Software for Industrial 3D Printing in the USA

Design, simulation, slicing, build preparation, printer operation and production management
Current products available to US manufacturers |

Executive summary

For commercial 3D printing, no single application covers every requirement. Most US industrial users work with a **CAD design package**, specialist **print preparation** software matched to the printer, and (for larger plants) **manufacturing execution / quality** systems. The software below includes US and international vendors with products marketed to US industrial users; the list is a practical shortlist.

The software workflow

1.	2.	3.	4.	5.	6.	7.
CAD design	**DfAM / lattice**	**Simulate**	**Orient & support**	**Slice & build**	**Run & monitor**	**Inspect & trace**

The shortlist

Design a part
Autodesk Fusion or SOLIDWORKS; Siemens NX / PTC Creo for complex engineering.

Make complex 3D shapes
nTop for lattices, lightweight structures and high-performance DfAM.

Prepare industrial metal builds
Materialise Magics 30 or Oqton 3DXpert; add machine-maker software.

Drive a specific printer
EOS Build / EOSPRINT, Nikon SLM.Prep, GrabCAD Print, PreForm or equivalent.

Control a multi-printer factory
Materialise CO-AM, Oqton MOS or Authentise FlowsAM.

Check manufactured parts
ZEISS INSPECT and process simulation where tolerances are critical.

Choose the software to suit the machine technology

PRINT TECHNOLOGY	RECOMMENDED SOFTWARE APPROACH
Metal laser powder-bed fusion (LPBF)	CAD + Magics/3DXpert + OEM build software; simulation and MES for production.
Large-format DED / hybrid metal	NX AM Multi-Axis or compatible dedicated OEM path-planning; verify robotics/CNC postprocessors.
FDM / FFF thermoplastic	CAD + Cura/PrusaSlicer for open machines or vendor-matched GrabCAD/Eiger.
Resin / SLA / DLP	CAD + Formlabs PreForm or 3D Systems 3D Sprint for supported printer models.
Industrial polymer SLS / MJF	CAD + OEM and/or Magics build preparation; HP software for supported Jet Fusion printers.

Important: Printer compatibility, machine-specific scan strategies, material profiles, and availability of offline/cloud options must be confirmed with the OEM before purchasing software.

1 | Design, DfAM & Simulation

These programs create the original product geometry, improve weight/strength, or predict printing problems before the production run.

SOFTWARE / SUPPLIER	MAIN FUNCTIONS	BEST FIT / ACCESS
Autodesk Fusion	Mechanical CAD, assemblies, CAM; additive setup for several processes. Manufacturing Extension adds advanced metal and multi-axis functions.	Small to mid-size product engineering; **commercial licence**.
SOLIDWORKS 3D CAD	Parametric mechanical/product design; 3D Print features and printable export.	General industrial products, jigs and machinery components; **commercial**.
Siemens NX AM	Integrated CAD, DfAM, fixed-plane and multi-axis build prep, CNC finishing and digital thread.	High-end aerospace/automotive, LPBF and DED; **enterprise quote**.
PTC Creo Additive	Parametric lattices, printability checks, tray optimization, supported print connectivity.	Engineered mechanical parts; **CAD + optional extension**.
nTop	Implicit geometry, lattices, topology-based and field-driven lightweight design.	Heat exchangers, complex channels, energy absorption, lightweight metal parts; **quote**.
Ansys Mechanical - AM	Thermomechanical process simulation, stress, warpage and distortion compensation for supported AM workflows.	Critical metal builds needing fewer trials; **enterprise**.
Hexagon Simufact Additive	Simulate LPBF and metal binder jetting; predict distortion and residual stress and post-process effects.	High-value precision metal parts; **enterprise**.

2 | Build Preparation & Printer Software

These packages orient parts, nest components, generate supports, produce slices/toolpaths and transmit build data. OEM support is often mandatory.

SOFTWARE / SUPPLIER	PRINTER TECHNOLOGY	PRIMARY ROLE / COMMERCIAL POSITION
Materialise Magics 30	Cross-platform: metal and polymer	Professional repair, supports, nesting and build preparation; **modular licence / quote**.
Oqton 3DXpert	Primarily industrial metal AM	DfAM, parametric build prep, simulation, slicing and inspection; **quote**.
EOS Build / EOSPRINT	EOS metal; selected EOS polymer	Machine job setup, material parameter and scan strategy management; **EOS site subscription**.
Nikon SLM.Prep	Nikon SLM metal LPBF	Multi-laser build data, path visibility, build-time simulation; **for Nikon SLM machine owners**.
Stratasys GrabCAD Print / Pro	Stratasys FDM, PolyJet, SAF & others by model	Print prep and job control; Pro adds automation/accuracy features; **base with printer; Pro paid**.
Formlabs PreForm	Formlabs SLA and SLS	Orienting, supports, packing, validated print parameters; **free software** for Formlabs machines.
3D Systems 3D Sprint	3D Systems polymer SLA/SLS/MJP etc.	Build prep, print optimization and machine interface; **provided with supported machines**.
HP 3D Build Manager	Supported HP Jet Fusion / Metal Jet	Build preparation and job submission; available under **HP printer software ecosystem**.
Markforged Eiger	Markforged composite and metal systems	Cloud-connected slicing and fleet management; **machine ecosystem**.
UltiMaker Cura	FFF/FDM on many supported printers	Open-source slicing, numerous process settings; **free desktop slicer**.
PrusaSlicer	FFF/FDM on supported printers	Local slicing, print profiles, support generation; **free and open source**.

3 | Factory Management, Quality & Traceability

Once multiple printers are used commercially, software must also control the order-to-delivery process, not merely the printers.

SOFTWARE / SUPPLIER	RELEVANT PRODUCTION CAPABILITIES	WHEN TO CONSIDER
Materialise CO-AM	AM MES; order processing, machines/materials, Magics integration, digital thread, IP protection and quality reporting.	Mixed-material production, validated workflows, regulated parts; **enterprise quote**.
Oqton Manufacturing OS	Factory scheduling, machine and order traceability, quality records, ERP/PLM integration and MES dashboards.	Mixed-vendor metal AM shop or growth to multiple sites; **SaaS quote**.
Authentise FlowsAM	Central order intake, scheduling, machine data, QA and delivery management.	Service bureaus and high-mix additive manufacturing; **commercial quote**.
AMFG	Automated quoting, job tracking, shop-floor control, scheduling, quality and workflow automation.	Job shops taking commercial customer enquiries; **commercial quote**.
GrabCAD Streamline Pro	Stratasys workgroup request/order control, fleet analytics, permissions and print operations.	Scaling a Stratasys-centric printer farm; **paid suite**.
ZEISS INSPECT	Inspection against CAD using 3D optical or X-ray measurement data; reporting and process trends.	Dimensional verification and quality sign-off; **licensed with trial options**.

Vendor demonstration: six pass/fail tests

#	ACCEPTANCE TEST
1	Import a real **STEP CAD assembly** and complex high-resolution mesh without geometry degradation.
2	Prove exact compatibility with **machine model, firmware, material and parameter set**.
3	Complete orientation, supports, nesting, slicing and estimated cost/time for **two real company products**.
4	Run a sample build, assess supports/warping, and confirm **post-processing and dimensional tolerance**.
5	Export build/inspection records plus order, material-lot, revision and job traceability.
6	Get a **3-year quote**: seats/sites, modules, cloud hosting, upgrades, training, APIs and US support.

Licensing note

Free tools are useful for open FFF/FDM machines, but do not replace approved proprietary job/laser control on industrial metal equipment. Most enterprise systems are sold by custom quotation; this note intentionally avoids unverified prices.

Primary sources / direct product pages

Materialise Magics (release history) • EOS Build • Nikon SLM.Prep • 3DXpert / Oqton • Siemens NX AM • Ansys support advisory • HP software • Formlabs PreForm

Method: Vendor documentation reviewed through 15 Oct 2026. This is a procurement-orientation shortlist, not measured US installation share. All clickable product names on pages 2–4 open official supplier information.