How to Select a CNC Router - a Customizable Matrix Approach

As seen in Modern Woodworking magazine

The selection of a CNC router can seem daunting, whether you're buying your first or adding to your current stable of CNC routers.

You must consider your company's needs, from budget to longevity to service and beyond.

Machine manufacturers, or their respective distributors, are primed to promote their machine's features and functions. Are those features and functions the most important to *your* business? How can you get a good "apples to apples comparison" with the vast amount of information?

How do you make a logical, informed decision between distinct pros and equally distinct cons?

A "matrix" can help rank and weigh both individual machines and vendors that is specific to your needs, giving greater weight to categories most important to your business. For example – if you have 24-hour crews running CNC routers, if you're a small shop working unusual hours then 24-hour service and support may weigh more heavily. Budget is always a factor; it may weigh less heavily than machine longevity at your company.

Does Such a Matrix Exist?

It does now. Below is a customizable matrix for any company looking to purchase a CNC router. This matrix gives the appropriate "weight" to categories most important to your shop's needs and allows you to develop a "checklist" of features and functions, scoring them on a 1-10 basis – *without* worrying about which category is most important. Plug the scores into the matrix and the built-in formula calculates the overall "score" for each machine.

Use this "plug and play" worksheet with formulas to assess which items are most important to you – we have included 18 in this example. Click here for the CNC Matrix spreadsheet (requires Microsoft Excel).

Prioritizing Your Needs

Let's examine some of the categories and the basic logic in the matrix that determines category weights. These are a few examples - your specific needs may differ.

Price

In our suggested ranking we make price the heaviest weighted item because it often is. No business typically has the luxury of an open check book.

However, making a decision based upon initial price alone isn't smart either. A machine that costs less to purchase may cost you more when put into operation, even in the first year!

Some examples - what if you must hire an expensive operator to run the machine; send personnel long distances for training; or if your vendor doesn't have 24-hour, seven-day-a-week,

365-day a year (24*x*7*x*365) repair or application support? You can spend much more with costs associated with these examples than if you purchased a more expensive machine.

Service and Support

How important is support? How do you test a vendor's support? Does 7*x*24*x*365 mean the same thing for all vendors? Are trained technicians available live or is an answering machine or service taking calls?

Be *absolutely* sure. Do a test call or two yourself. Call on a weekend or night. See "if someone is home" - someone with real knowledge.

Determine how important the availability of service and support is for your business. Consider operating hours. Do you work nights, weekends or holidays? What if you have a large order to fill on an upcoming Monday, and late Friday you have a machine or application support issue? Do you have the luxury of waiting until Monday, delaying delivery of the order?

"Use-ability" and Longevity

Hand in hand with service, support and long term costs are a machine's inherent "use-ability"and longevity features. Software ease of use; flexibility and automated tool setting; and full industrial CNC control fall into the "use-ability" category. Automatic lubrication of ballscrews and linear ways is a prime example of a longevity feature.

Why is longevity important? In our example, a feature like automatic lubrication of ballscrews and linear ways ensures a long-lasting machine. The alternative to this "automatic" feature is manual human intervention. But forgetting to perform lubrication at the scheduled time or worse yet doing it improperly will cause premature component failure. When you minimize the need for manual actions, you save time, improve costs and reduce errors.

How to Use and Customize the Matrix

The matrix is a simple spreadsheet (we used MS Excel). This example offers places to compare three machines and 18 different features, you can customize the worksheet to your needs.

> **Step One:** Review the feature/function list provided. Is there anything to add, replace or remove? You may want to try to plug in your initial "scores" using the list we provided and adjust later if needed.
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> **Step Two:** Set the "Purchaser Assigned Weight" for each feature. There are currently five different weight rankings. One (1) is the rank for features of little importance. Five (5) is the rank for "most important". Assigning a weight importance ensures consistent comparison machines and prioritization of the features and functions most important to your business.
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> **Step Three:** Assess each machine you are considering. Give a one (1) to ten (10) point score to each feature or function. One (1) is the worst. Ten (10) is the best. Complete the assessment of each feature or function for each machine you are comparing *before* you move onto the next. Give each feature a *fair score* – the matrix does the work. For instance, you may have a most expensive, least expensive and mid-range machine. The least expensive machine might get a ten (10) the most expensive a one (1), the middle a five (5) if the price range is vast. If the price range is small, you might give the least

expensive a ten (10) and the most expensive a five (5), the middle a seven (7). As long as you are consistent in your reasoning, the model will work.

Analysis

Complete the worksheet for all the machines you are considering. You now have both a logical and statistical comparison and a completed checklist that considers the long term goals of your business and how this new purchase fits your strategy. You can balance elements like price with longevity, and truly see when investing in a higher priced machine can save money long term. While you may decide to purchase a machine without the highest ranking, you will understand any possible shortcomings or operational issues, and you can accommodate for those.

Now you have one more tool to use in making an educated consumer purchase of your CNC router!