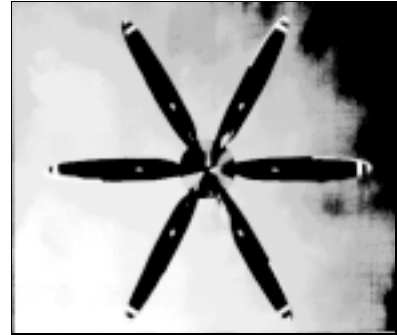


# Aircraft Supplier Touts ITC Tool Management Technology

This is a happy story about how an easy-to-use automatic tool management software program helped a great American manufacturer manage its tool crib more efficiently while fitting seamlessly into the manufacturer's on-line computer manufacturing network.

But before you dismiss this as just another story about tool crib inventory, read on just a bit.

Hartzell Propeller, Inc. of Piqua, Ohio, is one of four major players in the worldwide propeller manufacturing industry. Starting over 80 years ago when the company supplied propellers to the Wright Brothers, it has subscribed to the adage that practice makes perfect. Today it manufactures more than 150 unique variable pitch/constant speed propellers for piston and turboprop aircraft. From a beachhead pilot project in 1993, Hartzell completely rebuilt its shop floor from a traditional operation to a cellular manufacturing design. Today eight completely independent manufacturing cells turn out 57% more propellers by volume.



*In 1991 Hartzell introduced the first lightweight, dual-acting propeller*

Manufacturing engineers, management and shop floor metalworkers together produced the new manufacturing environment to produce more quality propellers, more productively while delivering higher profits.

“Automatic tool management is purely and simply a function of manufacturing excellence,” says Joe Brown, Hartzell vice president of manufacturing. Bob Allenbaugh, manager of special services for Hartzell, jumps in, “Tool management is an opportunity to do something really, really well where before we did it adequately.” But Bruce Ford, tooling coordinator, is working every day on the shop floor front lines and simply states, “It (tooling) was something that was out of control.”

After new lighting was added to the shop floor, new paint on the floors and walls, state-of-the-art Cincinnati Milacron machines added, three programmers turning out hundreds of tool paths with CAMAX SmartCam, rerouting 5000 parts and refixturing, it wasn't enough. “Automatic tool management was the one major piece of operational equipment that the cells didn't have right at hand,” says Brown. “We had gaging, we had scheduling, we had good machinery, but we didn't have control over tooling. That didn't make a whole lot of sense.”

## The Need

“We've been in cells actively since 1994,” says Brown. “It is among the great things that have panned out for this company in its 80+ year history. Getting into cells allowed us to build a good foundation for a continuing environment to drive our operational performance to levels of excellence.” But Bob and Bruce interjected and said, “now that we're in cells, we should attack waste in materials, the cost of supplies, and the cost of tooling. It makes sense.” When Hartzell had a central crib they would take visitors through it because every single element looked organized and sharp. The crib looked like one of the most rigidly managed parts of its business. “But then we started poking around and it turned out there was a tremendous opportunity to do it even better,” remembers Allenbaugh.

This is where ITC came in. Actually, ITC was selected after another tool management system was tried and found not flexible enough or capable of handling the requirements of Hartzell's cells. After this false start with one of ITC's competitors tool management system, a more

serious evaluation of available tool management control systems was conducted. The result was a tool management system from ITC that provided multiple crib (cell) control, was multi-user, ran on existing network hardware, was shop floor intuitive, and could communicate to the outside world. The system, called TLC Professional™, is a simple, yet critical replacement of an efficient tool crib inventory control operation that was using paper and pencil for recording information. According to Bob Allenbaugh, manager of manufacturing services, “What we needed was a program that was revolutionary in clerical accuracy, but usable on the shop floor. The ITC system showed us that revolutionary approach to tool control both in the tool storage inventory aspect and in tool tracking, order control, tool assembly kitting and reporting information about our tooling.”

ITC provides various versions or levels of tool management system software. An Economy version for shops just developing tool control procedures, with 5 products ranging from \$50 to \$500. ITC also provides 3 16-Bit and 3 32-Bit versions that are single or multi-user for operations wanting more tracking, interfacing, and communication control of the tool information. These are multiple products of varying sophistication that easily fit the needs of most manufacturing facilities. The products range from \$750 to \$5000 for single user versions to \$1500 and upwards to \$25000 for multi-user versions. They are available for a multitude of operating systems, i.e., Windows flavors, NT, network flavors or UNIX systems, for users who wants full on-line control through a distributed tool control installation. As Hartzell quickly found out, tool control is a multi-user application and chose a 16 user networked TLC Professional™ software system for \$25000 - *Top-of-the-Line*.

## **Straight and Simple**

Handheld laser scanners are used at Hartzell, which allows the machine operators to actually run the tool management system. Martin Plute, president of ITC, explains, “I always caution new tool management users about the unintelligent use of barcodes with tooling.” At Hartzell, they [decentralized their crib](#) and put the tooling right into the 8 cells. The barcode labels are on the drawers in the [cabinets right in the cell allowing each operator to access the barcode label, the tool and the input terminal screen for every tool issue and return transaction](#). “They (Allenbaugh and Ford) thought it through and did it right.” The input terminal is on the cabinet allowing the operator to input the transaction with the use of the laser scanner to the tool management system. This information is then immediately processed simultaneously along with seven other cells, and made available to others on the network for tool ordering, planning, scheduling, costing, and any other tool interest reporting that can be concocted from the knowledge of where the tool has been.

“Selecting the ITC TLC Professional tool management software was a very easy sell to me for a couple of reasons,” Brown recalls, “It used the same equipment we already had on the shop floor for our DNC program network and it could handle our level of sophistication yet had a simplicity that allowed our shop floor the ability to easily adapt to tool management. Since its installation, tool management has become another function of the DNC network. Plugging the tool management software into it as a point-of-use management system was a natural.”

Martin Plute, president of ITC, describes the tool management system his company provided Hartzell as a simple to use yet a competent system versus the complex fragmented systems ITC competes against. “ITC makes tool management look very easy and uncomplicated. And it is just that, yet people believe there’s got to be more to it than there is. I can only offer this as our tool management concept, [if I know who, what, where, and when a tool has been issued, returned, scrapped, reworked, ordered and delivered; I can answer any question you can ask concerning the use of that tool in manufacturing from the tool crib’s and shop floor management point of view. Think about it from the manufacturing point of view, not from the office functions](#)

point of view and you will see how simple it is. I have said for over 16 years that tool management must be controlled from the bottom up (the issue point) before the upper management can use the information about tool consumption. If you don't know the tool left the storage cabinet you can't account for it, charge it to anything, plan the use of any that are left or reorder it if more are needed. One of the simplest facts (and most misunderstood) of tool management is, **if you don't know where your tools are, you don't know anything about them. Do you?**

At Hartzell, even without a tool crib, the cell machine operators actually run the tool management system," explains Plute. "The cabinets are right in the cell, steps from the machines. The system, the input terminal stations, the scanners, the computer input screen, the data input error detection, the connection to the company's network, its right there, down and dirty on the shop floor working with the operators. **That's where tool management starts.** Approach it any other way and you are kidding yourself or playing politics."

## Testing the Waters

Before the ITC TLC™ (Tool Location Control™) software was purchased, Hartzell ran it side-by-side against other tool management systems. They didn't want to make another choice that later on would not meet their growth. "It (TLC) was well researched, believe me," insists Brown. "We chose the TLC system because it was the easiest to use (even though we didn't initially believe it would be), its accuracy and system flexibility was well demonstrated, and it just plain performed the best," says Bruce Ford.

## Inventory Stories

But just how important was tool management to the propeller maker? Allenbaugh recalls, "Bottom line tool management had become a pretty big issue in reducing costs. We didn't realize how big until we got into conducting inventories of our existing tooling." Allenbaugh found large inventories of tooling that were seldom used while encountering reappearing chronic shortages of essential tooling with uncomfortable frequency. "Its amazing the stuff that can accumulate in your crib, stuff you used to use and replaced for another tool choice, but still gets ordered, used and proliferates. We would quit using it if only we knew what else was in the crib that replaced it."

With the new tool management system, inventories were brought under better control. "Bob and Bruce have cut our standing inventory to one-third of what it used to be and this is with a 57% production increase in our manufacturing level," says Brown. "That's a fact. The savings are tremendous."

In the future Hartzell is predicting it will cut consumable tooling costs 20% per unit or per earned hour by selecting better grades of tooling, and getting longer life out of its tooling through regrinding. They have already experienced a decrease in their scrap parts to 37 % of what it was.

Plute says, "Tool control makes these predictions easily obtainable, however, not in the manner most manufacturing people first think it will. It's amazing to see traditional engineering logic disrupted by a tool management system that tracks the activity of tooling. One of my greatest rewards from a customer is when they begin understanding (and using) the power of the information available to them from our products' ability on the shop floor. Most of the systems ITC competes against concentrate on inventory or purchasing control and miss the basic needs of manufacturing tool management."

Brown's spreadsheet analysis revealed, "We had 3 times the tools in inventory, in terms of dollar value, than we consumed in total value in one year. That was also an aggregate of a year's worth

of buying for price breaks and then replacing that tool with a better performing tool regardless of the price break. It was a vicious circle and a pattern that we couldn't recognize without a tool management system. We just kept holding onto larger and larger inventories of tools that we were never going to completely expend in manufacture of piece parts. When we calibrated all the arithmetic, it represents 3 years worth of our annual tool consumption budget as standing on hand inventory. This was a serious problem. **This represented real dollars that could have been used for other areas and three years ago to boot.** My advice to anyone looking at tool management systems or solutions is: **If you think you have a tool management need, you are already too late, in our case three years to late."**

## Auto-Tool Ordering Too

The new tool management software and the existing network has permitted changes in the methods and means for buying tools. "The guys in Piqua are amazing," says Plute. **"They are making all their vendors accept electronic ordering directly from the tool management system."** Now Hartzell is hooked up to four major vendors, and some local suppliers for a total of ten tooling supply avenues. "The company is telling the other vendors either they do the same thing that Kennametal and other tooling vendors are doing—hooking up electronically to Hartzell's tool management system—or they won't be selling tools to Hartzell any longer." Plute has observed, "This is a trend that the vendors have brought upon themselves, but the manner of implementation is not quite what was originally intended. The customer now controls the ordering, the actual usage reporting and evaluation of the vendor, not the other way around. **And the customer can do this with any vendor, not just one, and the information is available immediately."**

The propeller builder now orders tooling twice a week and, "Frankly, Bob and Bruce have **reapplied most of their time to other duties and are not expediting tooling problems** as much as they used to," says Brown.

"We used to have a guy who would order tooling all week long," recalls Ford. "He often placed orders 40 times a week. We have narrowed that down and have realized great savings today. **There are no shipments arriving in old receiving areas, tools are delivered directly to the specific manufacturing cell that originated the order. This is tool control.**" Allenbaugh further notes, "The tool guy who used to spend so much time in the one time central crib has become our guru of recycled tooling and regrinding. Plus we now have the luxury of using our peoples talents in areas other than tool expediting."

Thus, the supplier base has been reduced, but deeper and more responsive relationships have been established within the new smaller vendor/supplier group. Once Hartzell hooked into Electronic Ordering with this select group, it became a partnership, not just a commodity buying method. **Each vendor is separate, but within the tool management system they are one element to Hartzell.** Managing one purchasing group has simplified the tool ordering and expediting for all concerned, Hartzell and each vendor. Hartzell left behind the days of haggling over tool prices with a universe of suppliers on a daily basis. Tool suppliers are selected on a competitive yearly basis.



“We have minimum and maximum tool stocking levels established by the operators on the shop floor for each tool crib/cell,” explains Ford. “The operators of each cell barcode the withdraw of a tool from the cabinet drawer, and input any return, scrap and rework transaction of the tool through the same terminal the barcode laser scanner is connected. **This establishes inventory accuracy and sets the stage for our various analysis reporting.** And when the stock level gets under minimum it kicks out on a reorder report. We review it, complete the order request and send it directly to the vendor. **We simply export the order file for that vendor electronically and directly from that cell.** Thus, the vendor knows where to deliver the tooling.”

The TLC tool management system delivers extremely specific data about what tool is in each manufacturing cell unit, how often that tool is used and for each specific application. **“A technician in any one cell can review a tool status as if it was the only tool in inventory in the whole company,”** explains Allenbaugh. **“But at the very same time that technician can have a quick exposure to the entire tool inventory in the rest of the manufacturing cells.** The tool management system gives you the perfect blend of high-level awareness of your total tool inventory, where it is in other cells, how to locate them, and the microview—you just login to your function menu and you operate it as an individual and independently of what others are doing in their functional areas.”

Ford insists, “that no matter how efficient you think your tool management system is now, when you look at the systems and options from ITC you will discover tremendous new ways to improve you operation and simplify complex tool control procedures. **This system is truly revolutionary in its approach to an industry wide common ailment.**”

Still, nationwide statistics reveal that tooling is the third largest expense in manufacturing, representing some \$4 billion in 1994 alone. With nearly 450,000 manufacturing facilities in North America alone, not even 4% have embraced an accountable tool management procedure and less than 25% even have a reconcilable tool inventory capability. The remainder has manual card systems, brass tags or work on the sighting of the empty drawer to maintain inventory level.

## **Tool Management at a Glance**

The tool management system is menu driven, making it easy for the operators and other shop personnel to use, it utilizes standard terminals and PC’s found on most network systems and does not require special hardware or third party package, however it can interface with almost any software or computer system that may be required. Its database information is shared among the different cells yet specific and private to each individual cell. “An operator or manager of any one cell can review a tool’s status as if it was the only tool in inventory,” explains Allenbaugh, “But at the very same time he can have quick exposure to the entire tooling inventory in his cell or any cell in the company. This is definitely a strategic set of databases and the need of this information is critical to manufacturing control throughout the company. That’s why we opted for ITC’s multi-user tool management product right away. This blend of microvision of a tool in a cell or maximvision of the entire tooling capacity of the company gives you a completely new awareness and understanding of the use, location, availability and performance of your tooling and anything or anyone involved with their use and it’s instantly available. **Of all the tool management systems we looked at, ITC’s opened our eyes to what was most important.**”

“The tool management system let’s us know who is using what tool, how often, and at what level,” insists Brown. “Tool management just integrates completely with the idea of independent manufacturing groups. **So it turns out that tool management was an undiscovered gem.**”

## **Is there something to be afraid of when considering tool management?**

Hartzell's Brown says with a grin, "If you are afraid of reducing your tool inventory right off the bat, putting more cash back into your operation, [yes](#). If you don't want the ongoing capability of picking the best application for your cutting tool dollar, the best tool for the money, the best vendor as a supplier, and complete control over where your tool inventory is, then absolutely, [there is a lot to be afraid of.](#)"

ITC Integrated Systems, Inc. has been supplying tool management systems to the world since 1980. They were the first commercial supplier of computerized tool management systems and have set the standard to which all other competitive systems are compared. ITC has over 3500 installed copies of its software in the world operating in 8 different spoken languages. ITC truly supplies a world class product that sets the standard for tool management systems in the world.

Please direct your inquiries to:

ITC Integrated Systems, Inc. C/O Martin Plute  
2008 Raccoon Run  
Clayton, NC 27527  
Call at (919) 607-1010

Hartzell Propeller  
1 Propeller Place  
Piqua, OH 45356  
(513) 778-4200

Email at [martinplute@earthlink.net](mailto:martinplute@earthlink.net)

For additional information or literature

See the CONTACT page at:

Click ⇒ <http://www.itctoolman.com>

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