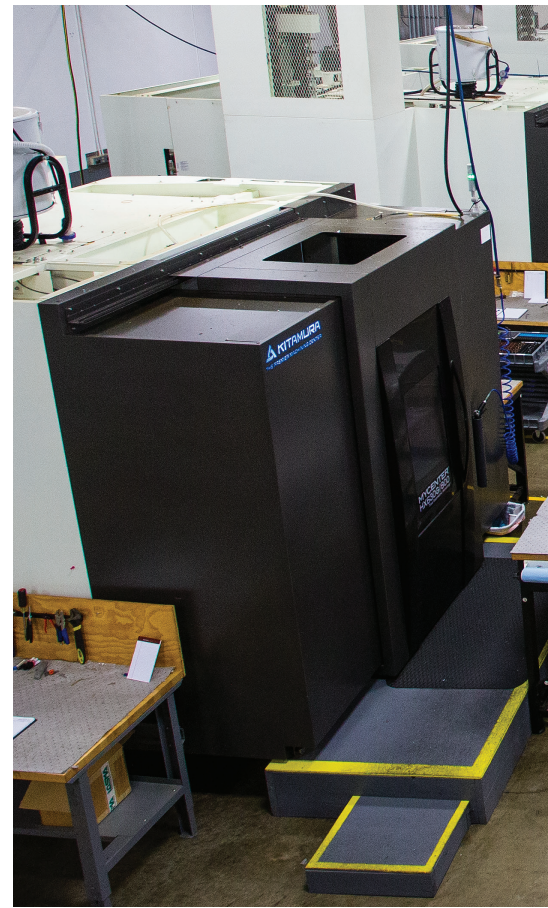


Left to right - CEO Joshua Boucher, COO Jeremy Laske, Lead CNC Programming Engineer Eric "Red" Reitan in front of one of their dozen Kitamura HX630 4 axis horizontals.



# 3V PRECISION MACHINING

## HARD METALS SPECIALISTS - HONING THEIR CRAFT FOR 3 DECADES

After spending years working for others, Peter Boucher founded 3V Precision Machining in 1993. His business model seemed simple, build a manufacturing company focused on its employees and success will follow. This year the company celebrates its 30th year in business and that core belief still rings true for the Tacoma, WA. based company. Now under the leadership of Joshua Boucher and Jeremy Laske, this hard metals job shop is expanding their craft and building on all three of the V's in their name.

For decades 3V has stood for Vision, Value and Validation, but as 2023 kicks off it's clear they could easily call upon science, education, and culture. "We are laser focused on our "V" elements," tells Joshua Boucher, 3V's CEO. "Vision, we never lose sight of where we've come from and where we are going. Value, we bring value to our customers and not in just a monetary sense. Validation, we really shine when it comes to our quality and delivery. We are a gold-gold supplier to the giants of aviation, space, defense, and medical with 99+% ratings."

3VPM is a super alloy specialist, manufacturing primarily in Inconel, Hastelloy, and Titanium. The only aluminum they cut is for fixturing, so they need machine tools that are up to the task of running highly complex parts with lights out manufacturing techniques. 3V has 40 employees and 30+ CNC milling and turning centers housed in 51,000sq. ft. of manufacturing space. Doing most of the heavy lifting are the dozen Kitamura MyCenter HX630 4-axis horizontals. "Instead of having different machines from various manufacturers, we have the same machines and lots of them," explains Joshua. "We choose to build a fleet of machines allowing us to interchange our products between those machining centers. This allows us to deploy a back bolting concept throughout the shop where the fixturing and programming become universal. We have a milling fleet of 12 MyCenter HX630G, 3 MyCenter HX400i and one MyTrunnion 4G 5 axis. We also have a dozen Hyundai Wia machining centers ranging from single and double turret lathes to, vertical mills and advanced twin turret/twin spindle mill turns. Our Swiss department is a trio





of Tsugamis, each equipped with the Caron Engineering TMAC system.”

Running high temperature alloys on complex parts takes time, so 3VPM is manned 24/7 with three shifts throughout the week. “Cycle times are typically long, sometimes well into days,” explains COO Jeremy Laske. “We build the process for these machines to run unattended. It’s a game of patience, you need to put the time in and understand that success doesn’t come overnight. You build in the care, the tooling, the redundancy into the part, and build the people into the process. All the prep work has been done so we can set it and forget. Next thing you know the timer goes off and the customer reaps the rewards.”

3VPM’s original owner sought after the Kitamuras because of the way they are made. He felt the bones of a machine tool is where quality starts. Joshua and Jeremy share in that idea. They like the specs on the MyCenter 630G/800 because of its solid box way construction, linear scales on all axes and twin ballscrew design in the X, Y and Z axes. The 630Gs have a generous work envelope, a 25” table, X travel is 43.3” x Y is 36.2” x and Z 41.3” and plenty of room inside the machine to fit parts. “Cutting super alloys, you need a machine with strength and torque and power behind it,” tells Joshua. “The 630 castings are huge, everything built on top of that is robust and built to perform right down to the cut. Where we differ from others is we are taking these big, heavy, strong machines and being

gentle with miniature sized tools. We need that Kitamura strength behind the machine to remove material and get longevity and consistency out of your tools.” “We only use new tooling, no regrinding, no diameter regrinding, nothing,” adds Jeremy. “Those variables, we don’t want them. We look at our tooling under a microscope, studying it so we understand what it does and how it will affect what we are running, how long it will last and so forth.”

The philosophy of the shop has always been to have more machine headroom than you need, and 3VPM’s machine tools are overkill for the average size part they run. It’s an added expense, but one they feel is worth the cost. “We take a delicate approach to machining,” continues Jeremy. “If you consume the machines ability at 100% it doesn’t last. We could put a giant slab of material in there and max out the tolerances of every axes, but that stresses the machine out. That stress will show up in your part. We’ve found that it is easy to impart stress into the super alloys if you are not careful. Putting too much heat in a product causes the material to change its form. By making smaller parts in a big machine, there is no stress put through the machine. The tools last longer, the machine lasts longer, and it does a better job on the part you are creating. There is no hiding when machining nickel alloys. When you own 15 machines that basically have the same capabilities, ideas, and concepts you can really hone in on your procedures.” “Hogue Precision Machinery is the exclusive Kitamura 3,4





3V's Swiss turning department consists of a trio of Tsugamis all equipped with Caron Engineering's Tool Monitor Adaptive Control (TMAC) system

and 5 axis dealer for our area," adds Joshua. "Owner and operator Gail Hogue has spent a lot of time onsite with us developing hard metals machinery solutions for over 20 years. They're great to deal with and provide excellent factory support."

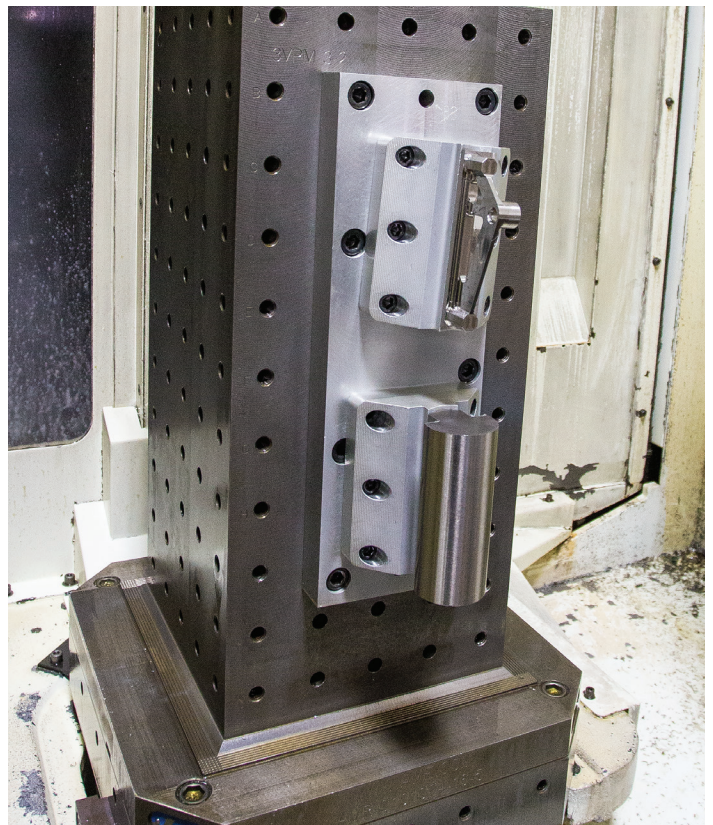
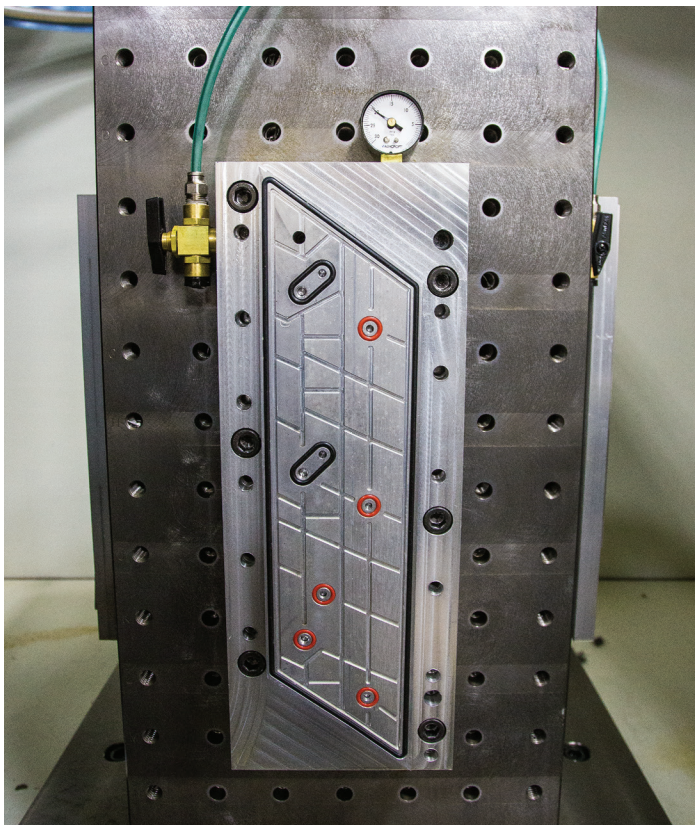
Culture is a big one at 3V Precision, management and employees alike enjoy having a nice place to work. 3VPM have a young staff and put a lot of effort towards teaching the science and art of cutting and removing metal. "We like it when people ask questions, want to learn more, are curious on where the parts we make go," tells Joshua. "We pay for employees to take college courses and earn their

journeyman cards. We reward education with promotions and bonuses. The more they learn, the more they are interested, the more we can succeed as a company. Many of our best and brightest employees didn't know exactly what CNC machining was before coming here. We tend to hire from outside the industry and train internally to our style of manufacturing. Culture is an important part of what we do. We can teach someone to run a machine, but it is harder to teach them to be a team player and a good human being." "We are in a constant state of education," continues Jeremy. "Not just manufacturing education, although that is a lot of it, but life education. We have financial planners come in and talk about savings, retirement, purchasing power. We have 23-year-olds here who own homes, toys, and cars now, but didn't know how to do it before. Education across the board is valued at 3VPM. We turn everything into a learning experience, making this a great place to work. Anything that helps them at home helps here and vice versa. Every morning breakfast is available to the staff. You need to feed the body and mind to stay sharp all day. This is a challenging place to work, be aware, alert, and pay attention to a lot of science. We need'em alive, awake, and focused on these big machines. Running on poor quality foods and drinks will not bring out the best in you. Josh and I can't take credit for the culture. It's always been like this. What we do is support it and keep it alive for the years to come."



Recent hire Tyler Dillow has a background in teaching, but has found a love of manufacturing. He logs into the ProShop ERP management system connected to the Hyundai Wia LM1600TTSY.





**3VPM deploys a back bolting concept throughout the shop that allows flexible fixturing and programming to be universal between machines.**

3VPM recently moved into a second facility in the same industrial area. Dual sources go back to their love of redundancy and should something catastrophic happen at one site, they have another complete setup that is still up and running. “We are growing and adding machines, progressively getting larger and larger,” details Joshua. “The goal is more lights out manufacturing, more Hyundai, more Kitamura, more Tsugami, maybe another quality lab. Our growth comes by reaching out to new customers and current customers and expanding what we do for them. We’ve got a craft here that not everyone knows about. We can help in lots of ways. For example, 15 years ago we quoted a titanium fuel door for a jet. We gave it the standard quote based on our manufacturing practices. Customer comes to us and says we are three times as much as everyone else and

that we won’t be getting the job. Ok. Couple years later the part shows up for bid again. We submit our price, and again they say we are too expensive compared to the others. They come back five years later hat in hand and ask why it is that our price is so much more than the others. They admit that they have gone through seven different suppliers because of various failures. They brought the manufacturing in house, and it is taking them 29 hours to cut it. Then it still needs extensive after processing like straightening and recutting an O-ring groove to make it pass inspection. We explain our strategy and they send a dozen people over to see firsthand how we would tackle the project. Their engineers and manufacturing specialists decide they like what they saw and give us a shot at one fuel door for the left and one for the right side, so two parts total. We returned them two



**3VPM has multiple Hyundai Wia machining centers ranging from single and double turret lathes to vertical mills.**





Every moment is a teaching moment at 3V. Jeremy takes the opportunity to educate staff member Hudson Pulicicchio on the Hyundai Wia's vertical lathe controls.

perfect parts and won the production contract. Using our sequential machining processes, we reduced the cutting time down to 9.5 hours, total, and by not imparting stress we didn't need to straighten and recut the part at all."

3VPM takes an almost Zen approach to their manufacturing. Right away it is clear that culture is something deeply rooted in how they do business. "There are 1000 ways to make a product," concludes Jeremy. "But we choose to focus on what the end user is going to use the product for. There are clues in the drawings that lead us down a path. Following datums and paying attention to the tight tolerance areas to understand what the next process in this parts life is." "Simplified we are putting holes in a bracket," half jokes Joshua. "But that bracket must fit inside an assembly to be successful as a bracket and lead its best bracket life. Everyone reading this knows the struggle of ill-fitting parts. Fit and finish have value and a little extra care on a part that took 56 hours to machine is well worth it knowing the people on the assembly line are doing their job better because of our manufacturing practices. Our job is to make assembly easy. Help the manufacturers assemble in a fast way so they can be successful, and we in turn can keep our jobs that we love."

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