

2014



Finalist

On-Time Machining
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Michigan





On Time Machining

Hurco Chipmaker Challenge Essay

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About six years ago the shop foreman Neil and I discussed going out on our own, in the end we decided that we should wait until our financial situations were better. We both like where we work but we anticipate problems in the next 10 years as the owner of our shop gets older. Together we decided to eliminate our personal debt and plan on doing this when we are good and ready. In the meantime we planned on being as Dave Ramsey says "Rock Stars" for our current employer. While being a "Rock Star" we developed outstanding skills not only in manufacturing, but also in leadership and business.

Since that time we have both eliminated all of our debt except for our houses; which we are both well on our way to paying off. Neil decided to switch to sales and I took over as foreman to the CNC department. To make my job more efficient I built a database and since then I expanded the database into sales and project management. All new quotes are established in my database and when a PO is cut on any quote it's attached to a new job in the database, automatically putting the new job on the appropriate job lists based on time quoted for each department (CNC, Design, Controls etc.) With all the data at my fingertips I was able to forecast my department with relatively good accuracy and anticipate openings or gridlock way sooner than ever before. Neil could reference my capacity charts to determine how to price jobs, lower if we needed work or higher if we were booked.

Recently we decided to write a business plan so we would be ready to launch. We want to make custom machines, fixtures, & parts just like we have been making; and leave the gearbox work for our current employer who seems to be focusing a greater amount of their time in this area.

I have an associate in applied arts and sciences for both tooling and manufacturing technology and mechanical design; along with my journeyman's card as a tool maker. I have been working at my current position for 15 years and will gladly maintain the database I built them and advise them after I leave.

We have not launched yet so we have no employees, but we do have a roster of contacts who said they will send us work. Many of those contacts work for 11 different companies, from five different industries (Automotive, Furniture, Medical\Dental, Food and Household appliance) any of which could overwhelm us with work if they sent a fraction of it our way.

We plan on making whatever type of part anyone needs. I have been doing this to the limitations of a 3 axis machine for years. (I would love a CNC lathe or a 5 axis machine, but trust me I've made crazy parts in a 3 axis Hurco. As far as categories of parts go, we will make: weld fixtures, assembly fixtures, housings, food processing equipment, end of arm tools, test fixtures, check fixtures, drill machines, spot welders, bushing press machines and the list goes on and on.

We make custom parts, if you need more than 100 of anything you should have us build you a fixture to make it, we are not likely interested in running high quantities of anything. We like change, a different part each day. Every industry needs something special, and if you can't buy it in stock somewhere then it must be made. If you can buy it then someone has already made a custom fixture to manufacture that item. Either way there is a need for shops that can build custom parts, either a few parts for a low demand product or a fixture to assist in building a high demand product. If a part blows out of a industrial cottage cheese machine it would be futile to try to get a replacement on Amazon, they may have a lot of stuff but they won't have that. The guy who is knee deep in cottage cheese when he realizes he does not have a replacement part can call us and order two, one ASAP and another soon after so next time he has a replacement.

People are always designing new stuff, and in order to mass produce any of it fixtures, machines, dies, molds and gauges must be custom built. That's what we do!

So why should and would people choose On Time Machining when there are already a myriad of other shops that do the same thing? Manufacturing people have a lot of things in common, most of them are not well spoken, I work way harder than most people to communicate clearly, and I would never rate myself as good at it. This is typical of manufacturing people. Where I am not typical is my desire to be on time; it seems that the majority of people in this industry are incapable of hitting a due date. (They just grab whatever they find until someone starts screaming for something else.)

If you have a choice to send work to someone who may work hard and always be busy, but your work may be 2 weeks early or it may be two weeks late. Most likely they will start on your project until someone else calls and asks about their hot project, then drop yours and knock out the other then get back on yours until someone else calls. Eventually you will have to call because your project is late, then they'll get back on yours but in the end when they're busy everything's late. The less screaming you do the later your stuff is. OR you can send the job to me where being on time is my number one priority and you don't have to scream. If I get into a problem with someone else's job becoming hotter, I may call you and ask if I can delay yours a little so I don't have to put in 16 hour days, but if you can't you can't, no screaming required. It stresses me out to name a business On Time because it means something to me, it has always been my philosophy and I'm very good at it. I think about how I can build this philosophy into the business so after I'm gone it can still operate in a good on time manner.

I can make parts fast in any machine; the problem is it takes forever to make quality parts fast in any machine, for that I need a Hurco. What's the difference between a part and a quality part in this industry? About .0004". I've assembled stuff from shops that do everything CAM, it rarely fits nice, it's either sloppy or you need a hammer. You end up spending hours re-setting parts up to dust a thousandth of an inch off a surface so it will go together. That's stupid, it was already set up why not make it right the first time. Then as I'm trying to release a wedged part that doesn't fit right so I can dust a couple tenths off it to make it right, I slice my fingers on the sharp edges that were careless de-burred with a pencil grinder because the CAD model had sharp edges and it's cut to data and it's a pain to put blend rads in so they didn't bother, just like they didn't bother checking the part because they never paid any attention to it because the software did all the work.

In a Hurco you just deck a part with a facemill as block 1, then you mill frame with .05 corner rads as block 2, pop holes in for block 3, NC program call block 4, text detail number block 5, if something is not right it's easy to change! In the end the conversational blocks took barely any time, the NC program did the unique contours, and the final part looks great, which customers love.

Other things that make conversational useful: when I have 12 details that are all very similar but slightly different and I take 4 minutes to write a program, changing the program only takes a few seconds. I can write template programs that have the angle of some lines programmed in, length of other lines, endpoints of other lines, blend rads everywhere so when I'm done all I have to do is change a couple numbers for a similar but different part. If I used CAM I could import my sequence and post a program in

about a minute, but wait! The CAD data does not have blend rads! I'll end up spending a couple minutes adding the rads to each new model or I'll spend a couple minutes hand de-burring the parts. Once my template is done it usually only takes a few seconds to change it for the next part, and blend rads and chamfers are automatic!

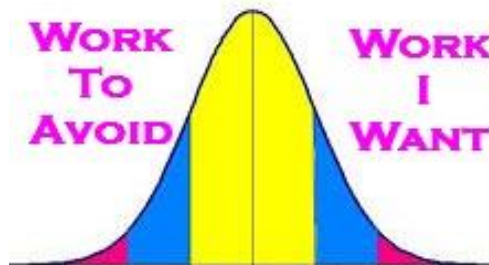
Nothing against CAM, but there is a time and a place for user friendly programming.

Hurco's also have a great coolant pump, when I turn the coolant on I want a lot of coolant, some machines barely have enough to keep my tools from breaking.

My greatest manufacturing challenge will be when I launch I will only have one CNC, I will have to run parts in it that are too big for the machine or that would be better suited for another machine (such as a CNC lathe or a 5 axis machine). I did this all the time when I first started running CNC in a 1987 Hurco known as the "Old Hurco" at my current employer. In 2004 we were very happy to get a brand new "Big Hurco" which cut down on multi-setups substantially. I will of course need to build my way back up to be able to afford bigger or additional machines.

My greatest Business challenge will be to be on time. I cannot express how important this is to me, that's why I chose the name On Time machining. I'm not underestimating how challenging of a feat this is. There's a reason why so many people struggle with it, I would too but the database I'm building for this business is built around this principle.

There are a couple groups of guys who I regularly meet with; not an official organization or club, but people who are knowledgeable in machining and business. We talk about what type of work we are getting in and how the terms are changing. We recently discussed the changing terms and how almost everyone is holding payment for jobs until completion. A year ago most customers would allow incremental invoices after different phases of jobs were completed. As a small startup with very little cash flow I want to be as selective as possible on the jobs I choose so my cash is not tied up in inventory.



There's nothing wrong with jobs that require a lot of high cost material, tooling and finishing because those costs will be passed on to the customer with markup. I will gladly take those jobs when I have more cash on hand, but if I have a choice I will take jobs that require a lot of hours on a low cost block.

I also learn creative machining solutions to a variety of unique jobs from meeting with other people in the machining trade. People love to talk about how they solved a difficult problem, and I love to listen. I often hear about programming problems that would not be problems in a Hurco.

I get compliments on the quality and timing of my work all the time, but I have no awards or accolades to show for it. Here are some awesome things I have done to make parts faster:

15 years and I know who to call for sales, design, purchasing, lathe work, engineering, controls, wiring, welding, coolant, cleaning, rags etc. I have forged relationships with several people who are scattered all over the state and country who know different aspects of this industry, and will prove to be valuable resources. I also plan on leaving my current employer on good terms, they have expressed they would like to keep me but understand I will not stay there forever. They want to keep me as a resource by sending certain work my way and I hope to utilize their resources for parts of projects that are out of my range of capability. I've set up a very good info structure there, and they use Hurco's so they should be able to get me quality parts faster than most shops. I will also be able to help them get fires put out.

I think I will be comfortable buying a lathe or a 5 axis Hurco in 2 years if I win a Hurco, if not it will likely be 5 years. The type of work I'm landing and the struggles I encounter my first couple years will determine what type of machine I end up buying first. I don't anticipate having trouble finding new customers, I plan on being the tortoise that wins the race, I don't want debt so it will take me longer to grow; but I will be able to weather upcoming downturns if I stay out of debt. With this business model I'm sure I will always have more customers than I can handle. Growing slow will give me time to perfect my processes and database to better serve my customers when I do expand.

I will also need at least one designer by the five year mark. I like designing but I need to keep my Hurco running. Outsourcing design could be a huge problem with delivering fixtures on time and avoiding design can be a huge problem with getting enough work in the door.

In ten years I figure I will have three 3-axis vertical Hurco mill's and 3 Hurco lathes, a small one for pins, a medium one for small parts and a big one for housings. I assume at least one of them will have live tooling. I'm sure I will also have a 5 axis Hurco mill, because I hate spending all day setting up sine plates to do parts that I know I could crank out in no time with a 5 axis machine. (I also hate buying stupid long endmills when a stubby would work in a 5 axis machine.) Staffing should be interesting over the years; I will need to find people with my same passion for quality. Fortunately the pool will be bigger because learning a Hurco is super easy. If I can teach someone speeds and feeds I can teach them to run a Hurco. With other machines you almost have to pick from a small group of people who can run the control, it seems like you just have to settle for hot headed troublemakers, I don't want that. I have proven to be a leader that people respect over the last few years and I don't want to put outstanding team members in a shop with competent troublemakers. I like the idea of having more hiring options as I grow because I have an easy to operate control.

I figure my growth will be substantial between ten and twenty years. I will have built a huge inventory of tooling and found good team members by then. I will have enough machinery to get me through most jobs without outsourcing and I won't have to be so cautious about taking jobs that require upfront capital.

In the end if I can find a crew that believes in quality, and strives to be on time I don't think I will ever have to worry about losing any customers, and if new customers don't find me, I can go find them!



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