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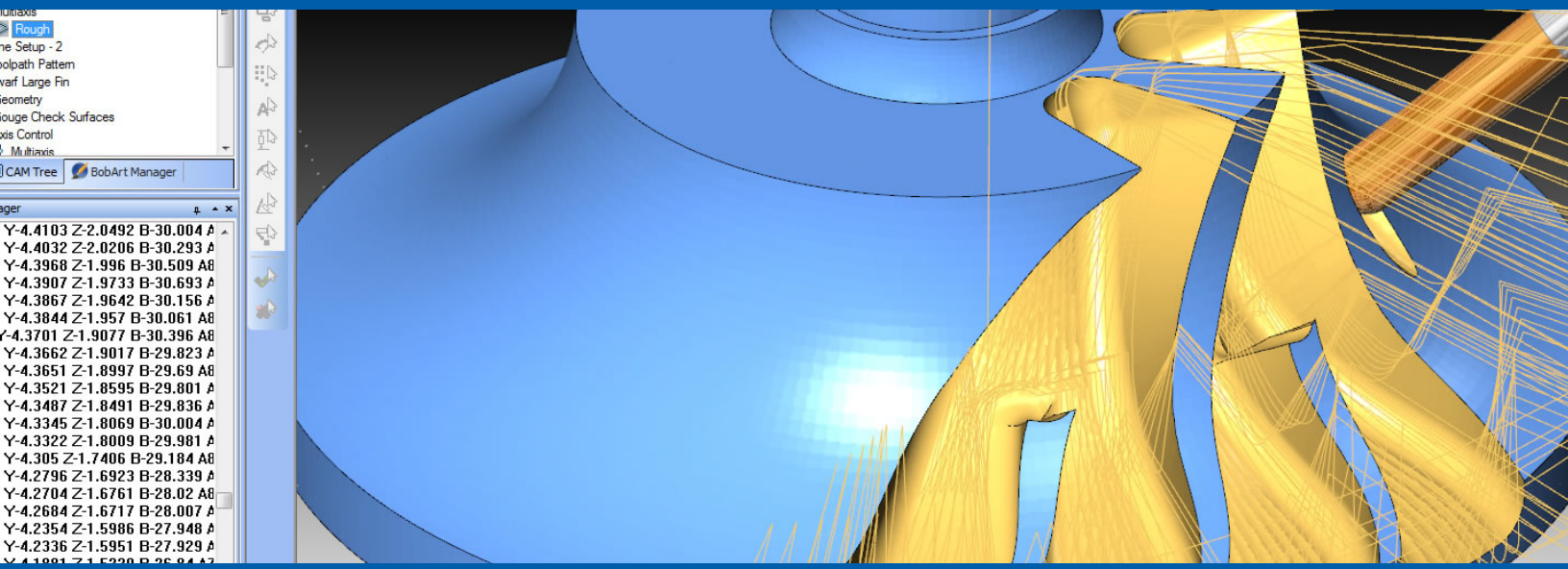

5 Easy Steps To Choosing A CAD/CAM Product

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Why CAD/CAM Implementation?

The projected manufacturing demographics for CNC shops and CNC machine consumption for 2013 tell us that shops between 1-19 employees are expected to grow by more than 50% this year over 2012. 5 Axis CNC Milling machine tool consumption is expected to see a staggering 276% increase over 2012 while horizontal machining centers following at a 118% increase. These projections tell us that cnc businesses are growing and they're going to need to automate the manufacturing processes. Otherwise this growth will end up under-utilized and shops will not be as profitable as they could be.

Let's face it, a CNC shop in 2013 without an offline CAD/CAM programming system to automate the process of part-making is like having to rub sticks together to build a fire. And even though many manufacturers already have a form of CAD-CAM implemented, not one CNC software system offers everything which leads these shops to having to add technology in order to meet all of their job requirements and remain competitive.

Even though some will argue, there is the fact that we all are still coming through the tail end of a tough economic decade. With that in mind, you will find many job shops faced with having to pay high dollar maintenance fees for their software. Do they use it enough to justify paying such costs just to stay current? And what percentage of those software users simply can't afford to continue paying such fees when they are already somewhat productive? Then there is the subject of technical support costs and training costs that can pile up to the point of wanting to check your machine to see what canned cycles you can continue using for everything.

Whatever the case may be, we can all agree that time is just too valuable and this is what brings us to writing an article that will give you the knowledge to help bring your shop to peak performance, increase your CNC workflow efficiency and bring your part making capabilities up to par with the competition. All while empowering you so that you can start saving you money along the way.

Step 1: The CAD/CAM Discovery Phase

Whether you have purchased a CAD-CAM system in the past or you are looking to acquire one for the first time, you will find many CAD-CAM programs listed on the Internet. Simply type in "cad cam software" or "cnc milling software" in your Internet search engine and the search results page will give you many sites that provide CAD and/or CAM. If you want to add an application to your search you can search for "3 axis cad cam software" or "4 axis cad cam software" or even "5 axis cad cam software." You can also enter other forms of the product in your search like "cad cam cnc". These will all do the trick and give you the resources that you need quickly.

Today, the use of social media is a powerful tool for discovery. Most of the action can be found on YouTube, Facebook and Twitter. However by searching cad-cam software on Facebook you may not get the results you are looking for. We recommend that once you find a CAD/CAM providers website, then click their social media links and see what's going on. How do they interact with their friends and communities? That will tell you something about the company. By going to YouTube and searching cad-cam software you can watch videos on many systems and discover a lot about what these products can actually do along with how they do it. This is a great way to gauge whether you will be able to easily adapt to the product or not. We are also seeing new information show up on other social media hubs like slideshare.com where you can search for CAD/CAM Software and find slide shows about it. By the time you reach the 4th page of the category on slideshare.com, you will have found a decent amount of information.

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As a tip, some of the more expensive systems may not provide pricing and will ask that you call them or locate a reseller first before providing a price list of software products and options. Most people like to gather their own information that includes prices, features and options as well as even try a free working trial of the product before making a buying decision.

There are some very informative sites on the internet today that can give you information as well. Here are a few...

- www.cadcamsoftware.com offers educational and helpful resources on CAD/CAM software as well as a forum, industry successes and more.
- www.bobcadafterdark.com offers a wealth of videos that demonstrate CAD/CAM software being used in real-world scenarios.
- www.cnczone.com is a massive forum for manufacturing that has a CAD/CAM software thread listing various software products.
- www.practicalmachinist.com is a massive forum for manufacturing that has a CAD/CAM software thread listing various software products.
- www.cncinformation.com is a site that offers both a cnc blog as well as a cnc forum that includes CAD/CAM systems.
- www.wikipedia.com offers several pages starting with Computer-aided technologies or Computer-aided manufacturing.

These sources are good places to start the discovery process. Some sources also rate these products for performance as well as offer feature lists and direct phone numbers to CAD/CAM providers. We live in a fast paced technology era which means that CAD/CAM software suppliers will most likely have the ability to give you a live one-on-one demonstration of their capabilities. This is generally done by phone through the computer using GoToMeeting or a similar solution. This is excellent as you can explain your application needs and be shown how the process takes place. There are several CAD/CAM suppliers that offer a free trial version of their product. This is also a good way to see the software. Uninterrupted, you can try it out. Ask yourself how easy it is to work through the interface to create toolpath for a part and a posted NC program for a machine. This can be very helpful.

You are also going to want to make sure that the software is compatible with your current hardware capabilities. For CAD Design(solid modeling & assembly design), CAM toolpath calculation and Simulation processing you will want to have the right hardware. This includes a quality graphics card to support potentially graphics intensive modeling operations.

Look for a CAD/CAM product that offers multi-core processing support if you will be creating cnc programs for complex 3, 4 and/or 5 axis machining. Multi-Threaded toolpath processing means that you will not have to wait all day for a complex 3, 4 or 5 Axis toolpath to calculate. Quality CAM products have taken this into consideration and will have the necessary support for this. It is a major time saver.

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What operating systems does the software work on? Make sure that the CAD/CAM system is workable with the Windows 32 or 64 operating system that you have or that it will work on the network that you have at your shop. Check hardware requirements that includes what graphics card will work best and other details to make sure that you have what you need or at least know what to ask before you make a purchase.

Step 2: Innovation & Design Interoperability

How do you interact with your clients when it comes to CNC machining/manufacturing? Do your clients prefer to provide you with a Designed CAD part file created in one of their "approved" design products or do they provide you with a print and ask that you design the product as well as machine it? In the first scenario we have clients that have created products in an approved design system such as SolidWorks, AutoCAD Inventor or a similar product. In this case you may need to have the same design product in order to do business with them as seen in the Aerospace industry and some others. The next question in this case is, are your clients currently using a design product that offers a certified CAM plug-in or add-on? A good example of this is SolidWorks and their list of Gold Partner CAM add-ons. These CAM products have been sent through a rigorous development process to ensure that SolidWorks customers have the best qualified CAM products which bear the Gold Partner logo on them once approved. This type of a scenario allows you to collaborate with your clients better, read in the native SolidWorks part file and process it with CNC toolpath and the required machining operations right within one software environment rather than have two separate products for CAD and CAM. This can be very beneficial to working with clients in other areas, states or even other countries easily.

Typically a CAD-CAM system offers both File Import capabilities as well as a full set of wireframe, surface or solid modeling design features along with a host of editing tools allowing you to fully design or edit and make changes to existing CAD files. Evaluate the CAD needs that you have and make sure that the software can fulfill them. Some manufacturers will need to have multiple licenses for a design department when the CNC shop is located somewhere else or in a separate area of the facility. Evaluate how many licenses you will need.

Your shop may be one where you need 3 licenses of CAD and the CNC shop only needs one license of CAM. This is where you can benefit from implementing a product that is modular.

Modular CAD/CAM products allow you to implement core software and then add-on to the product. If this scenario best suits your situation then you will want to find a product that offers licenses for CAD, Basic CAM, Advanced CAM modules for 3, 4 and even 5 Axis CNC Machining, Lathe and other modules like Artistic CAD/CAM and even Nesting or Sheet Optimizing software modules. This way you can get what you need now and add-on what you "grow" into or need later. This also keeps the costs of implementation down.

Step 3: CAM Machining & Machine Tool Post Processing

The first order of business in researching CAD/CAM to meet your requirements involves the ability to create an NC File that will work with your CNC machine tool. Every CAM system offers what is called a "Post Processor." Can the software post a program to your machine that eliminates the need to hand edit the g-code? Without posting capabilities a CAM system is essentially useless. This is a big subject and will require that you know something about your CNC machines controller starting with the make and model. Generally, providers catalog their post processors by machine brand, make and model. From there, you will want to make sure that the output is right. This is a discussion that you will most certainly want to have with the supplier. Post processors are more or less a translator that converts toolpath into code that is then

sent to the machine using RS 232 and DNC capabilities. The CAD/CAM supplier will help you with this subject and in some cases even ask for information from your machines manual regarding certain aspects of the output code. How arcs need to be output, do you have multiple spindles, do you need sub-program output etc. Editing a post processor configuration file is usually done by the supplier's technical staff. Machine "toolpath" is what is created in a CAM system to actually machine the part. There are a lot of different toolpath operations ranging from engraving, profiling and pocketing toolpaths to more advanced toolpath operations for 3, 4 and 5 axis machining. Some CAD/CAM systems offer very strict toolpath-generating features where others allow you to use software knowledge or go into a toolpath operation and customize the variables that include compensation output, cutting direction, toolpath ramping and linking as well as change or customize roughing and finishing tools. All of this variable input data is taken into consideration by a CAM product in order to generate a g-code program that works efficiently at the machine controller.

A very successful method of creating toolpath is through machining "Wizards". A toolpath or machining wizard is a series of correctly laid out dialog boxes that allow you to correctly process the variables of an operation by clicking "Next" until you have completed the process where you would then click the "Finish" button or the one that starts the toolpath calculation process. Wizards remove the guesswork from programming with CAD/CAM and allow you to make changes to different variables as needed and re-generate toolpath as needed. For example, you may have created an entire program that includes drilling operations, facing, profiling and pocketing in a CAM-Job Tree within the software. Then you find out that there needs to be a design modification that now wipes out most of the toolpath you created for the job. Toolpath "Associativity" allows you to make the change and "Update" the cutting paths without having to start over again. This is another important aspect of a CAD/CAM system as it increases workflow efficiency. Time is money right?

Basically you will want to look at the machining capabilities and measure them against what you do now. Measure them against what you can't do, that you need to do because you keep losing money on those jobs due to not having the right technology. All of this should be considered when looking into the right CAD/CAM for your cnc business.

Step 4: Budgets & Implementation

Once you have found the right CAD/CAM product for your cnc business you will need to weigh it in against what you have budgeted. In the 80's and early 90's it was hard to find a quality CAD/CAM system for less than $5,000 - $10,000. There were only a small handful of truly powerful cnc programming software products on the market that would shape the way we bring products to market. This is not the case any longer. In your research for a quality product, be sure to do a thorough review of everything involved in the decision. What is the cost of the software? What is the cost for technical support? What is the cost to keep the software up to date? Is there maintenance agreements that require an annual budget? Does it come with any training or is that an extra cost? Not only that but what are the available training options? Look at these items and add everything up. Every CAD/CAM professional will appreciate a product that offers online operator certification for high level training and testing. Does the company offer it and if so, how much is it? CNC businesses usually have a budget for software technology. If you don't, consider creating one.

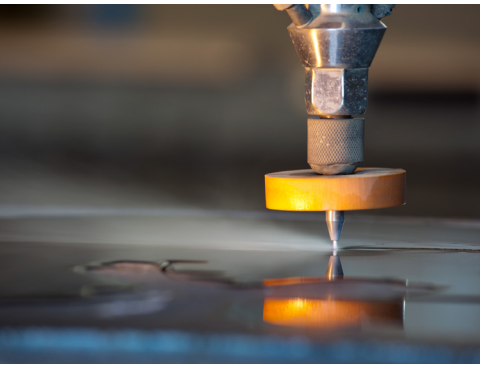
The implementation processes for CAD/CAM software shouldn't require lengthy meetings to discuss how to get it started. However, many shops have teams that work together through the design phase to the cnc machining phase. These people will want to agree on a cnc programming system for integration into an

already productive process. Therefore, business owners may consider bringing in their programmers into the decision making process or at least the discovery process. One person may already know a software product where another on the team may not. This is another reason why training and support are critical to the implementation phase.

Step 5: CAD/CAM Training & Support Service

Successfully adding a CAD/CAM product into the manufacturing process requires training, support and dedication by the employees that will be using it. This is the "learning curve" of CAD/CAM software. Will the supplier follow up with a service call upon installation? Is there a representative that is available to direct your staff to the right resources when issues come up? Is there a local technician? Most of the time the need for a local support technician is not necessary until the technology begins a steeper climb into the world of programming 5 axis machines with CAD/CAM. However, even advanced programming software for multiaxis machining can be found easy to use for those that know how to use a multiaxis cnc machine. After all, the purpose of CAD/CAM is to automate the process and make programming faster, smarter and easier.

Does the supplier offer a customer support website with "Knowledge-Based" online help? Is there a way to reach technical support by phone or through an online ticketing system with "Live Chat" services available for those times when you need help fast? Training and support are a critical ingredient to a successful implementation and programming operation. Things come up. When they do, is help just a few minutes away?



Look at the suppliers website to see what their training options are. Do they offer local seminars? Do they offer online training and professional certification? Do they have a customer forum on their site or allow you to access an online support "help-Desk". When you ask the supplier what the average "wait time" is on a support call what is the answer?

Improving CNC Efficiency & Beyond

These are the "5 Easy Steps to Choosing a CAD/CAM Product" that will help you improve workflow efficiency, saving you valuable time and open the door to becoming more productive and profitable as a cnc business. Most cnc shops today have multiple CAD/CAM products that are used in various part programming scenarios. The reason for this is because there are so many applications out there coupled with the costs of CAD/CAM for 3, 4 and 5 axis programming. There are great solutions out there that are backed by quality support and service. If you are just starting to consider adding CAD/CAM to your shop, you will find that by doing so it is safe to say that you could easily achieve up to a 30% increase in productivity once properly implemented.

We hope that this has enlightened you on what to look for when entering the discovery process through to implementing CAD/CAM Software for cnc machining!

For more information on implementing powerful and affordable CAD/CAM software into your business call BobCAD-CAM, Inc. at 877-262-2231 or 727-442-3554. Visit www.bobcad.com for a free demo and look at what their products can offer you.

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