



Hydro Inc. is Carving out their Niche in the Global Pump Aftermarket

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Pump Engineer spoke with George Harris, Hydro Inc.'s CEO and Founder, to learn more about what sets them apart from other pump aftermarket services. "Hydro has developed a unique niche where we have the capabilities, the engineering support, and the lab for testing purposes to provide comprehensive support for customers, while providing prompt capable service on a global basis," says Harris. Hydro Inc. makes customers the cornerstone of their business. "Everything that we do is focused on the needs of the customer," explains Brian Scorer who is the Executive VP at Hydro Inc. "We make sure we are entrepreneurial, flexible, agile, and very quick in the way that we go about our business. We provide world class quality, world class delivery, and we wish to be competitive on cost. The foundation for what we do is built upon engineering excellence and technology. We also have some of the world's best pump engineers."



Dedicated aftermarket focus

What sets Hydro Inc. apart from the original equipment manufacturers (OEMs) is that their dedicated engineering resource is reserved entirely for aftermarket service. OEMs, on the other hand, tend to share an engineering resource between both development and production of new equipment, in addition to aftermarket needs. "Hydro Inc. is solely focused on aftermarket," explains Scorer. "The OEMs have a pull between aftermarket and new equipment production and development, so that tends to dilute the resource. Our resource is pure and simply aimed at aftermarket end user customer issues. Also, because we have an independent and unbiased approach, we are not trying to defend the design of a particular piece of equipment, which tends to lead to the correct solution rather than a convenient solution."

On-site reverse engineering capabilities to meet quality standards

Consistency of approach when it comes to their engineering standards is a huge factor of what sets Hydro Inc. apart from their competitors. "We have extensive, well-documented standards that we implement to ensure the engineering integrity of our services," says Gary Dyson, the Managing Director



of Hydro's Global Engineering Services.

Hydro Inc. has developed a process by which they can take a used part, perform the reverse engineering, do the hydraulic comparison, and create a final 3D model in a very short period of time. In circumstances where a customer needs a casting with critical deadlines, Hydro's method of reverse engineering is the quickest on the market. "Is it more expensive? Yes. But the delivery can be shortened dramatically," says the VP of Nuclear Operations, Nick Dages. "From there, we can take that 3D model and create a casting through a 3D printing process to create the mould. We then take the package to the foundry, where they pour the metal to create the component." Hydro Inc. is able to decrease the manufacturing times of pump components because they have the majority of the equipment at their facilities. The traditional manufacturing process of a cast component, for example, can take nine months to a year. Hydro Inc.'s capabilities are such that they can deliver within weeks.

Along with their reverse engineering services, Hydro Inc. also offers several other pump engineering services including CFD, rotor dynamic stress, and root cause analysis. Dyson explains how the ability to carry out in-depth failure and root cause analysis can be very difficult and involves equipment review, operational reviews, and site aspects. They must forensically determine why the equipment has failed and what fixes can be put in place to prevent the failures. "Separating root cause damage from consequential damage requires great experience and capability", says Dyson. "All our techniques are underpinned by world class engineering and experience. Having a fundamental understanding of component function is very important when carrying out part re-engineering." Other services offered by Hydro Inc. include pump repairs, pump upgrades, replacement parts, emergency pump services, pump testing capabilities, and pump field services.

Engineered castings done in-house that drive fast lead times

For the past three years, Hydro Inc. has been manufacturing precision castings using 3D printing. "If a customer needs a casting quickly and we have that 3D model, our process shortens the manufacturing period tremendously compared to sourcing cast parts through the OEM," explains Dages.

Jesse Stinson, Hydro Inc.'s VP of Operations at Hydro Parts Solutions, explains the benefits of the new technology when it comes to castings. "In the past, you had foundry foremen and metallurgists that had 20 years of experience and they just knew how to lay this stuff out – they may have scrapped a lot of parts – but through trial and error they learned how to make a good casting. Now, there are computational fluid dynamics (CFD) programs that allow you to put that model into the program, simulate it, and it shows you where your hot spots are in the casting."

Dages gives the example of a nuclear power plant client who needed a safety related pump repaired within 12 weeks. "This special casting, meeting nuclear quality standards, simply could not be sourced from the OEM in the time frame required by the customer. Under emergency conditions, we were able to reverse engineer and manufacture a 3D model, including the casting with engineering analysis, and the pouring of the metal in six weeks. We met the customer's critical 12 week outage deadline."



Strategically positioned across the globe to stay close to region-specific needs

All of Hydro Inc.'s service centers are strategically placed around the globe to help accommodate the specific needs of their customers. "We have service centers in many countries including Australia, Korea, France, and the United Arab Emirates," shares Scorer.

The Director of Hydro Middle East, Thomas Arakal, notes that some of the most common pump-related issues he sees include deterioration of pumps due to severe corrosion issues, along with a lack of local engineering support – which is where Hydro Inc. can step in to help. He also shares that the pump market in the Middle East is primarily due to the demands of the oil and gas industry. "Energy demands keep increasing with rise in infrastructure across the region," says Arakal. "Alongside energy demands is the demand for desalinated water arising from the lack of natural water resources. With the abundance of hydrocarbon reserves, the Middle East is steadily building refining and petrochemical by-products to better utilize the raw crude."

Hydro Inc.'s service center in Australia also has specific issues that are dominant to their region. The General Manager of Hydro Australia, Ross Bertoli, points out that the two most prominent concerns he sees in Australia include reliability issues and a push to reduce carbon emissions because of the prominent power industry. Bertoli notes that Hydro Inc. is also heavily involved in oil and gas, water municipality authorities, pulp and paper, and mining industries in Australia.

Dennis Plaizier, the Managing Director of Hydro Scotford, notes that about 55% to 60% of Hydro's business from the Alberta location is from the oil and gas industry. Hydro Scotford also has several clients from the LNG and the fertilizer industries. "Because our location is near the tar sands business, we tend to see a lot of customers dealing with erosion wear in their pumps."

Harris elaborates on the criticality of having a global presence. "The markets and customers we serve are global companies. With the consolidation that is taking place in both the power and the oil and gas industries, many of these companies have a global footprint, so it is important for them to have a reliable aftermarket supplier with a global presence."



Positioning Hydro Inc. for future success through utilization of new technologies

Just in the past year, Dyson shares that Hydro Inc. has not only continued to build internal capabilities on CFD, FEA, and rotordynamic analysis, but have also extended their re-engineering capabilities for parts. "Having the ability to pick up a phone or sit in on a video conference to brainstorm engineering issues is something my engineering team tells me is immeasurable," adds in Bertoli.

For the future, Hydro Inc. aims to continue to adapt and evolve with their rapid manufacturing processes. "This is an area where technology is changing rapidly and Hydro is determined to be at the forefront of this," notes Dyson. "And each Hydro division responds to the customer in a proactive



manner and with new concepts by introducing today's technology to yesterday's pumps," says Arakal.

"And for the future of Hydro," says Harris, "I see our unique niche continuing to grow into the global market because of the need for custom engineered services and the flexibility that Hydro Inc. can provide."

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