

CHICK'S EFFICIENCIES COMES OF AGE

WORKHOLDING SOLUTIONS

STORY AND PHOTOS BY RICHARD BERRY

WHEN IS A MILLING MACHINE EFFICIENT?

ANSWER: ONLY WHEN IT'S MAKING CHIPS.



"It's no riddle," insists Paul Swann, president of *Chick Workholding Solutions*. "The reason you buy a CNC machine is to remove metal. That's the only activity that makes you money!"

Swann admits to being obsessed with efficiency. For more than 20 years, his Warrendale, Pennsylvania, company has been one of the world's leading manufacturers of high-efficiency workholding products.

When is a milling machine efficient?

"Ask a hundred people that question," states Swann, "and ninety-five will reply: 'When it's in cycle.' But in typical work cycles, the machine may be making chips less than 50 percent of the time. The rest is lost to non-cutting movements, such as rapid movements, tool changing and indexing delays."

According to Swann, the right workholding can reduce these losses. "Beyond rigidly securing a workpiece to a table," he explains, "*Chick's* products are designed to minimize the wasted time from non-cutting movements."

And the company's first workholding products were born entirely of manufacturing necessity – their own!

OUT OF NECESSITY

"Dad started the company in the mid-1960s as a contract job shop," Swann recalls, "but the specialty was really engineering. They'd apply their engineering prowess to help redesign a customer's part, making it easier to manufacture." That heritage of working smarter, not harder, established the company's mission to constantly improve efficiency.

"When we bought our first CNC mill in the '80s," Swann explains, "we quickly realized the vises that performed well on our manual knee-mills were hopelessly unsuited for the new technology. The machine was kicking out finished parts so quickly – one at a time – that we had to put a full-time machinist on it to make the operation successful. Somehow, we had to give him more walk-away time."

Their engineers came up with a precision multi-station workholding design that reduced set-up time from a day to less than an hour, and held multiple workpieces, so every tool change and indexing pause served many parts instead of just one. These improvements increased efficiency – and freed the machinist to do other things.



“That was the beginning of what became *Chick*,” explains Swann. “Today, we focus 100% of our energy on designing and manufacturing efficient workholding products for CNC milling machines.”

Since 1998, *Chick* has relied on CNC machines from Haas Automation to produce their workholding, initially investing in VF-5 vertical machining centers, and recently adding an EC-400PP horizontal machining center with six-station pallet pool.

Practicing what they preach, *Chick* outfitted the Haas VF-5s with the company’s own *Pneu-Dex*™ workholding to manufacture precision slide assemblies more efficiently. “The VF-5 table is magnificent,” says Swann. “It’s 23 inches deep and travels 50 inches in the X axis; it easily holds a group of four *Pneu-Dex*. That arrangement allows the vertical to match the production rate of a 4-pallet horizontal – and it gives the machinist a tremendous amount of walk-away time.”

NOT ALWAYS OBVIOUS

Chick’s product designs and manufacturing approach have been shaped by decades of analytical research and work-pattern studies. To help their customers – and guide themselves – the company has perfected a formal way to examine efficiency.

“Consider the individual roles of the machine, the workholding and the tool on a shop’s overall production,”

Swann proposes. “Tooling is the easiest element to change in an existing setup, and where most people look first to improve efficiency. But in small-lot-size production, the limited scope of individual tool improvements means limited returns.

“Workholding is initially harder to change out,” Swann points out, “but studies show its efficiency gains usually impact *every* step of production. Well-designed and properly applied workholding, though not always the obvious solution, can make a huge difference.

“Often the biggest factor affecting process efficiency,” Swann continues, “is machine design. But you can’t swap machines on a job-to-job basis, like you can tools or workholding. Smart initial planning – matching the machine’s best qualities to the shop environment – is the only path to realizing benefits. In the end,” Swann concludes, “all three elements have to be correct and work together perfectly.”

EFFICIENCIES ADD UP

Chick’s commitment to matching machines to the shop environment led them to select Haas machine tools for much of their critical work. The company’s latest addition – an EC-400PP HMC with six-station pallet pool – is helping *Chick* wring out even more efficiency from their manufacturing, and giving them added flexibility in planning and scheduling work.

Over the last few months, *Chick* has transitioned much of their small- and medium-run production work from their Haas VF-5 VMCs to the new EC-400PP horizontal.

“And it’s not for the reasons you might expect,” notes Swann. Higher throughput – an obvious strongpoint of pallet machines – had nothing to do with it. What drove the shop’s decision was the greater flexibility to mix jobs within the pallet pool.

“While a table full of *Pneu-Dex* makes a vertical think like a horizontal,” Swann points out, “you still have to stop all chip-making to reload parts. With the EC-400PP, both part loading and setup changes are essentially free: The spindle never has to stop cutting, so these activities cost nothing.”

Free setups are particularly important to *Chick*. With a fast-growing product line that requires just-in-time production of a large mix of parts, the ability to change jobs frequently without slowing production translates into significantly higher manufacturing efficiency – and higher profits.

“We have the flexibility to mix parts and batch sizes on this machine as often as we want,” says Swann. “Yet, for dedicated runs, the machinist can push the *Cycle Start* button and walk away for 3 or 4 hours.

“The VF-5s are being re-assigned to our ferrous shop to produce tight-tolerance steel foundation plates,” he adds.

“We love the machines. They’re equipped with glass linear scales, and have exceptional positioning accuracy and repeatability.”

Little efficiencies add up, but Swann cautions not to overlook the sometimes less-obvious big ones. One of the primary considerations for choosing the VF-5s and the EC-400PP for his shop environment was, “the Haas reputation for reliability – in both the machines and the support,” he says.

“A lot of people don’t stop to consider machine reliability, and how important that is to their productivity,” Swann emphasizes. “Even the best machinists occasionally ‘bump’ a machine, and then service response is critical.

“I could have a machining center with a 0.02 second tool-change and lightning-fast rapids,” says Swann. “But all it takes is a week of downtime to wipe out a year’s worth of efficiency gains. We’ve had to wait as long as three weeks just to get a part delivered for another brand of machine. For people like us who value efficiency, that’s devastating!” he exclaims. “With the Haas machines, that’s never an issue.

“Efficiency is sometimes hard to come by,” Swann concludes, “but it’s *always* easy to lose.”

Chick Workholding
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