACTUALLY WHAT YOU PRINT.

With Creo you can design, optimize, validate, and run a print-check all in one environment, reducing overall process time, tedium, and mistakes. When you're ready, simply send the file straight to the 3D printer.* You can design for additive manufacturing in polymers and in metal and then connect directly to your chosen printer with its optimized printer profile and support structures. No switching between software packages, and no hassle. Our metal printing capabilities cover 70% of the metal printers currently on the market.

>>> THE CREO ADVANTAGE

Creo is the 3D CAD solution that helps you accelerate product innovation so you can build better products faster. Easy-to-learn Creo seamlessly takes you from the earliest phases of product design to manufacturing and beyond. You can combine powerful, proven functionality with new technologies such as generative design, augmented reality, real-time simulation, additive manufacturing and the IoT, to iterate faster, reduce costs and improve product quality. The world of product development moves quickly, and only Creo delivers the transformative tools you need to build competitive advantage and gain market share.

Creo Versions	4	5	6	7	8
Creo Parametric					
Create Print Trays	•	•	•	•	•
Print Check	•	•	•	•	•
Connection to 3D System Plastic Printers (understand material usage and Print Times)	•	•	•	•	•
Connection to i.materialize Print Bureau	•	•	•	•	•
Connection to Plastic Printers in the Materialise Library (Manage print drivers and profiles)			•	•	•
Connection to 3D Systems ODM Print Bureau			•	•	•
Creo Additive Manufacturing Extension					
Lattice Modeling (2 ½ D and 3D Beam lattices, uniformly distributed)	•	•	•	•	•
Formula-based lattices (Triple-periodic minimal surface cells: Gyroids, Primitive and Diamond)			•	•	•
Advanced beam lattices (Stochastic – conformal and foam, transitions)			•	•	•
Stochastic lattices with Delaunay algorithm and edges recognition				•	•
Stochastic lattices, Trabecular shape option for Voronoi triangulation					•
Homogenized lattice representation for fast simulation and light weight files storage			•	•	•
Custom defined cells (based on Creo .prt files)			•	•	•
Improvements to custom defined cells, support of Quilts and Curves				•	•
Selective removal of dangling beams					•
Lattice variability based on geometric references	•	•	•	•	•
Simulation and optimization of lattices using idealizations in Creo Simulate		•	•	•	•
Real-time simulation of lattices using Creo Simulation Live			•	•	•
Automatic Lattice variability based on simulation results, (for beam-based lattices)					•
Modify, Manage and Save Print Tray Assemblies	•	•	•	•	•
Automatic Positioning, Nesting and Global Interference Check in Print Tray Assemblies	•	•	•	•	•
Insert multiple parts in the Tray Assembly in one step					•
Define the Print Build Direction in Part Mode and direct placement in the Print Tray			•	•	•
3MF Core specification export		•	•	•	•
3MF Materials and colors extension support and 3MF beam lattice extension support			•	•	•
Windows 10 driver support for 3D printing			•	•	•
Creo Additive Manufacturing Plus Extension for Materialise					
Support of Metal Printers in the Materialise Library (Manage print drivers & profiles)		•	•	•	•
Generate and Customize Metal Support Structures		•	•	•	•
Additional support structures: Tree, Cone and Hybrid				• 7.0.1.0	•
Optimization of the Print Build Direction in Part Mode and direct placement in the Print Tray			•	•	•
Multi-objective Optimization of the Print Build Direction and detection of overhang edges and vertices					•
Amphyon Additive Process Simulation for Creo*					
Simulation of parts, lattices and supports on the Tray Assembly. For Powder-bed metal 3D Printers				•	•
Creation of compensated models and insert them on the Tray Assembly model tree				•	•

Creo Versions	4	5	6	7	8
Creo Generative Topology Optimization Extension (GTO)					
Set constraints and requirements, including materials and manufacturing processes •				•	•
Work with both additive manufacturing and more traditional processes •				•	•
Output is rich, B-rep geometry. •				•	•
Creo Generative Design Extension (GDX)					
Turn to cloud-based GDX to evaluate multiple scenarios in parallel				•	•

Please visit the PTC support page for the most up-to-date platform support and system requirements.

CREO PARAMETRIC >>>

Connect to 3D Systems Plastic Printers, and to i.materialise and 3D Systems Print Bureaus

- Out-of-the-box (OOTB) functionality: print parts, assign materials, colors, and calculate build and building material directly from Creo.
- Ability to direct order parts from i.materialise and 3D Systems on demand manufacturing (ODM) print bureaus.

Connect to Plastic Printers in the Materialise Library

- OOTB functionality: print plastic parts directly from Creo.
- Manage print drivers and profiles for plastic printers in the library.
- Ability to print support structures requires *Creo Additive Manufacturing Plus Extension for Materialise.*
- Materialise provides optimized printer profiles for each printer in the Materialise library. Build processors available from Materialise.
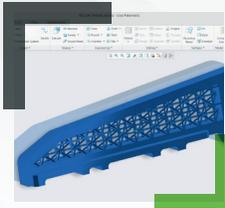
PTC Additive Manufacturing Partners

3D SYSTEMS

3D SYSTEMS
On Demand Manufacturing

materialise

i.materialise

# CREO ADDITIVE MANUFACTURING CAPABILITIES:

CREO ADDITIVE MANUFACTURING EXTENSION >>>

Lattice Modeling

- Optimization of lattice structures with simulation.
- Create parametrically-controlled lattice structures, fully-detailed parts with accurate mass properties. With variability control you can optimize the lattices to achieve your engineering goal.
- Use the full spectrum of cellular structures such as: 2 ½ D, 3D beam-based, Formula-driven, Stochastic and Custom-cell type.
- Take advantage of lattice transitions between beam-based lattices and the supported downskin patches of a model, based on the build orientation and critical angle.
- Improved FEA Simulation of very dense full BREP beam-based lattices using homogenized representation, coupled with Creo Simulate to analyze the linear, static, and modal response of a part.
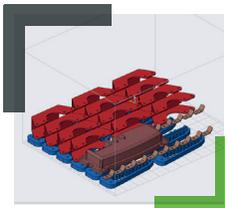
Create, Modify, Manage, and Save Print Tray Assemblies

- Define print tray specific to printer, where the tray assembly is the repository for the 3D print job.
- Add parts at any time, define positioning and rotations, assign materials/colors, etc.

Automatic Positioning and Nesting in Print Tray Assemblies

- Optimize the orientation of parts in print tray according to printer specifications.
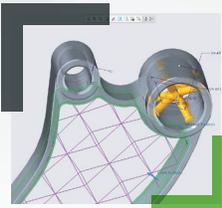- Nest parts in print tray assemblies (assumes printer supports nested parts).
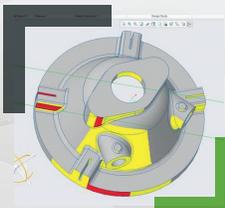
Build Direction

- Define the optimal orientation for printing your design.

# CREO ADDITIVE MANUFACTURING CAPABILITIES:

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CREO ADDITIVE MANUFACTURING PLUS EXTENSION FOR MATERIALISE >>>

### Connect to Metal Printers in the Materialise Library

- Out-of-the-box (OOTB) functionality: print parts, assign materials, colors, and calculate build and building material directly from Creo.
- Optimized printer profiles for every printer in the Materialise library. Build processor available from Materialise.
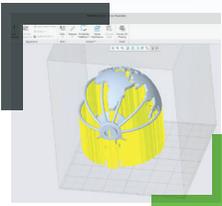
Generate and Customize Metal Support Structures

- Materialise-based support structures (point, line, gusset, web, contour & block) Tree, Cone and Hybrid are generated in the tray assembly once the part is placed in the tray and the printer is selected.
- Supports are created in Creo and update when models are changed.
- Support parameters are dependent on the specific printer, and modifiable by the user.
- Users can modify specific support structures if needed.

CREO GENERATIVE TOPOLOGY EXTENSION >>>
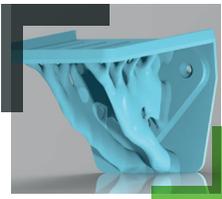
Optimize designs according to your requirements

- Seamless set-up for your scenario. Simply select design spaces, add your loads and constraints, then define the objectives, material, and manufacturing process for the scenario. Use the results as your final design or continue to iterate.
- Support for many common manufacturing requirements, from traditional to additive manufacturing.
- Ability to preview and interrogate optimized design along with simulation results. Interactive process where results dynamically update with edits to geometry and setup.
- Automatic reconstruction of optimized results to rich B-rep geometry or tessellated model.
- Structural Analysis only. Modal and Thermal analysis in Creo 9.0

CREO GENERATIVE DESIGN EXTENSION >>>

Consider multiple scenarios in parallel

- Use the power of the cloud
- Automatically identifies the top options, including those you might not have considered.
- Enables junior design engineers to contribute earlier in the design process by using GDX to turn product requirements into designs.