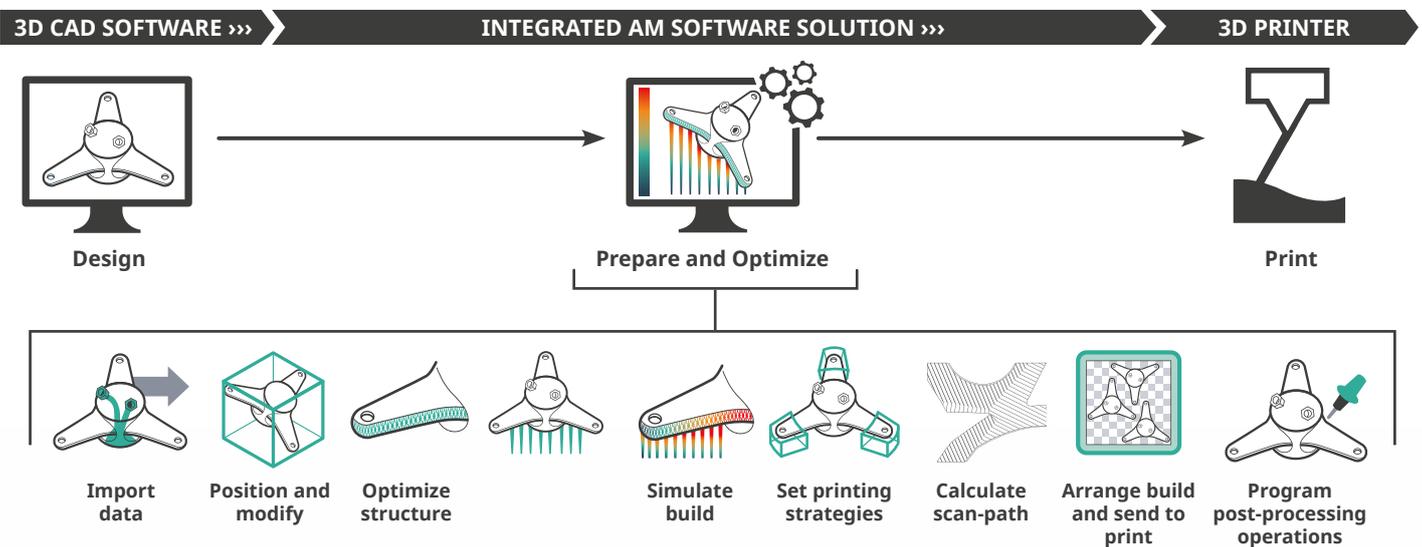


What to Look for in a Metal Additive Manufacturing Software

Although the cost of Additive Manufacturing (AM) software is typically only a fraction of the printer and material costs, its impact on the entire AM process and Total Cost of Operation (TCO) is extremely high.

Once a printer and material have been selected, the parameters that affect a build's TCO are all controlled by AM software. Therefore, when looking for an AM solution, special attention should be paid to the AM software that is available.

The following step-by-step considerations offer a checklist for benchmarking AM software.



- IMPORT**
Can you use CAD models in the native format of your CAD software? There is great value in working with b-rep (solids and surfaces) models, yet very few AM software solutions can offer this option without converting your CAD data into a mesh model. Preferably, select a model for print that can be further optimized so that you are able to evaluate structure optimization.
- CHECK FOR PRINTABILITY**
Can you run printability checks and take corrective actions if needed?
- SET ORIENTATION FOR BEST RESULTS**
Orienting the part on the print tray is quite possibly the single most critical aspect of a successful print. Are you able to analyze the effect of different orientations based on criteria such as minimum print time, minimum supports, etc.? Are these tools automated? Can you also make manual adjustments as needed with visibility into the impact of orientation changes on various parameters?
- MODIFY FOR MANUFACTURING**
Can you add machining offset to areas that will be machined during post-processing? What about closing off holes that are too small to print that will need to be drilled instead? Make sure to look at the geometry selection tools that are available for you to perform these kinds of modifications.
- OPTIMIZE THE DESIGN**
Are you able to add volume lattice structures for lighter weight parts? Try several types, changing the settings manually and take note of the time required to make changes. How do lattice updates impact print estimations (material consumption, printing time)? Explore the library of lattice types that are available to select from.

What about surface textures? Repeat the process and exploration outlined above for surface textures.
- OPTIMIZE LATTICE STRUCTURES**
Can you run Finite Element based analysis? Is it possible to lightweight lattice structures or change shell thicknesses based on the results?

SET SUPPORTS

Support design with metal AM is very different from plastics. It requires experience and know-how, and is greatly aided by versatile software that provides the necessary tools for automation using best practice templates, as well as the flexibility to intervene manually.

Can you use automatic tools to analyze and set required supports? Is it possible to manually adjust them? Can you choose from different templates or create and save your own templates for future use? Make sure to check out the supports library.

REQUEST CHANGES

Simulate a real world scenario where either the customer is issuing an Engineering Change Order (ECO) (i.e. a change in dimensions or adding holes) or you have found an error such as insufficient machining offset. Run through this process to acquaint yourself with the operations workflow and time required.

RUN BUILD SIMULATION

Achieving a successful metal print can be challenging and become expensive if you start builds that contain errors or failure-prone features. Are simulation tools available to predict build failures and minimize the number of attempts to get a successful print?

Run simulations until you are satisfied with the results. Make sure to check predicted faults and view the simulated model together with the original model. Evaluate the process used to implement the required modifications.

SET PRINTING STRATEGIES

Some AM software solutions will allow you to set printing strategies to different objects or at different heights, but most do not allow you to define different print strategies to different 3D volumes of the same object.

Can you set different print strategies to different volumes of the part? Experience how difficult it is to define different volumes and how to fuse different print strategies to eliminate weaknesses along the connection lines. What kind of control do you have over the printing parameters?

ARRANGE BUILD PLATE

When you have all the required data to send to the printer, can you view the scan path and laser parameters to verify it matches your requirements? estimations?

SLICE AND CALCULATE SCAN PATH

Get all required data to send to the printer. View the scan path and laser parameters to verify it matches your requirements.

SEND TO PRINT

Send the data to the printer and check if any additional actions are required before starting to print.

COMPARE AND CONCLUDE

As you evaluate different AM software solutions, be sure to compare the total process cycle time and cost.

It is extremely important to get hands-on with the process, to see and understand what it takes to perform each of the different steps.

Lastly, be sure to identify and closely evaluate the tested functionalities you will need in your business and confirm the AM software includes them. This will help to ensure you get the right tools with the right functionality to facilitate your AM workflow.

Interested in learning more about 3DXpert Additive Manufacturing software?

Arrange your free trial today

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