## **CAL-DRAULTCS** Hydraulic Parts - Machined, Assembled, Tested. 100% on Time - 100% Right





Doug and Jeanette Johnson have owned Cal-Draulics since 1992 and love coming to work every day, and will probably do it until they are 90.

al-Draulics has been making hydraulic components for aerospace applications since 1950. In 1992 they were located in Irvine Ca. and purchased by Doug and Jeanette Johnson. Doug is a mechanical engineer with 30 years' experience in the aerospace and defense industry who thought it "would be fun" to be completely independent. Due to rent increases and the inability to use a mannequin to help in the car pool lane within a year the business was quickly relocated to Corona, Ca. Corona afforded all the advantages of Irvine, but was closer to home, freeway access is plentiful, Ontario airport is right up the road, and they are easy to find. Cal-Draulics has had the same campus now since 1993 and has moved back and forth between two buildings depending on their space requirements. Currently they are operating out of the main 12,000 sq.ft building with a separate testing center in the 6,000 sq.ft. second building.

When Doug bought Cal-Draulics they were largely captive by Douglas Aircraft. They were doing a ton of hydraulic work for them with very few other customers. Prior to the purchase Doug was president of a small aerospace company with 100 or so employees and he knew the value of having a variety of customers instead of being tied to just one large one. These days

Cal-Draulics are tier one suppliers to Boeing, Parker, Eaton, Moog, and Hartwell, and having the fun he had hoped for years ago. "I'd like to quote my friend Jack Morehouse of



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Perceptyx," says Doug. "He always said that overnight success took about 15 years. And he was pretty spot on."

It's no wonder Doug and Jeanette love coming to work every day. Cal-Draulics is a family business and with five children, and eight grandchildren all of them have worked at one time or another at Cal-Draulics. Besides having their own family employed Cal-Draulics has three father/son teams, husband/ wife combos and even a few sisters. Clearly it is a great place to work, and the low employee turnover rate confirms it.

Cal-Draulics is unique in many ways, but one thing that stands out is that they turn down work if it doesn't fit what they like to do. They specialize in build to print hydraulic components, and like to do the ones that require assembly and testing. "We do the machining," says Jeanette. "But if it doesn't require assembly and test Doug typically doesn't do the work." A lot of their components are machined out of a heat treatable 440c stainless. "We machine it in the soft state," explains Doug. "Then it goes out for heat treating and comes back around 60 Rockwell. We then do things like lapping or polishing to bring it to its final size. It is then used in assembly and then fully tested." There are plenty of shops who can do the machining, but to Cal-Draulics they don't feel there is much in the way of true competition. Their familiarity with the engineering requirements for assembly and testing set them apart from others in their field.

Cal-Draulics transitioned from a manual shop to a CNC shop in 1998. When they did they started with quality machines from DMG Mori Seiki. They continued to add machines including a German turning center called a Spinner. "The Spinner is very high tech," describes Doug. "It has live tooling with sub spindle capabilities. We also have offerings from Hardinge, Bridgeport, Gildemeister, a jig grinder and a Ganesh mini mill. The Ganesh has proven to be a solid work horse machine and the jig grinder lends itself to precision holes and fixtures." They use it a lot when making spherical seats.

The most recent acquisition has been two Trak 2op machines from Southwestern Industries. It stands for 2nd operation and the advantage is that it is very cost effective, and mobile. "You can accomplish the same thing with a more expensive lathe with live tooling and sub spindles." explains Doug. "We have one out there, it costs over \$250,000. With the Trak 2op I can utilize a basic high quality turning center and the 2op to do the same thing for under \$100,000. If we were running 2000 parts at a time there are more effective machines, but in aerospace we typically run 35-100 so it works out perfectly." Doug didn't happen upon the 2op by chance. He has always been a fan of



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Cal-Draulics has a wide range of CNC mills and lathes from Hardinge, Ganesh, Gildemeister, Spinner, Mori Seiki and recently added two Trak 20ps into the fray.

the Southwestern Industries product line even though he didn't own any. "I always wanted one," tells Doug. "Instead I bought off brand retro kits and just was never happy with the performance or the service." What actually sold Cal-Draulics on the Trak 2op was when a machine mover said he did some moving for Southwestern Industries and that he noticed that most of the customers who bought one were so pleased that they purchased another. "So after hearing that I called Larry Deptula at Southwestern and we talked about it." tells Doug. "We went to their facility in Dominguez Hills and they showed us everything, including their own production facility where they were using several 2op machines." After talking to the operators and programmers they saw right away how the 2op would fit into their work flow. Most everything they make is turned, usually in the first op. The backlog of mill work was piling up and it was a perfect fit for the 20p.

Running in a lean manufacturing environment requires you to set up cells in close proximity to each other to maximize production. The 2op is mobile and comes with a pallet jack to move it around. All it needs is air, power and to be level and you have a mobile cell. "It really is portable," explains Doug. "I could move it twice a day if I wanted to. Instead we loved it so much that we bought another one a few months later." Support from Southwestern Industries has been stellar, the second machine was up and running within a day. The easy to use controls and software make it a perfect machine for veteran machinist and



They ordered a second Trak 2op only a few months after getting their first one. Doug had the forethought to run air and power in multiple locations when installing the first one. The new one was set up and running in less than a day.

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trainees alike. They have a young man, Josh, out on the shop floor that is new to machining and has already learned how to program basic commands on it.

From machines to software Cal-Draulics likes to have the right tools for the job. Doug has been designing with Solid Works for well over 10 years, and they use CamWorks for all their cam programming. "Funny story about CamWorks," jokes Doug. "I had a job that needed some conturing and didn't know how to do it. I had heard about CamWorks so I contacted the rep and he came for a demonstration. I thought I'd be clever and have him do it on my part. He loaded in my disk to the computer and did the 3D machining in less time than it took the shop manager to come in and view the demonstration. Under five minutes! He had to do it again once my guy got in there. He downloaded it and I ran the part. Needless to say I called him and said I need this program. Jim Nealy from 3D Cadware at the time flew up in his plane and hand delivered it to me at the Corona airport. Can't beat that service, and it was showy."

The beauty of Cal-Draulics is that we limit what we take

in," beams Jeanette. "For the past six years we have been 100% on time and 100% quality with everybody. We don't try and fill our machines day in and day out, but run at a comfortable level to ensure the work gets done on time and with 100% customer satisfaction. They don't want their \$65 part holding up a \$100,000 assembly by not being right or on time. They accomplish this 100% satisfaction with the help of their "awesome inspection department." Within those walls work a handful of highly skilled people and the Seebrez multi sensor video measuring system. It can do mechanical probing and optical probing on the same part, fully automated and made locally in Temecula, Ca. "It does everything that an optical comparator and CMM can do, but it goes beyond that,"

explains Doug. "Surface finish on hydraulic components can be very critical especially when you are doing match fit assemblies with 80 millionths of an inch clearance. We have actually magnified the surface of the part to 500x to show to our customers. That's ridiculously high, but in doing so we discovered a few things to change in the lapping process to make the part better."

With long term contracts Jeanette jokes that they will be here forever. "Doug at least until he is 90, and probably me too. We don't want to be Donald Trump, we are happy with our lifestyle and love, love, love coming to work." Not many people can say that, and even fewer married couples who work together. Cal-Draulics offer a unique approach to business, one that is not overcome by greed but is balanced out with a desire to deliver the best product on time. When Jeanette says how it is important to Cal-Draulics to be good for their customers and good to their employees, there is no doubt that they have it all figured out and will still have fun coming to work when they are 90.



The QC team at Cal-Draulics love the precision and versatility of the Seebrez.

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