Optimize

Three Best Practices to Save Money Before You Make Chips

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Are you getting the most value out of each machine and operator in your shop? What if we told you that by following three simple best practices, you can increase your profits by hundreds of dollars per machine, per day? Here are some key facts:

- Machining time represents approximately 50% of overall manufacturing costs.
- The average time to set up one 20-tool CNC machine is 60 minutes (1 hour).
- The first solution to any machining problem is a reduction in cutting speeds.

To maintain or improve your current level of production and quality, you need a focused approach that allows the average operator to achieve superior results. How do you do that? The following best practices will help any operator get more speed and quality out of each machine. And best of all, the results are repeatable from operator to operator.

1. Use Shrink Fit Toolholders

A well put together tool assembly reduces vibration. With collet and collet nut assemblies, quality depends on process repeatability. What if the collet is not clean? What if the collet bore or the collet nut is dirty? In the end, the tool goes in dirt and all. Then one operator may torque the holder correctly with the proper wrench, the next might just hit it with a mallet.

Shrink fit is a best practice because, whether you're on the job for one day or 20 years, everyone changes the tool the same. There are no moving parts to vibrate or loosen and it is impossible for one person to change a tool differently than the next. ***HAIMER shrink fit toolholders*** provide 3 micron runout accuracy, have better balance characteristics, and because there are no mechanical moving parts, all the above are completely repeatable.

Savings: A shrink fit assembly allows any operator to run at higher speeds = more parts per hour = more profit. Can't run faster? The inherent balance and runout accuracy of this system nets an average increase in tool life of 25-45% when run at same cutting conditions as systems like collet chucks or side lock holders.

Bonus Savings: Tool changes are faster with shrink fit. Faster tool changes = more money.

2. Presetting Offline

For better quality and faster speeds, it is important to check the toolholder and cutting tool for overall height, diameter and runout. Which saves more money? Having the operator do this operation manually between each job or having it done offline on a ***preset machine***? With the latter, the machine tool is out in the shop making parts while a tool room engineer is presetting tools for the next job. When the operator finishes one job, they can remove the toolholder from the machine, load the new toolholder and set the offsets (manually or upload directly to the machine control) to begin the next job.

Savings: Manual setup generally takes twice as long as presetting. If you have 8 machines in your shop with one hour of setup time per machine per day, that is 8 total hours of setup time. Using a tool presetter, you can cut that down to 30 minutes per machine. With a shop rate of $70 an hour, that's $280 savings per day ($72,800/year) by using presetting.

Bonus Savings: Presetting is more accurate than manual, hence permits faster run rates via improved process reliability.

3. Balance Your Tool Assembly

All assemblies have some unbalance, but with ***HAIMER balance machines*** this unbalance is easily corrected. Unbalanced assemblies create centrifugal forces that cause vibration. That vibration can only go two places: Up into the spindle of the machine tool or down into the part. The part may take one hour to make – at 100% capacity. If the operator sees chatter marks caused by vibration, more often than not, they will slow the machine down to 90-80% of capacity. A machining center costs $100 per hour to operate (one-shift operation, 1,600 operating hours per year). With a 10-percent increase in metal removal time, you save $10 per hour, which equals $16,000 per year.

Any worker familiar with toolholders should be able to operate a properly designed balancing machine without extensive training. The specialist knowledge resides in the machine, which has already been fed the necessary data about each tool, saving time and avoiding errors.

Savings: Balanced assemblies = more speed = higher metal removal rate = more parts off the machine per hour.

Bonus savings: Less vibration = longer tool life + lower maintenance and replacement expense. Save 20% on average on tool life.

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