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Increased Efficiencies - The Holy Grail of Manufacturing

A visit to West Coast Surgical in Half Moon Bay California

The medical equipment manufacturing business is fraught with complexities, and when you produce precision instruments used in life saving cardio vascular, nervous system, and spinal surgeries, 100% manufacturing excellence is a must.

In my quest to uncover manufacturing excellence in the SF Bay Area I took a 30 minute drive west over the hills from Silicon Valley to the scenic coastal town of Half Moon Bay and entered a lay back world of fine food, sailing, and extreme surfing. As I drove past a surfing beach I was tempted to grab a board hit the water and hang 10, but that would have to wait. Today I was on my way to visit West Coast Surgical to learn all I could about this medical instrument manufacturer and why and how they've integrated SolidCAM into their business.

I made a left off Highway 1, drove past four seafood restaurants; made a left at the corner of a high-end Mexican restaurant and a small café, then drove a block until I almost bumped into the marina, turned right and there it was - a nautical grey cement box of a building fronted with oversized roll-up garage doors sitting like a behemoth smoldering in the morning fog.

I had arrived at the home of West Coast Surgical and jointly held Axcess Surgical Innovations.

Their building wasn't designed for beauty but for functionality. Those roll-up doors across the building's face, for example, are used to accommodate the mammoth size of their manufacturing equipment.

Before meeting with the management team I snuck in an unescorted tour of the manufacturing floor and was taken aback. The facility was filled to the brim with Haas lathes and mills all going full blast and spitting out shavings at a record rate accompanied by the ear splitting high pitched siren sound of end mills spinning at super high RPMs. Red plastic part holders sitting next to each machine were filling at a

record pace, and I later learned that this high tempo manufacturing dance is performed here almost non-stop, 24 hours a day Monday through Friday and for 10 hours on both Saturdays and Sundays.

I climbed a nautical staircase that wound itself around a pole and when I opened the office door at the top, Daniel Bass the founder of West Coast Surgical, and his business partner in Axcess Surgical Kevin Kachuck welcomed me in.

Daniel Bass
Founder, West Coast Surgical

Kevin Kachuck
Partner, Axcess Surgical Innovations

Daniel is a tall six foot plus man with a smile on his face and a twinkle in his eye that projects energetic happiness while Kevin comes across as the man he is deep down inside – a consummate sailor with a boat parked in the marina - friendly, focused and intense. Together they're relentlessly committed to improving and growing their company, with manufacturing excellence and efficiency at the forefront of their agenda.

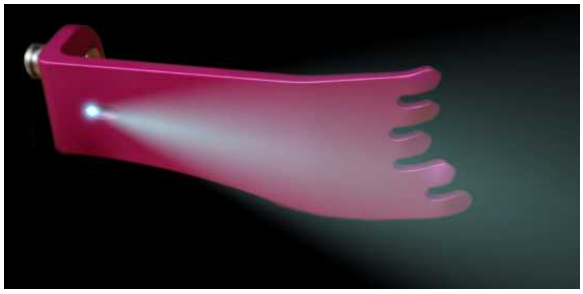
I learned that West Coast Surgical (WCS), founded in 2005 by Daniel Bass, is primarily an OEM manufacturer of Cardio Vascular, Neuro (nervous system) and spine instrumentation, and that in 2011 Kevin Kachuck partnered with Daniel to form Axcess Surgical Innovations to produce complementary precision rigid and flexible operating room holding and positioning assemblies. Both companies are joined at the hip and occupy the same building and collaborate and share all their resources and equipment, from assembly and machinery to SolidCAM licenses, and all their employees work for both companies.

Daniel told me that he was an early SolidCAM adopter and that initially WCS used the software for jobs that required 2 ½ and multi axis 3D milling. One reason he originally chose SolidCAM was because of its seamless integration into SolidWorks. "In our business we manufacture many different things but in relatively small quantities. In some cases we'll be running 5 or 10 pieces of a high-end device and even though West Coast is an OEM we often design or modify the geometries for our customers. The integrated CAD/CAM power of SolidCAM let us quickly prepare the parts for manufacture while reducing set-up times and improving efficiencies."

As medical equipment suppliers both companies must also maintain a comprehensive quality management system that meets both their internal production needs and that satisfies stringent ISO and FDA standards and inspection criteria.

“We produce medical devices,” Daniel said, “and the tool set-up sheets become part of the documentation for our internal use and to meet ISO 13485 and FDA 21CFR820 quality standards. We have to demonstrate that the next time we make this part we can make it exactly the same as the first time. “

“Before we had SolidCAM we had to manually write all this up. Now SolidCAM takes care of documenting this for us and the nice thing is that you can print it out so it’s all integrated, and then when the job returns it’s driven by item and rev number. Our shop manager just checks the Rev, pulls it up, and it goes downstairs to the machine shop floor where they run it again.”



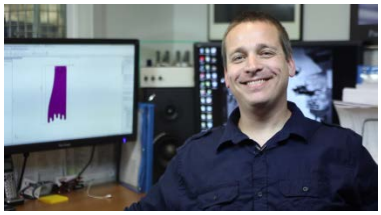
“Hang 10 Blade”

Shortly before Daniel and Kevin partnered, West Coast Surgical was asked to manufacture sophisticated retractor blades used for lateral and posterior spine operations that include a light channel and canalization with light mounting through-holes. These dual-function retractor blades hold an incision open during an operation while shining light directly into the operating area.

When I asked Kevin what role SolidCAM’s iMachining played in this blade’s manufacture he told me that, “Up until then all the blades we produced were manufactured using 2 ½ D milling or formed from sheet metal but these dual function blades, nicknamed ‘Hang 10 blades’ for their curved ‘toes,’ just had to be fabricated with 4-axis 3D machining. “

“Back then we were using SolidCAM and even though we were able to do the required 3D machining it was slow going and each retractor blade took us more than 45 minutes to machine. “

They manufacture these blades in sets of 30 different sizes and a typical run is now for a whopping 50 sets. “We were working 24/7 to keep up with demand and were finally able to come up for air when iMachining 3D arrived on the scene to whittle the cycle time for these parts down by more than 50% to just 20 minutes a blade.” Daniel and Kevin both think this is still too long, and they’re now tweaking the code to squeeze cycle times down even more.



John Carlson is the shop’s machining manager and programmer and I wanted to see for myself how the ‘hang 10’ blade is produced so I popped into John’s office and looked over his shoulder as he tweaked the part’s geometry in SolidWorks and than in a blink of an eye switched to SolidCAM and ran its tool path simulation. John said that, “iMachining 3D is really easy to program, the simulation is amazingly accurate, and what you see on the computer’s screen is what you get on the shop floor." We then went down to the shop floor and I got a chance to see a Haas milling machine take the part from a block of metal to the finished product in record time, just like it did in the simulation.

IMachining helped buy them the breathing space they needed to grow the company and now that Access Surgery is established they've been able to efficiently expand their product line to include rigid and flexible operating room holding and positioning systems.

Operating Room
Holding and Positioning Systems

In this a small 40 person company everyone wears many hats, and In addition to heading up Axcess Surgical Kevin is now also spearheading a companywide 2014 effort to improve efficiencies by examining each design and finding ways to incorporate iMachining into the process. Kevin's mission is to increase both companies' profitability by insuring that all their designs are optimized to take advantage of the 30 - to 50% time savings they expect to get from his effort over this year.

I learned that now with iMachining 3D they can take on extremely sophisticated jobs. Daniel told me that, "West Coast is currently producing a miniature titanium implantable device that requires 5-axis machining since it essentially has to be machined from all sides. We landed this job when no one else was able to make it, or didn't want to take on the challenge. "

"This is one case where some engineer in a cubicle designed something without thinking about how it would be manufactured. This is a low quantity high value job with a weird shape and if we couldn't use SolidCAM's 5-axis machining and take advantage of iMachining we would have had to produce it in two set-ups, at a slower speed and the cost to make the fixturing for just 20 or 30 pieces would have been prohibitive."

Kevin wrapped things up as he told me that, "Over the past two years we've been buying equipment for Axcess Surgical, outfitting the shop, and hiring more people and now that we've got our core staff in place we're working on improving efficiencies. 2014 is really all about companywide efficiency and when it comes to lathes, instead of online programming at the lathe we're using more offline programming for the build turn, and for CNC milling we're reprogramming all the parts we possibly can with iMachining and expect to decrease our manufacturing cycle times to by 30% to 50% over the year.

After spending a full day with at WCS/Axcess Surgical I left with new friends in the machining business, learned how the partnership between them and SolidCAM has helped them increase their capability by lowering costs, and I now have a better appreciation for what it takes to be a successful manufacturer.

I'll be back to visit again soon, and next time I'll bring my wetsuit and board. I'm not going to try Mavericks, that's way out of my league, but surf's up most days at the local beaches and I can't wait to hang 10 off the beach and at West Coast Surgical.