

# CAD TO CAM

## 4 PRODUCTION DATA LINKING BEST PRACTICES



How do you relay  
manufacturing data from  
CAD to CAM software?

In any process where multiple copies of anything are created, is a process asking for accidents. The best practice is to create a standardized format for manufacturing data that the design and manufacturing teams agree on and use with every design.

Today we spoke to a manufacturer, who shared with us his process of taking geometries from AutoCad® to his nesting package. It seems he exports them out of AutoCad, saves as DWG files segregated by material type, strips out all the non-cutting, non-tool path data by hand, and saves these edited files in another file for retrieval from the nesting software.

Maybe a piece or two of this cumbersome and frustration-ripe story resonates with your experiences or the experiences of another company you've heard about. It strikes me that in this scenario, there is a lot of opportunity for error by missing a step, grabbing the wrong file, or processing parts based on incorrect information. Ouch. If this rings even a little true to you, allow me to suggest a few alternative ways of looking at this process that could save significant time, error, and frustration.

► Use one database for design. Have the nesting software draw on the CAD files for all part files. Don't store multiple design copies in CAD and CAM.

## BEST PRACTICES

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Each and every manufacturer has their way of getting information needed for manufacture from design to production. And while no one way will be perfect for everyone, there are a few guiding axioms that may be of help.

## THE MORE FILES; THE MORE ERRORS

In any process where multiple copies of anything – let alone part geometries – are created, is a process asking for accidents. The engineer or programmer doesn't have a bulletproof system to know which file has the latest and greatest copy. He is left guessing or remembering or hoping a mistake wasn't previously made that will translate into significant downstream problems. The chance of him grabbing the wrong file is great. And we all know the snowball effect of grabbing the wrong part file and creating the wrong part, wrong version, or wrong size.

**Best Practice:** Use one database for design. Have the nesting software draw on the CAD files for all part files. Don't store multiple design copies in CAD and CAM.

## DISAGGREGATED DATA

When the manufacturing data (material, grains, downstream processes, etc.) necessary to produce a part is stored in multiple places, the opportunity for mistakes is ripe. If the material is in the file name, the grain information is in the design file, and the post-fabrication processes are on a separate paper chart, the process is slowed considerably and, again, the opportunity for error is great.

**Best Practice:** Agree on a standard set of naming and location conventions between design and manufacturing. Collect all of the relevant data in that same location, whether it is in the design file, a table within the design file, or within a separate table. The nesting software can then read all of the pertinent data automatically.

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## PROPRIETARY FILE FORMATS

Every CAD package has a proprietary file format. With AutoCAD it is “dwg.” And this is all well and good. The challenge comes when passing off data to a CAM package. Because the proprietary file format is unique not only to that CAD package, but it also changes with every release. Integrating with a nesting algorithm becomes a moving target. Some CAM software packages overcome this by inserting a second CAD package in the process to convert the files to a format they prefer. Further, what do you do with all of the legacy files – the 500, 5,000, or 50,000 part files – that are in a proprietary format when you want to integrate with a CAM package that doesn’t support the older version?

**Best Practice:** Building and saving files in standard file formats (DXF or IGES), can make the whole communication link so much easier and opens up many more production options.

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## STRIPPING OUT NON-CUTTING DATA

I have three dogs....that shed ... a lot. I’ve long since given up trying to pick off the dog hair from the backseat of my car by hand. It’s tedious, aggravating, and, well, tedious! Stripping out non-cutting data from a design file, in my humble opinion, is equivalent. Why manually edit all of the extraneous information? The opportunity for missing something that will impact production is huge. And the time consumed is non-value added.

**Best Practice:** The best practice is to create a standardized format for manufacturing data that the design and manufacturing teams agree on and use with every design. For example, to communicate material type for each part, simply agree to a set of abbreviations for the material names, then put that abbreviation

after the initials “RM” (raw material) in the design file. The nesting software can just pick up that information without human interaction. Similarly, if the grain information is needed in fabrication, insert a directional line in the CAD file on a separate layer. Again, the automatic nesting software will pick it up.

What are your experiences? How do you relay manufacturing data from CAD to CAM software? Do you have a best practice?

When looking to achieve nesting success there are best practices to draw on to minimize error, save effort, and reduce confusion. Contact Optimization to learn more about putting these best practices in place with automatic nesting software.