

## What's Your Relationship with Computerized Manufacturing Technologies -- Functional, Dysfunctional or Non-Existent?

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By Jan Wiedenbeck, Jeff Parsons and Bruce Beeken

Computer-aided manufacturing (CAM), in which computer-aided design (CAD) and computer numerically controlled (CNC) machining are integrated for the production of parts, became a viable option for the woodworking industry in the 1980s.

Those companies that bought their first CNC machines in the early '80s could be characterized as the "early adopters." They were, for the most part, large manufacturers with sizeable capital investment budgets. In the late '80s and early '90s more companies purchased their first CNC machines but many companies still were watching the technology from the sidelines and only a very few companies moved toward an integrated system of computer-aided manufacturing.

By the late 1990s, CNC machining technology and to some extent CAM technology, was becoming more affordable and thus more widespread in use. For example, less substantial CNC routers could be acquired for as little as \$5,000, while more robust "made for industrial use" machines could be purchased for anywhere from \$25,000 to \$100,000 and up. We now see many mid-size manufacturers using these technologies and even some of the smallest companies now realize that CNC and CAD technologies can be beneficial and financially feasible.

In 2006, Jeff Parsons and Bruce Beeken, co-owners of Beeken Parsons, a small custom woodworking company in Vermont, set out to prove that using computer-based technologies in wood products design and manufacturing can streamline all phases of production from design through production and sales. Their experience with computer-based technology indicated this was so, but they wanted to learn more about the uses and impacts that other companies, big and small, had realized with computer-based technologies. What Parsons and Beeken found out, through conversations, visits and a survey that was sent to subscribers of *Wood & Wood Products* magazine, amounted to a wealth of useful expert information.

### Who Are These Computer-Based Technology Experts?

One hundred and seventy-three of you, *Wood & Wood Products* readers and computer-based technology experts provided insights in response to the survey.

Just as Parsons and Beeken have an interest in learning how computer-based technologies could be used to streamline their small woodworking business, other comparably sized businesses appeared to share their interest. In fact, 54% of the companies that responded to the survey employed fewer than 10 employees (what we classified as “very small” firms) and another 21% had between 10 and 29 employees (“small firms”).

### Which Computer-Based Technologies Do They Use?

Sixty-three percent of survey respondents indicated they used CAD (Figure 1). Even in very small woodworking companies, CAD use was not uncommon, with 41% of these companies employing CAD technology. CAD was most frequently used in developing visual renderings of the wood piece or product to show customers, but it was used almost as frequently during the design phase for concept development and only slightly less frequently for CNC equipment control.

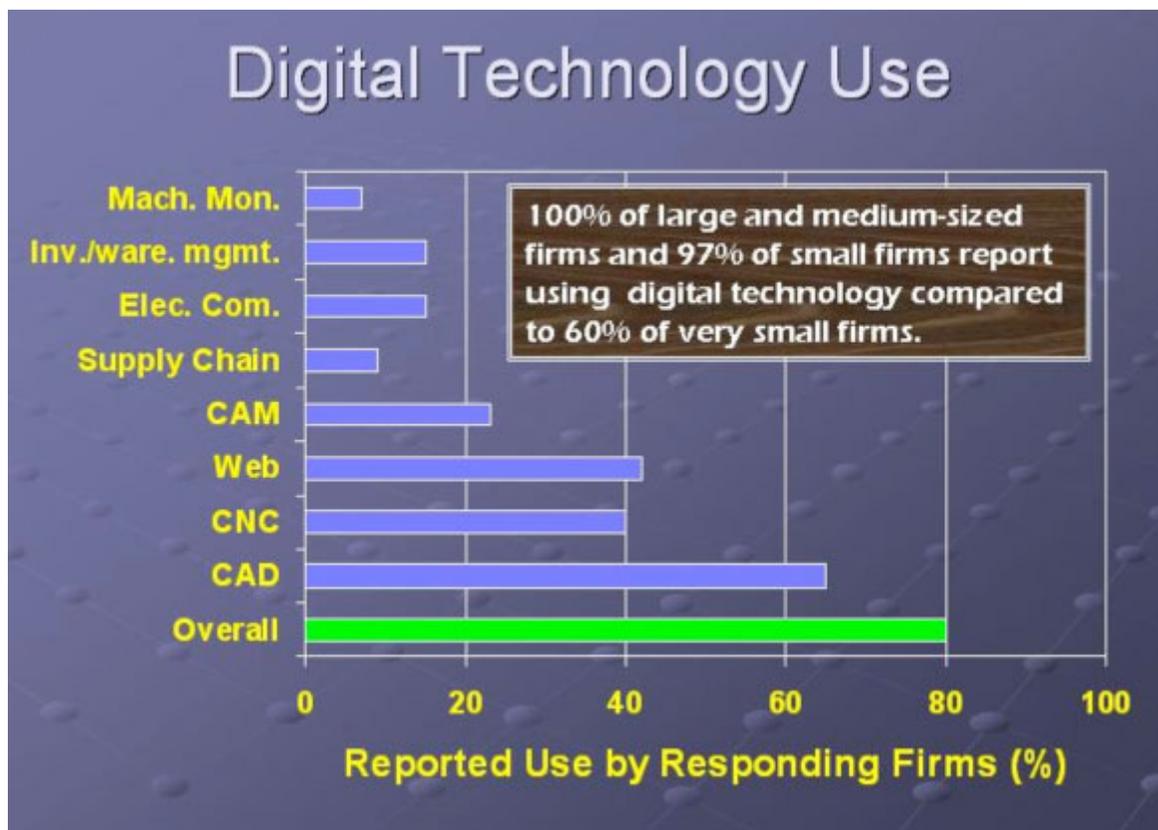


Figure 1. Based on 174 survey responses, manufacturers of cabinets, furniture, architectural woodwork and similar products used CAD more than any other computer-based technology.

Computer-based business strategies covered in this survey included not only digital technologies used in design and manufacturing, but also technologies used in market development. Web sites and Web-based sales were used by 41% of the survey respondents, while 39% used CNC machines to manufacture products. Worth noting, a much higher percentage of the larger companies used CNC, considering all companies with 10 or more employees, 75% used CNC

machines. CAM was the only other computer technology utilized by more than 20% of the respondents.

### Some Observations on the Adoption of CNC Machining

Ratings provided by the 67 companies with CNC machining capabilities indicated that overall, there were no operational issues associated with the adoption of CNC. Only two of the statements put forward in the survey received somewhat neutral responses, i.e., on average, respondents neither strongly agreed nor disagreed with the statement: “New CNC equipment is easy to learn to operate and program,” and “Every CNC machine purchased has led to increased profit” (Figure 2). Improved machining accuracy was broadly recognized as a plus associated with CNC machining.

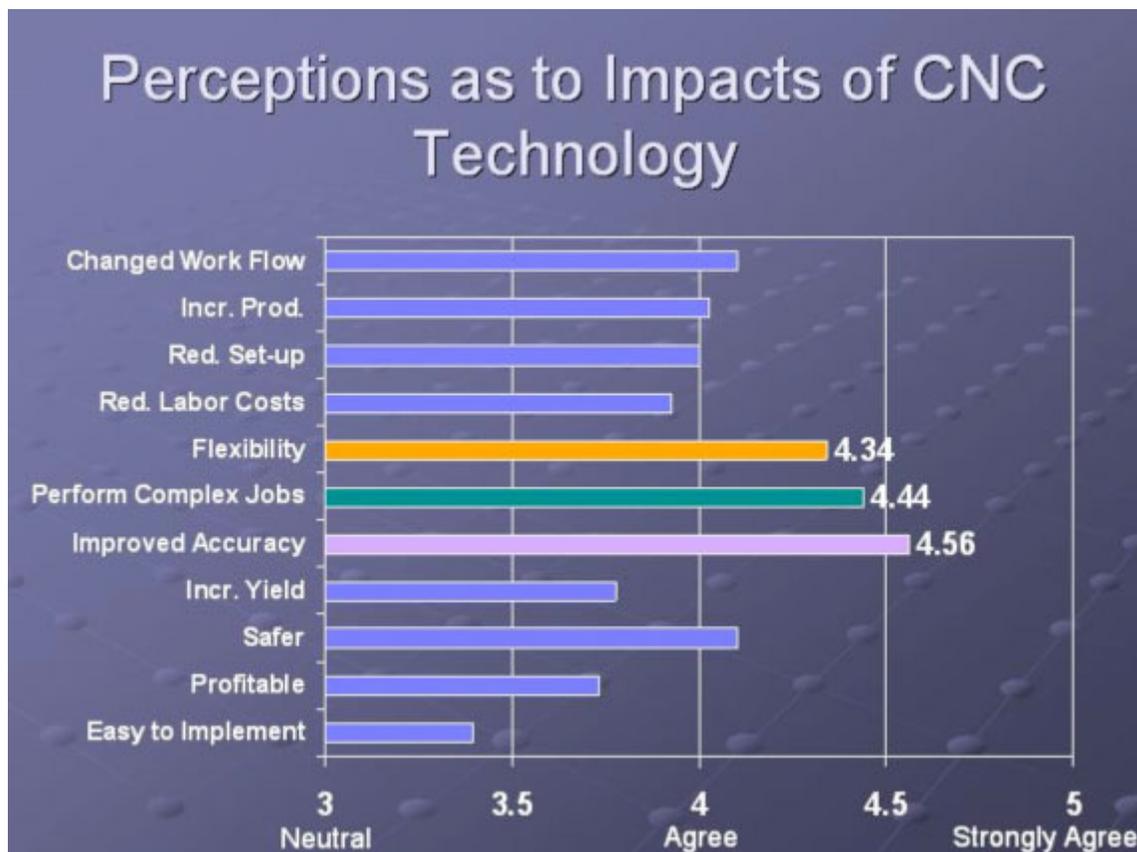


Figure 2. CNC technology was most widely recognized for improved machining accuracy, providing the ability to perform complex jobs and machining flexibility.

### A Range of Wisdom Offered by Respondents

More useful than percentages and rank scores perhaps, were the insights offered by respondents. Some of these came from managers/owners of companies with highly functional computer-technology implementations in place. Some came from professionals whose relationships with digital systems had been less positive. And some of these insights were from individuals who had not yet adopted many or any of the computer-based technologies.

First, a few of the many endorsements of computer-based technologies from experts who appeared to have a highly functional relationship with digital technologies: (1) "Can't compete with the Asians in volume – only in custom capabilities and quality;" (2) "It's expensive and frustrating to learn, but without it you will be left in the dust by your competitors;" (3) "Can help you grow your volume at a higher rate than the increase in production labor;" (4) "They are a 'no brainer'... you have to have them;" and (5) "Don't be afraid to consider change."

And a few warnings from experts who had a less positive, perhaps dysfunctional relationship with digital technologies: (1) "New users must be aware of the learning curve;" (2) "Do not overbuy – make sure you can use the machine;" (3) "Research the software carefully, there are a lot of hidden costs;" (4) "Be patient;" and (5) "Have the right people in place before making the leap."

Finally, comments from those who had not gone digital, i.e., non-existent relationship with computer manufacturing technologies: (1) "I am so small (that) the cost of digital is out of reach at this time;" (2) "Great concept... wish I had the room for CNC;" (3) "Great for production but for a small shop doing custom work it is hard to see any payback;" (4) "I wish I had some;" and (5) "Despite the advantages in production, it is unlikely that I will ever invest in CNC. As a one man shop, I am selling on my skill-based niche to a clientele that expects an entirely hands-on product."

Many of the concerns expressed by companies that were minimally invested in computer-based technologies suggested that the owners of small shops believed they had little to gain from adoption of these technologies. As small woodworking shop owners who have been quite happy with the results realized from digital technologies, Jeff Parsons and Bruce Beeken developed a Web-based video to describe their use of these technologies: [www.beekenparsons.com/webcast](http://www.beekenparsons.com/webcast). Viewing this video is likely to stimulate your interest in further developing use of computer-based design and manufacturing systems.

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