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Hydrodemolition of a Wall at an Australian Mine

A defective wall at a Queensland, Australia, mine was removed by two Aquajet hydrocutters, reducing what would have been a six-month job to just four weeks.

One of Australia's leading hydrodemolition specialist contractors, HiTech Industrial Services, has removed a defective section of blade wall from a mine in Mackay, Queensland, using two Aquajet robot cutters, a method that allowed continuous working despite the proximity of a railway line that placed restrictions on conventional demolition methods.

The problem had arisen when an incorrect batch of concrete had been poured for a section of the blade wall measuring 9.3 m high by 9.3 m long and with a thickness of 1 m.

Removal of the section was necessary, but had wire sawing techniques been used, the deployment of the crane would have had to be scheduled around railway shutdowns.

"Using the two Aqua Cutter robots meant that our total time on-site was just four weeks, compared with an estimated six months or more that a crane and wire saw would have required," says HiTech's Operations Manager Damien Turner.

HiTech, which was formed in 1991 specifically to pioneer and specialize in high pressure hydrodemolition and waterjetting services, used an Aqua Cutter 710V Evolution and an Aqua Cutter HVD6000 from Aquajet Systems AB, delivered through Adelaide-based local distributor Metco Ltd.

The 710V Evolution robot was equipped with an 11 m mast to enable it to comfortably reach the top of the wall. It has been designed for all horizontal, vertical, and overhead

operations, having a 3-D positioning of the front power head and giving the operator full freedom to reach all areas and to work in confined areas.

The HVD6000, which has a similar 3-D feature, was fitted with a standard 5 m mast.

"There was a 32,000 volt rail line behind the site that is used to transport coal. The line is just 2 m behind the wall," says Mr. Turner. "We proposed placing an 8 mm thick steel plate behind the wall, which was supported by formwork and props, to prevent flying debris hitting the trains. It also stopped the jet from hitting the power cables.

"Apart from the speed and convenience of the removal rate using hydrodemolition techniques, the idea of the 8 mm safety shield helped us to win the contract. It was important that the trains continued working. A full trainload of coal is valued at A\$3 million so it was important to ensure there were no delays."

Mr. Turner says that although HiTech was onsite for four weeks and working or on standby 24/7, the removal of the full 86 m³ of defective concrete was achieved in just 172 blasting hours.

"There was a good deal of reorganising and other work going on at the site, and so much of our time was spent on active standby," he

said. "The actual work presented no unexpected problems for the Aquajet robots."

The concrete being removed was 40 MPa, with the reinforcing bars being 32 mm diameter with generally between 150 and 200 mm spacing, although in some places the spacing was only 50 mm.

Use of hydrodemolition ensured that the rebar was not damaged in any way while removing the defective concrete.

Mr. Turner says that hydrodemolition in Australia is still a relatively novel concept, but that with the technique proving to be so efficient, acceptance is spreading.

Basic principles of hydrodemolition

The key element of hydrodemolition is to pressurize and widen existing pores and micro cracks in the weakened concrete structure using high pressure water penetration.

Material is easily removed as the built-up pressure exceeds the tensile strength of the damaged or weakened concrete.

In addition to the water pressure, the volume of water is also a contributing factor to the efficiency of the system.

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Get the Most Out of Your Waterjet Cutting System

Waterjet Manufacturer Jet Edge Shares Eco-Friendly and Budget Friendly Tips for Increasing Waterjet Productivity

By Nancy Lauseng, Jet Edge, Inc.

With time and money tighter than ever, waterjet shops around the world are looking for ways to maximize their waterjet systems' productivity and profitability without breaking the bank on capital investments.

Waterjet industry veterans Jeff Schibley and Bradley Schwartz of Jet Edge recently offered some helpful insights on how to increase waterjet productivity and minimize waste without breaking the bank.



Adding multiple cutting heads is the easiest way to increase waterjet productivity. This Jet Edge High Rail Gantry waterjet system has six abrasivejet cutting heads and six pneumatic drills. Courtesy Jet Edge, Inc.

According to Schibley and Schwartz, there are numerous ways to increase waterjet productivity, including X-Stream pressure pumps that can reach up to 90,000 psi (6200 bar), multiple-head systems that can include a dozen or more cutting heads, mirroring programs that can cut large parts twice as fast by using two cutting heads, and nesting software that can maximize parts per sheet or plate. Ancillary equipment also can be added to waterjet systems to increase their productivity, including abrasive removal systems, garnet recycling systems, chiller and closed loop systems, Dual



Waterjet close up. Pacific Ship Repair and Fabrication, Inc., San Diego.

Pressure Valves, height sensors, and pneumatic drills.

All of these productivity enhancements serve an important dual purpose of increasing a waterjet shop's profitability and protecting our planet by minimizing material waste and water and power consumption.

X-Stream Pressure Pumps

For years, 60,000 psi (4100 bar) was the standard operating pressure for most waterjet shops, but in the last five years, X-Stream pressure cutting technology has made a dramatic entrance into the waterjet world. With pres-



Jet Edge's X-Stream waterjet intensifier pumps produce up to 90,000 psi of ultra-high pressure water and support a continuous operating pressure of 75,000 psi. X-Stream pumps can cut up to 50% faster and lower operating costs as much as \$40% compared to traditional 60,000 psi pumps.

Photo courtesy Jet Edge, Inc.

ures exceeding 90,000 psi, X-Stream pressure waterjets can increase cutting speed up to 50%, depending on the material. By cutting faster, X-Stream-powered systems use less power, water and abrasive, reducing operating costs as much as 40%.

"Increasing pressure is where we can see tremendous efficiencies in the abrasive waterjet cutting process," says Schibley, who serves as Jet Edge's Great Lakes regional manager. "By pressurizing to higher pressures, we get faster acceleration of the abrasive and we get more efficiency in the cutting process."

A great example is NASCAR's Michael Waltrip Racing (MWR). MWR has seen tremendous productivity gains since upgrading their waterjet intensifier pump to an X-Stream pressure pump. Since upgrading to X-Stream pressure, MWR has been able to reduce its waterjet operating hours from 60 to 65 hours per week to 40 to 50 hours per week, saving on labor and overhead.

"We've been seeing, across the board, a 35% improvement in cutting speed, plus we are using about 25% less garnet abrasive, and we have reduced our costs by 30%," says Nick Hughes, MWR's technical director.

"As an example, our spindles, which are one of our more complicated steering parts and cut from 2" 4140 steel, used to take 50-55 minutes to cut at 60,000 psi. Now we are cutting them in 30-44 minutes. Before we got the waterjet, it used to take three

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Get the Most Out of Your Waterjet Cutting System, from page 4

or four hours to rough cut them on a band saw. I also should note that about the same time we upgraded our pump, we changed suppliers for our spindle blanks. They use a much harder material that requires a slower cutting time. The X-Stream offset the increased cutting time.

"Another good example of a reduction in machining time would be our upper control arm plates that attach our front suspension arms to the chassis. These are cut from 1.5" thick steel and took about 1 hour and 25 minutes to cut two with the double heads and the old 60KSI pump. We can now cut two in about one hour with the double heads and the 90KSI pump."

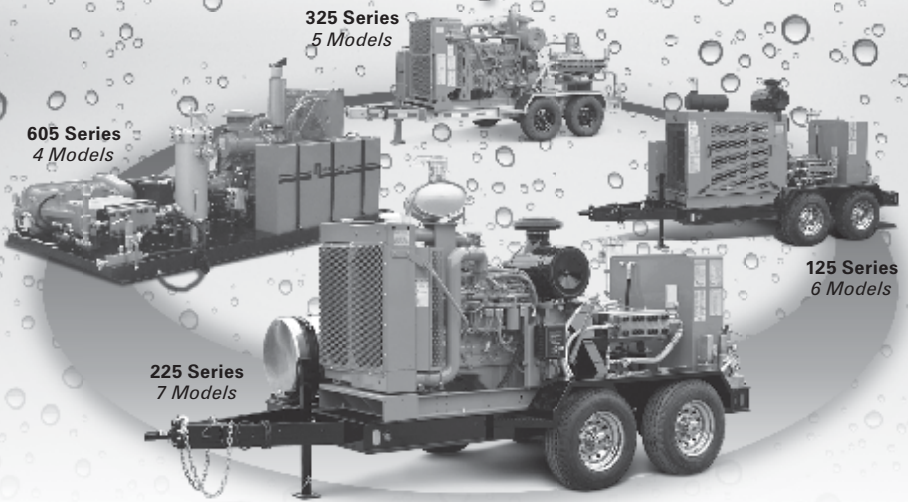
How to Select the Right Waterjet Pump

But how do you know if an X-Stream pressure pump is right for your shop, and how do you determine what horsepower of pump your shop needs?

Before investing in a waterjet system, ask the waterjet manufacturer to perform a test cut, Schibley advises. Most waterjet manufacturers provide free test cuts using material supplied by the customer. The test will help you determine how many cutting heads are necessary to reach a desired throughput and how much horsepower is required to supply the proper amount of water to each cutting head. It also will determine the most efficient orifice/nozzle combination, pressure and abrasive feed rate for a given application.

"We cut the part to determine how much energy is required," Schibley

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notes. "As an example, you say, a .010/.030 orifice/nozzle combination at 60,000 psi made my part, but not as fast as I want. Well, I can run two .010/.030 nozzles with a 50 hp pump or I can run four .010/.030 nozzles with a 100 hp pump, or I can run six .010/.030 nozzles with a 150 hp pump. If I'm cutting much over 3/4" thick material, I'm probably going to want to put 50 hp of

energy into that nozzle. I'm going to run at least a .010/.030 at 75,000 psi (5200 bar) or a .015/.045 at 60,000 psi. Depending on the throughput is how we determine the horsepower, so if I run one head, I need 50 hp, if I'm running two heads, I might need 100 hp, if I'm running

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Hydrodemolition Techniques Provide Substantial Time Savings During Removal of Defective Blade Wall at Australian Mine, from page 2

The rate of removal, for example, is dependent on the amount of water directed towards the concrete surface in order to rapidly and continuously pressurize the areas being treated.

This combination of water pressure and flow, together with the controlled kinetic and geometric movements of the robotic equipment, creates the necessary 'effect' criteria for the hydrodemolition process, leaving sound concrete undamaged.

Research into waterjet erosion has shown that the concrete resistance against waterjet removal is dependent on concrete strength, method of finishing the concrete, aggregate size, and the content of steel reinforcement bars.

The lower the concrete strength, the larger the material removal rate that can be achieved due to larger penetration and pressurization of the material.

Additionally, the higher the cement matrix strength, the higher the concrete resistance. This is due to the increased difference in the compressive strength of the construction and the penetration effect of the waterjet pressure, water volume and jet movement.

Surface quality

Hydrodemolition produces an excellent clean surface quality. The pull-off strength, which is an important indicator of the surface structure conditions, exceeds the required 1.5 MPa (N/mm²) value with a 95% reliability.

If the surface is prepared with waterjets, the interfaced zone between the remaining concrete and the new cast overlay very seldom constitutes a plane of weakness.

This compares favorably with a surface prepared with hand-held tools, which results in a higher probability on interface failures at pull-off testing.

With waterjet hydrodemolition, once programmed, the jet moves rapidly and continuously over the selected area for removal. There is no percussive effect on the surface with the waterjet penetrating the deteriorated concrete. Extensive investigations have proven that there is no

modification of the concrete microstructure during the waterjet treatment. Similarly the concrete pore structure is not affected by the waterjet.

The surface geometry achieved after hydrodemolition depends on the type and size of the aggregate. With limestone, for example, the surface is comparatively smooth and characterized by a high degree of fractured aggregate gains.

In contrast, quartzite-containing concrete exhibits an uneven surface and a high amount of undamaged aggregates.

Compared with other removal methods, hydrodemolition generates a very large contact surface between the concrete and applied coating system.

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Indiana Crews Use Vacuum Truck in Grain Silo Rescue

Through a system of ropes and the use of a Vactor truck, they vacuumed up the grain while keeping the man secure.

By Caitlin Huston, Pharos-Tribune, Logansport, IN

Emergency personnel used ropes and a large vacuum to pull a Clymers farmworker from a grain elevator Monday afternoon [August 20, 2012]. The Logansport Fire Department responded to the accident at the 18th Street elevator about 1 p.m. Monday, finding Juan Cadillo, a worker at Duane Dietrich's farm in Clymers, chin-deep in corn.

Through a system of ropes and the use of a Vactor truck from Logansport Municipal Utilities, the multiple agencies vacuumed up the grain while keeping the man secure, and he was later able to crawl to safety.

Dietrich says he was with Cadillo at the elevator when the grain stopped flowing and Cadillo crawled in to fix the problem. Dietrich says the grain suddenly began flowing again, but too quickly.

"It just broke loose, and all at once I realized I had to shut things down," Dietrich says.

Dietrich shut off the grain bin and called 9-1-1.

"I knew we needed some help," Dietrich says.

Logansport Fire Chief Mark Strong says that when firefighters arrived, they could see only the man's head above the corn.

Though the fire department had the option of cutting open the silo, Strong says, they feared an explosion of grain dust. They were also afraid the man would suffocate while they waited.

As they contemplated the options, the Cass County Fire District arrived with a ladder truck, and members from both fire departments secured the man with ropes from the side and from above.

"The two of us worked together to keep him from going any further," says Lt. Rex Danely at the county fire district.

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Then they decided to call LMU, which quickly dispatched its truck to help siphon the grain away from Cadillo.

"It was a life saver," Strong says.

Strong adds that rescuers were helped by the fact that the 70-foot silo was only about a third filled with corn.

Once the corn was cleared, the man was able to crawl out at 2:11 p.m., and the first thing he did was shake hands with Strong.

The Walton Fire Department, Lucerne Fire Department, Cass County Sheriff's Department, Logansport Police Department and Cass County Emergency Management Agency were also on scene.

"They all worked well together in assessing what they needed and getting the gentleman out of the grain bin," says Sheriff Randy Pryor.

Throughout the rescue, the man was breathing and talking with the rescuers.

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FS Solutions Adds New Courses to Online Training Curriculum

Safety and skills training available for professional industrial cleaning contractors

Federal Signal Corporation's Environmental Solutions Group has introduced three new online training courses from FS Solutions to help its professional industrial cleaning contractor customers increase job safety and operational efficiency in a variety of applications.

Offered through FS Solutions' ESG University, the three new online courses include "Maximize Power of Water Jetter through Tip and Hose Selection," "Estimating the Vacuum Job," and "Fundamentals of Hydroexcavating Safety and Skills."

"As experts in the sales, rental, and servicing of high-pressure waterblasting equipment, industrial vacuum equipment, vacuum excavation equipment and sewer cleaning equipment, FS Solutions has the knowledge, insight and resources to develop comprehensive safety and skills training courses to help our customers protect their bottom line – and help their employees minimize risk while enhancing job performance," says Gary Toothe, training manager at FS Solutions. "Instead of attending two or three days of classroom training, our online course offerings allow students to work at their own pace and convenience to remain compliant with OSHA and other industry best practices." FS Solutions' certified instructors are committed to providing the best, most up-to-date training.

"Maximize Power of WaterJetter through Tip and Hose Selection"

A follow-up to the "Fundamentals of Waterblast Theory, Skills and Safety," this course provides an overview of the horsepower formula and how it is used to solve for



pressure, flow and horsepower; the components of tip design; factors affecting tip performance and the unique issues in pipe cleaning, tube cleaning, shot gun cleaning and automatic tool cleaning. The skills covered in this course can also be used to analyze job productions to determine what equipment is required to perform at maximum efficiency.

"Estimating the Vacuum Job"

A follow-up to "Vacuum/Air Moving Fundamentals, Skills and Safety," this course focuses on the basic mathematic and geometric principles in determining volume, square feet and linear feet of objects to be vacuumed. Vacuum estimation stresses cycle times, realistic truck capacities and the above mathematics to enable the student to successfully estimate production times on vacuum jobs. The skills covered in this course can also be used to analyze job production to determine if the job is being performed at maximum efficiency.

"Fundamentals of Hydro-excavating Safety and Skills"

This two-module course covers the unique challenges associated with hydroexcavation, including benefits, safety hazards, proper

operations, identifying and preserving underground utilities, and maximizing productivity with a hydroexcavator.

The structure and content of the online courses provide a flexible training environment for adult learners. The courses include tests that each student must pass with a grade of at least 80 percent before advancing to the next training module.

"FS Solutions offers state-of-the-art training in a variety of venues from online to onsite training," Toothe said. "Our courses can be customized to suit customers' unique market, equipment, application and personnel skill level challenges."

With nearly 100 years of collective experience in industrial vacuum loading, sewer and catch basin cleaning, vacuum excavation and industrial high-pressure waterblasting, FS Solutions offers unsurpassed expertise and a unique breadth of product lines and trusted brands to meet the needs of industrial cleaning contractors and other industry professionals.

For more information about training courses available from FS Solutions, call 800-822-8785, or visit www.fssolutionsgroup.com.

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WJTA-IMCA Board Approves Change to Waterjet Recommended Practices

On September 10, 2012, the WJTA-IMCA Board of Directors approved the addition of new language to section 14.17.1 of the *Recommended Practices for the Use of High Pressure Waterjetting Equipment*. Section 14.17.1 addresses a color coding scheme for pressure hoses. The goal of this recommended practice is to help ensure on-the-job safety by making the various hoses more easily identifiable on sight.

Section 14.17.1 is reprinted below. The new language appears in red.

Pressure hoses are designed for various pressures and could present a safety hazard if not used for the designated working pressure. In order to better identify the pressure in use, it is recommended that the following color code scheme is used for the applicable maximum working pressure:

PSI	Bar		Color
10,000	690	-	Yellow
15,000	1,034	-	Green
20,000	1,379	-	Blue
30,000	2,068	-	Silver
40,000	2,758	-	Orange
55,000	3,792	-	Red

The color scheme should be easily identifiable at least two feet from both hose ends. January 1, 2013, is the effective date for implementation. Abrasion-proof stickers are acceptable in the interim.

If working between pressures in the chart, ensure that all hoses are color coded to indicate the higher maximum rated pressure above the intended working pressure. For example, if the desired working pressure is 12,000 psi, use a hose rated at the next highest pressure.

The new language appears in the latest edition of the *Recommended Practices for the Use of High Pressure Waterjetting Equipment*.

The *Recommended Practices* manual is available from the WJTA-IMCA. To order or obtain more information, contact Peter Wright by email: wjta-imca@wjta.org, telephone: (314)241-1445, or visit www.wjta.org.

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Get the Most Out of Your Waterjet Cutting System, from page 6

three, I might want 150 hp, if I'm running four, I might want 200 hp to feed the proper amount of water to that nozzle.

"We're trying to run as efficient a nozzle setup as we can. In a .010/.030 I can accelerate 0.6 pounds per minute of abrasive at 60,000 psi and I can accelerate 0.7 pounds per minute at 75,000 psi."

Multi-Head Systems

The quickest way to make a waterjet system more productive is to add multiple cutting heads to the system, Schibley notes.

"Look at most successful job shops and what are they running?" Schibley asks. "They are running two heads, three heads, four heads. That's generally because we burden a machine with overhead costs and general and administrative costs (G&A) based on that machine. We don't burden each cutting head, so when we start putting multiple heads on a machine it allows us to prorate our G&A costs over a greater number of parts per cut. So if I have \$50 per hour for G&A costs and I'm running one head and I've got \$37 per hour operating costs, I've got \$87 in costs and I haven't made a machine payment yet in operating that single head. Now if I go to two heads, what happens? If I have a 100hp pump and I'm operating two nozzles, I still have my \$37 to run each one of them, but my cost per part dropped by \$25 because I was able to prorate my overhead costs."

Mirroring – Cut Large Parts Twice as Fast

Adding optional mirroring capabilities to a waterjet system can be a huge time saver, says Schwartz, who serves as Jet Edge's Pacific regional manager.

Mirroring capabilities allow waterjet operators to cut large parts simultaneously with two cutting heads, doubling productivity and freeing the machine and labor for other projects.



Precision Waterjet Concepts equipped their Jet Edge waterjet system with mirroring capabilities. This allows them to cut large parts twice as fast by cutting the part with two cutting heads.
Photo courtesy Precision Waterjet Concepts

Precision Waterjet Concepts of Pequot Lakes, Minnesota, is one example of a shop that is saving time and money by mirroring parts with a Jet Edge Mid Rail Gantry system that also features programmable head spacing.

"We cut a lot of extremely large parts and we can save a lot of time and money by mirroring," says Joe Quaal, Precision Waterjet Concepts president. "Fifty percent of the time, we are mirroring. The programmable head spacing also saves us 10-15 minutes per job on set up time."

Nesting Software – Maximizes Material

"A good nesting program is very important for any system, especially if you are looking at material that costs quite a lot and you're doing high volume," Schwartz says. "You can look at the efficiency of the nesting software and just conservatively see a 5% savings. Nesting will give you a huge amount of cost savings in a year."

Nesting software saves money and increases productivity by maximizing the amount of parts that can be cut out of a piece of material. This reduces waste and minimizes the downtime during loading and unloading of parts.

Nesting software can also be used to tab parts to prevent them from falling into the waterjet tank or to keep them together in a sheet of material so the entire sheet can be removed at once, speeding up loading and unloading.

Arro-Jet Engineering and Consulting of Camarillo, Calif., offered a dramatic example of how nesting can help shops save money and pass the savings on to customers.

One of Arro-Jet's customers needed to have parts cut from 20 84"X40" 3" thick titanium plates valued at



Nesting software maximizes the quantity of parts that can be cut out of a piece of material, reducing material waste and speeding production. It also can tab parts to prevent them from falling into the waterjet tank or keep them together on a plate for faster loading and unloading. Courtesy Jet Edge, Inc.

(continued on page 18)

Just how easily and precisely does PurePulse™ waterjet technology strip chrome plating and other hard coatings?



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Get the Most Out of Your Waterjet Cutting System, from page 16

\$50,000 a plate. The customer expected to get nine parts out of each plate, but Arro-Jet tightly nested the parts and cut 10 parts from each plate. The customer received 20 extra parts that they had not expected.

Pneumatic Drill

Pneumatic drills are an inexpensive accessory that can speed up waterjet processing time by pre-drilling material that is sensitive to delamination, such as polycarbonate or fiberglass, Schwartz explains.

The programming sequence will first run the drill, pre-drilling at desired locations, then switch to the waterjet to finish the part. This increases productivity by allowing waterjet operators to quickly pre-drill and cut sensitive material without using a slower low-pressure pierce or long lead in cut to the part. It also allows shops to cut materials that they may have avoided in the past due to delamination concerns.



Pneumatic drills allow waterjet operators to pre-drill materials that are sensitive to delamination prior to waterjet cutting them. Courtesy Jet Edge, Inc.

Height Sensing

If you have ever had to shut down your system to replace a nozzle after slamming into uneven material or a tipped up part, you know why a contact height sensor is an invaluable waterjet accessory.

According to Schwartz, contact height sensors allow waterjet operators to overcome significant fluctuations in material flatness by maintaining a constant automatic

Height sensors allow waterjet operators to maintain a constant automatic standoff between the nozzle and the material, despite fluctuations in the material's flatness. This allows them to achieve optimum cut quality, tolerance, taper and speed without having to monitor the standoff. Courtesy Jet Edge, Inc.



standoff from the material. As a result, waterjet operators achieve optimum cut quality, tolerance, taper, and speed without having to monitor the standoff. Height sensors also can be programmed to avoid previously cut parts that may have tipped up after being cut. Height sensors are also a necessity in running underwater cutting operations since the operator cannot monitor the "stand-off distance" between the nozzle and material, Schwartz adds.

Dual Pressure Valves

For shops whose work requires them to frequently raise and lower pressure or do frequent low pressure pierces, Jet Edge's patented Dual Pressure Valve® offers a cost-effective solution to reducing wear and tear on pump components and reducing downtime.



"In dual pressure cutting, we want the ability to peck our way through material ever so gently with lower pressure water, and then as we get that hole in there, we can increase the pressure," Schibley explains. "In the case of glass, if I impact glass with 60,000 psi water, I'm going to get chips just like I'd get on my windshield when I'm driving behind a gravel truck and it throws a stone at me. It's going to take a big chunk out of it. I don't want to make that big chunk. I want to cut gently through there. Non-tempered glass cuts fine as long as we cut through from an edge, so we peck a tiny hole in there and now we can boost to high pressure.

Jet Edge's patented Dual Pressure Valve® allows waterjet operators to control water pressure independent of the waterjet pump. This increases productivity and reduces wear and tear on pump components. The Dual Pressure Valve can be used with any manufacturer's waterjet system. Courtesy Jet Edge.

"But when you take a waterjet pump and you ramp that pressure up and down, what occurs? Number one, when we ramp and load up and down on the electric motor it causes it to use more electricity. It also causes us to fatigue our high pressure components faster. High pressure components are designed to be at maximum pressure. They like being at 60,000 psi, or 75,000 psi, or 40,000 psi, whatever your system runs at. What they don't like is being at that pressure and suddenly being depressurized. It's that action that creates fatigue."

(continued on page 21)

Indiana Crews Use Vacuum Truck in Grain Silo Rescue, from page 10

"He was able to keep his cool," Strong says.

Though firefighters are trained on grain silo rescues, Danely says this was the first time he'd had to use that training.

"I've been in the fire service for almost 25 years, and I've heard of them, I've trained for it, but I've never been on the scene for something like this," Danely says.

Danely says he was glad Cadillo was able to make it out alive.

"Any time there's somebody stuck in a corn or bean silo, there's rarely a good turnout," he says.

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Safety Alert – Wheel Chocks



In a recent incident involving an improperly stabilized vacuum truck, workers were injured when the vacuum truck began rolling during a cleaning project.

Remember to always **apply the parking brakes** and **fully chock all wheels** when setting up a vacuum truck for use or service.

Refer to the *WJTA-IMCA Recommended Practices for the Use of Industrial Vacuum Equipment* for more safety recommendations. To order, visit www.wjta.org, email: wjta-imca@wjta.org, or call: 314-241-1445.

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Terydon, Inc.

The Blast Bag Company, Inc.

TurtleSkin WaterArmor by Warwick

See pictures on page 22

Jet Edge Waterjets Featured on Special #55 Toyota Camry at Sylvania 300 in Loudon, N.H.

Brian Vickers Drives #55 to Top 10 Finish

Waterjet manufacturer Jet Edge was featured prominently on Michael Waltrip Racing's (MWR's) famous #55 car at the Sylvania 300 NASCAR® Sprint Cup Series race September 23 at New Hampshire Motor Speedway.

Brian Vickers drove the #55 Jet Edge/Freightliner Toyota Camry to a ninth place finish. The MWR driver qualified fourth, but was forced to start from the back of the field after an engine change. Vickers quickly climbed into the top 25 and raced in 14th during caution-flag pit stops with 120 laps remaining. Crew Chief Rodney Childers opted for a two-tire stop and Vickers returned to the track in the lead. The No. 55 held the lead for five laps and held his position in the top five. After a four-tire stop under green, Vickers restarted the race in seventh with 23 laps remaining and held on for the ninth-place finish. It marked the fourth top-10 finish in seven races for Vickers at MWR.

Michael Waltrip Racing ran the special #55 as a salute to sponsors Jet Edge and Freightliner. MWR uses a 90KSI Jet Edge waterjet system to cut more than 1,000 parts for each of its racecars. MWR builds about 56 cars per year, including the #55 Aaron's Dream Machine Toyota Camry driven by Michael Waltrip, Mark Martin, and Brian Vickers; the #56 NAPA Auto Parts Toyota Camry driven by Martin Truex Jr.; and the #15 5-hour ENERGY Toyota Camry driven by Clint Bowyer.

MWR has two drivers in the Chase for the Sprint Cup this fall, Clint



Bowyer and Martin Truex, Jr. It is MWR's first Chase appearance.

"It's so exciting to see MWR in the Chase after all their years of hard work," says Jet Edge President Jude Lague. "We've been with them since the early days when they were struggling, and we always knew they would be successful because they have the grit, confidence, and teamwork of champions. We are proud to be associated with MWR and wish them the best of luck this championship season."

Get the Most Out of Your Waterjet Cutting System, from page 18

To overcome the wear and tear of dual pressure cutting, Jet Edge introduced a patented Dual Pressure Valve® that can be used with any waterjet system, Schibley explains. The valve allows waterjet operators to raise and lower water pressure independent of the waterjet pump.

"This allows us to reduce the pressure at the cutting head without having to ramp our pump up and down," Schibley explains. "So all the plumbing out to the cutting head gets to stay at what it likes to be at and what it's designed to be at, ultra-high pressure, and it reduces wear and tear."

Creative Edge Master Shop, Inc. of Fairfield, Iowa, has seen a tremendous increase in productivity and reduced maintenance costs and downtime since adding a Dual Pressure Valve.

The waterjet fabrication and design company runs nine waterjet systems more than 80 hours a week, cutting intricate pieces of mostly stone and tile for custom flooring designs that can be seen in fine homes, commercial buildings and civic institutions around the world.

The nature of such delicate cutting requires Creative Edge's waterjet operators to alter high-low water-pressure settings as many as 200 times a day, a process that can take 10 seconds per cycle and put tremendous strain on the intensifier pump that powers the waterjet, as well as the connecting high-pressure hoses.

"Ten seconds times 200 cycles per shift adds up to significant production gains, especially when you consider that we cut many small parts that may only take 30 seconds in actual profile cut time," says Mark McCabe, Creative Edge engineer. "If you're doing lots of high-low cycles, you are stressing every component. On one machine, I was replacing blown lines every week. Every week, I would have a leak somewhere and would have to spend \$200 an hour for maintenance."

Since installing the Jet Edge Dual Pressure Valve, McCabe has not had to service the offending intensifier pump, and has increased productivity by eliminating downtime between high-low cycles.

"That Dual Pressure Valve is amazing," he says. "It has just been a trooper. Nobody else has anything comparable on the market. It saves wear and tear on all the components."

Green Accessories – Closed Loop Filtration and Garnet Recycling

Waterjet has always been considered an eco-friendly technology, but it's becoming even greener as more shops invest in green accessories that are not only good for the environment, but also good for their bottom line.

Closed-loop filtration systems are perhaps the greenest of all waterjet accessories. They allow waterjet shops to filter, cool, and recycle water, eliminating the need to dump it down the drain. A must in desert environments, closed-loop filtration systems are now required by many municipalities and for ISO-9000 certification. They also provide a great option for waterjet shops that do not have a floor drain.

"When I have a closed loop filtration system and chiller, I am taking the water after the cutting process, giving it a three-stage cleaning and providing a filtration level of 50 parts per million, total dissolved solids," Schwartz explains. "I'm chilling the water as well and providing that back to the cutting loop of the pump, re-pressurizing it and completing the loop. Reusing the water and zero discharge to the environment is what it's all about."

(continued on page 23)



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Live Demonstrations at the 2012 WJTA-IMCA Expo, from page 20

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Get the Most Out of Your Waterjet Cutting System, from page 21

Many waterjet shops are insisting on closed-loop filtration for environmental reasons. Among them is Twelve Strike Bowling Services of Long Beach, California.

"We are in the desert here and water is a huge issue," explains Twelve Strike's owner Ron Richmond. "I also did not want to be dumping water down the drain. I do not have an environmental issue here and I do not want one."

Precision Waterjet Concepts has devised an ingenious system that uses their waterjet chiller to heat their Northern Minnesota waterjet shop with hot water generated by its five waterjet systems. Winters in Minnesota can get very cold, so this has resulted in tremendous savings on their heating bill.

Garnet is by far the costliest operational expense of a waterjet system. Abrasive waterjets go through 0.5 to 1.5 pounds (0.25 to 0.68 Kg) per minute of the abrasive material, which can cost 20 cents to more than 40 cents per pound, depending on grade. The good news is, garnet can be effectively recycled.

Garnett Gerke of G.O. H2O of Edmonton, Alberta, Canada, uses a garnet abrasive recycling system to reclaim 50-70 percent of his garnet. He mixes used garnet with new garnet and has seen no reduction in cutting speed. He recovered the cost of his recycling system in one year and now uses it to recycle abrasive from two waterjet machines.

Gerke explains that he had to come up with a way to remove the garnet from his tank and reuse it to minimize downtime for shoveling out the tank and reduce disposal costs.

"In our first two years [cutting 24/7], we had to shut down every seven to 10 days to clean out the tank," Gerke recalls. "We would be down 8-12 hours. We had a sump truck come in and pump out the tank and haul the garnet off to the landfill. The first year, he charged \$400 per visit. Two years later, it was three times the cost."



G.O. H2O of Edmonton, Alberta, Canada, is successfully recycling garnet abrasive by mixing the recycled abrasive with new abrasive. They have not noticed a reduction in cutting speed. Their abrasive recycling system paid for itself within one year. Courtesy G.O. H2O.

If you have high disposal costs in your area, it can definitely be worth it to recycle the material, Schwartz notes.

"Only about 30% of the abrasive is actually doing the work and the rest is going right into your tank," Schwartz explains. "You can reclaim this."

Abrasive Removal Systems – Stop Shoveling!

Abrasive removal systems are a must for high-volume shops. They all but eliminate the need to shut down production to shovel out a tank. Shops with an abrasive

(continued on page 24)

Dues Increase for International Members

WJTA-IMCA announces a dues increase, effective 2013, for international members: \$500 Corporate, \$100 Individual, and \$75 Corporate Individual. This increase is intended solely to offset increasing postage costs to international destinations.

WJTA-IMCA has continued to grow, remaining healthy and financially strong, with only two dues increases since its inception 30 years ago. We greatly value the continuing support of all of our members. If you have any questions about membership dues please contact the WJTA-IMCA administrative office.

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Michael Waltrip Racing's Jet Edge waterjet system features a closed loop filtration system and abrasive removal system. The closed loop system allows them to filter, chill and reuse their water so they do not have to dump it down the drain. The abrasive removal system increases productivity by minimizing downtime for tank cleanout. A 24/7 shop without an abrasive removal system might have to shovel out their waterjet tank once a week, while a 24/7 shop with an abrasive removal system might have to shovel out their waterjet tank only once a year. Courtesy Jet Edge, Inc.

removal system might only have to shovel their tank out once a year to remove large material drops, versus several times a month if they do not have an abrasive removal system and run 24/7.

"Abrasive removal systems will allow for 24-hour operation seven days a week by pulling the abrasive out of the tank and discharging it into a receptacle," Schwartz explains. "It keeps the tank stirred up and keeps the abrasive suspended and in the water and will bring it out through a centrifugal separator and discharge into a tank and into a bag filter. When that fills up, you just pull the full bag out and put an empty bag in."

Abrasive removal systems can be added to existing waterjet systems.

But Most Importantly, Maintain Your System

You can equip your waterjet shop with all the latest productivity accessories and the biggest pump on the market, but if you do not maintain your waterjet system properly, your productivity could suddenly drop to zero. The most important thing you can do to maximize productivity is to maintain your system properly.

"I had a customer who never changed their hydraulic oil or hydraulic filter," Schibley recalls. "They had over 4,000 hours on the original hydraulic fluid and all of a sudden, their pump said 'I don't want to run today.' The hydraulic oil broke down over a period of time and it gummed up the directional control valve. Had they been changing their filters regularly and changing their hydraulic oil as recommended, they would not have had

hydraulic oil breakdown and a clogged directional control valve, which stopped the process from working.

"Maintenance is important. All high pressure waterjet systems require maintenance. It's just the nature of the animal. The more we maintain that pump and do what the manufacturer recommends, the lower the cost of operation becomes. You hear some people complain about how high the cost of maintenance is; well ultra-high pressure only becomes high maintenance if you neglect it. If you allow a weep hole to continue weeping water out until it

cuts a groove in that high pressure component, now you have to spend a lot of time lapping it out or you have to replace that component. In order to minimize the cost of ownership and minimize the maintenance and downtime, proper maintenance is tremendously important. That is why Jet

Edge offers free training for the life of your machine. We want you to be trained and we want you to know how to operate your system properly and in turn you're going to get the greatest life out of your components."

For more tips on how to get the most out of your ultra-high pressure waterjet system, visit www.jetedge.com or email sales@jetedge.com.



Metal service center JACQUET has equipped all nine of their Jet Edge waterjet systems with abrasive removal, chilling, and closed loop filtration to maximize productivity. Shown here is the 21'x13' Jet Edge Mid Rail Gantry at JACQUET Southeast in Charlotte. Courtesy Jet Edge, Inc.

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Exhibitors at the 2012 WJTA-IMCA Expo, from page 25



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Carolina Equipment & Supply (CESCO)
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Gardner Denver Water Jetting Systems, Inc.
General Pump
Giant Industries, Inc.
Global Vacuum Systems, Inc.
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Hammelmann Corp.
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High Pressure Equipment Co.
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Inotek Safety
JGB Enterprises, Inc.
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Terydon, Inc.
The Blast Bag Company, Inc.
TurtleSkin WaterArmor by Warwick
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Under Pressure Systems, Inc.
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OMAX® Corporation Intelli-VISOR™ System Monitoring Package

OMAX Corporation's new Intelli-VISOR System Monitoring Package works to increase the efficiency and uptime of any OMAX JetMachining Center by connecting operation controls with machine maintenance.

As a function of OMAX's new Intelli-MAX® 18 control software, Intelli-VISOR



OMAX® Corporation's Intelli-VISOR™ System Monitoring Package works to increase the efficiency and uptime of any OMAX JetMachining® Center by connecting operation controls with machine maintenance.

utilizes an industry-standard Modbus® communications protocol and features a streamlined software interface and robust machine sensor network to capture and share real-time data from different components across the OMAX JetMachining Center. As a result, operators can effectively monitor and analyze important machining parameters, including cutting activity, pump pressure and abrasive levels, as well as keep track of machine hours and maintenance schedules.

Through its custom-programmed parameters, or Modules, Intelli-VISOR enables the operator to configure exactly what aspect of the machine is to be monitored

and the action the machine is to initiate if an operation is about to fail or has failed, including pausing the machine to protect the cutting head and workpiece and administering an alert notification.

Further adding to its high adaptability, Intelli-VISOR can alert the operator of an issue at the machine control screen, and with an Internet connection can distribute an alert notice to up to four people via email or SMS text messaging.

OMAX Corporation designs all of its accessories to be retrofittable to its existing machine models. However, in order to benefit from the Intelli-VISOR package, users must first upgrade to the latest Intelli-MAX 18 Software, which is free to existing OMAX customers. As with all of its machines and accessories, OMAX backs its new Intelli-MAX 18 Software and Intelli-VISOR system Monitoring Package with unparalleled customer support.

For more information, visit www.omax.com or call 800-838-0343.

Comments Solicited on Improvements to Recommended Practices

Comments are solicited regarding improvements to the WJTA-IMCA publications, *Recommended Practices for the Use of High Pressure Waterjetting Equipment* and *Recommended Practices for the Use of Industrial Vacuum Equipment*. While both publications are reviewed periodically at the WJTA-IMCA conferences and throughout the year, your comments and suggestions for improving the publications are invited and welcome anytime.

Please address your comments and suggestions to: WJTA-IMCA, 906 Olive Street, Suite 1200, St. Louis, MO 63101-1448, phone: (314)241-1445, fax: (314) 241-1449, email: wjta-imca@wjta.org. Please specify which publication you are commenting on.

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Guzzler Unveils Updated Guzzler CL Vacuum Loader

Customer input key to operation enhancements and improved air routing, filtration and maintenance

Guzzler Manufacturing has introduced an updated Guzzler Classic (CL) industrial vacuum loader featuring enhanced operator ergonomics and improved air routing, filtration and maintenance. Guzzler displayed the new machine at the WJTA-IMCA 2012 Expo.

“The backbone of the Guzzler industrial vacuum loader line, the Guzzler Classic has a great reputation in the field as a powerful and efficient industrial vacuum loader that cleans and recovers solids and dry bulk powders, liquids, slurries and thick sludge from hard to reach areas,” says Tony Fuller, director of industrial sales for Guzzler Manufacturing. “Our customers are constantly challenged to get jobs done faster and do more with less, and they, in turn, challenged us to advance the design of this workhorse even further.”

Engineered from the ground up with input from customers, the updated industrial vacuum loader retains the signature look, performance, durability and reliability of the previous Guzzler CL model to tackle the most demanding wet/dry industrial cleaning applications. Maintaining the 18-cubic-yard capacity, the updated Guzzler CL features a new longer body for improved material separation.

“With the modified Guzzler CL, we’ve given the operator easier and safer access to the top of the truck,” says Ben Schmitt, product manager for Guzzler Manufacturing, referring to the standard ladder, catwalk and railing.

“Our updated Guzzler CL has improved air-routing and material separation, while maintaining the lowest pressure drop of any vacuum loader in its class,” Schmitt says.

The bag house and cyclone cleanout access doors have been enlarged for easier access. The transition to the dump tubes has been widened for more effective dumping. The linear wall connection from the cyclone to the bag house has been increased in size, providing a more efficient airflow.

The new, rounded transition from debris body to cyclone allows the future addition of valving to isolate the tank for adding pressure offload systems. The new, full-opening door option further enhances the offload capabilities.

“Giving our customers more time on the job is one of our top priorities, and that’s why our customers have come to expect easy maintenance and exceptional serviceability from their Guzzler vacuum loaders,” Schmitt says.

Upholding the Guzzler tradition of easy maintenance, the remodeled Guzzler CL design provides easier access to the drive line components that require greasing. The hydraulic and electrical components previously mounted on the boom have been relocated to eye level for easier access. A full-opening door for more thorough clean dumping is available as an option. The length of seal on the rear door has been reduced and the sealing surface has been widened to prevent leakage. The wiring for the debris body is harnessed, function stamped and color coded.

“For vacuum loader operators working in harsh industrial environments to manage the efficient movement, storage, transport, packaging or drumming of materials and hazardous wastes, safety is always a primary concern,” Schmitt says.



The new emergency stop circuitry on the updated Guzzler CL cuts power to disable the vacuum and hydraulics and throttles the chassis engine down to idle. For improved module grounding, the debris body, sub-frame and chassis are fully connected via a copper grounding strap, while an improved grounding cable clamp grounds the module components to their grounding location.

Previously available as options, the remodeled Guzzler CL is equipped with standard LED lighting and a top loading port.

For more information, visit www.guzzler.com or call 800-627-3171.

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Pat DeBusk Joins Vacuum Truck Rentals

Pat DeBusk has joined the Vacuum Truck Rentals (VTR) organization. DeBusk has had a long history in the industrial cleaning industry starting with his family owned company, Hydro Services. He served as president of Hydro Services until an investment group bought the company and renamed it Hydro Chem. He left Hydro Chem after serving in a variety of senior management positions and worked in a number of similar positions at DeBusk Industrial and Inland Industrial before joining VTR. DeBusk has been extremely active in the WJTA-IMCA and will be focusing primarily in the Gulf Coast markets for VTR.



Pat DeBusk

SPIR STAR Ltd. Announces the Promotion of Ronnie Allen

SPIR STAR Ltd. has announced the promotion of Ronnie Allen to sales representative. Allen joined SPIR STAR in 2007, starting in production and rapidly advancing to a hose assembly technician. With Allen's extensive knowledge of SPIR STAR's product line, he was promoted to sales representative earlier this year.



Ronnie Allen

As a sales representative, Allen's primary duty is to uphold SPIR STAR's high level of customer service. Allen's commitment to this goal makes him a great fit for the SPIR STAR sales team.

Sean Baker Joins Stutes Enterprises

Sean Baker is the new Gulf Coast sales manager for Stutes Enterprises. Baker will aid and assist the rental and sales efforts of all Stutes locations as well as developing new territories throughout North America. In addition to new sales development, Baker will serve as liaison to Stutes' vendors as well as product development.



Sean Baker



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Baker brings 20 years of plant maintenance experience and contractor relationships to Stutes Enterprises. He began his career in the torque and tension field with Torque Systems where he managed their rental fleet. He later spent time as an extractor operator pulling bundles on turnarounds with Repcon. In 2001 Baker became the southwest region aftermarket sales representative at NLB. Building on these experiences, Baker came to be president of Peinemann USA where he grew their business nearly ten-fold in five years.

Baker has literally grown up in this industry, and he has developed strong relationships among the contractors and equipment manufacturers within. Stutes is pleased to bring Baker on board and trust he will add value to Stute's clientele and product offering for many years to come.

Please contact Sean Baker for more information regarding Stutes Enterprise Systems, Inc. products and services. He will be based out of the La Porte, Texas, corporate office location, 524 Hwy. 146 S., La Porte Texas, 77571, office number: 281-842-9990, toll free: 866-362-9332, email: sean@aquablasters.com.

New High Pressure Power Packs Designed for Hydrodemolition Applications

Aquajet Systems AB has introduced a new range of state-of-the-art, containerized, high pressure Power Packs designed specifically for hydrodemolition applications, including Power Pack 400, Power Pack 400 Ecosilence, Power Pack 700 and Power Pack 700 Ecosilence. The Power Packs are housed in a clean and rigid designed 23 ft container equipped with a 'roll off' frame for easy on/off truck loading and transportation.

The Ecosilence versions feature acoustic surface treatment, thick sound absorbing insulation and seals for doors and hatches, all of which contribute to reducing noise levels to less than half that of conventional power packs – meeting an average 57.5 dB (Power Pack 400 Ecosilence) noise output.

Both versions of the 'top of the range' Power Pack 700 feature a working pressure of up to 1000 bar (14,500 psi) with a power input of 473 kW (645 hp). The Power Pack 400 Ecosilence has a maximum working pressure of 850 bar (12,300 psi) and a power input of 276 kW (375 hp). The standard high pressure Power Pack 400 unit offers an increased maximum working pressure of 1150 bar (16,700 psi).

Reduced fuel consumption

The Ecosilence versions offer a substantial reduction in fuel consumption. Its efficient design ensures that just 70 L/h is used when producing a water output of, for example, 185 L/min at 1000 bar utilizing just 73% capacity. Maximum output is 261 L/min at 1000 bar.

Ventilation systems for both Ecosilence models feature sound

baffles that exchange air inside the container twice a minute.

An advanced heat exchange system is also fitted to the diesel engine instead of a traditional cooler during working operations. Double exhaust silencers with a 4.5 m damping length are heat protected and also mounted inside the container.

The power packs diesel engine and high pressure pump for all versions are assembled complete on a heavy-duty welded steel frame with a built-in 925 litre (244 gal) diesel tank in the Power Pack 700 models and an 820 litre (217 gal) tank in the Power Pack 400's.

A bag type filter prevents dirt particles from entering the system and pump. A booster pump is also mounted between the stainless steel water tank and high pressure pump to ensure an adequate inlet pressure.

The base frame is installed in the container on vibration isolators. All pipes and fittings are in stainless steel and non-corrosive materials.

Automatically operated hydraulic roof hatches for engine cooling air and an automatic locking system are incorporated into the container roof for the high pressure non-EcoSilence versions.

The Power Pack's REVO control system has been developed as safe and user friendly with easily understood parameters set on the graphic color display, incorporating multilanguage operator's instructions.



A remote control system with a pressure on/off switch and emergency stop button is included. When the remote control is switched to the off position, the system will de-pressurize the pump and high pressure hose and reduce the engine speed.

Hard wired remote control is standard with radio control optionally available.

The new Power Pack models also incorporate a built-in work bench complete with a vice and storage room for spare parts. Movable heavy hooks are also fitted for storing high pressure hoses and cables.

The work area also includes space to house the for the AQUA CUTTER robot for storage, particularly during transportation.

The latest generation of Power Packs from Aquajet Systems ensure easy handling, cost effective transportation, and set-up times and require a minimum of space on-site.

For more information, visit www.aquajet.se or email: aquajet@aquajet.se.

Jet Edge Modular Waterjet Pump Ideal for Tight Spaces, Shipboard Use

36,000 PSI Waterjet Pump Features Three Modules For Easy Portability

Jet Edge, Inc. has introduced the iP36-50 Modular Waterjet Intensifier Pump. Designed for ease of portability, the 36KSI (2500 bar), 50hp waterjet pump features a modular design that makes it easy to move into tight spaces, such as small passageways, ship engine rooms and ballast tanks.

The Jet Edge iP36-50 Modular Waterjet Intensifier Pump produces up to 1.8 gpm (6.8 L/m) of 36KSI (2500 bar) ultra-high pressure (UHP) water for precision cutting, cleaning and surface preparation applications. It includes three modules with lifting



eyes. The modules can be stacked to save space during operation or storage. The pump's hydraulic module contains the electric motor, hydraulic pump, hydraulic fluid supply, a plate style heat exchanger, and related

(continued on page 37)

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Federal Signal to Open New FS Solutions Location in Highland, Indiana

Federal Signal Corporation's Environmental Solutions Group has announced the opening of a new FS Solutions rental center in Highland, Indiana. Located at 9932 Express Drive, the new FS Solutions center is part of the company's expansion of FS Solutions locations and service offerings in key areas throughout North America. As the seventh FS Solutions rental center, the Highland location will stock high performance parts and accessories for Federal Signal's Jetstream brand of waterblasters, along with other makes and models of waterblasters. Customers will also be able to rent the full line of Jetstream waterblasters and tools, as well as StoneAge tooling for specialized waterblast cleaning applications.

"The new FS Solutions center in Highland represents our commitment to increasing product, service, training and rental offerings to industrial cleaning contractors and other industry professionals in Northwest Indiana – and

all states west into the Great Plains," says Tony Fuller, director of industrial sales for FS Solutions. "This new location will provide the rentals, used equipment, parts, accessories and training our customers need to perform their jobs more profitably. In addition, as an authorized StoneAge repair facility, FS Solutions can keep our customers' StoneAge tools in top condition."

Jetstream rentals come with all the advantages associated with the Jetstream name—ease of use, ease of maintenance and the ability to convert from 10K to 40K PSI pressures. Customers can either pick up the unit they need, or FS Solutions can deliver to the job site. Waterblasting safety training can be provided by FS Solutions with every Jetstream rental.

"Customers look to FS Solutions' sales staff and service training techni-



cians for equipment evaluations, expert recommendations and solutions to the unique challenges of their particular cleaning applications," Fuller says.

To assist customers with their waterblast needs, the new FS Solutions center will be staffed by knowledgeable, highly-trained employees possessing a wealth of industrial cleaning experience. The new center will provide genuine OEM parts and factory-trained, certified technicians to offer recommendations and resolutions to any challenges customers may present.

Additional FS Solutions centers are located in Birmingham, Alabama; Gonzales, Louisiana; Houston, Texas; Lexington, South Carolina; Long Beach, California; Streator, Illinois and Toledo, Ohio.

To contact the FS Solutions center in Highland, Indiana, please call 219/924-3180.

New NLB Branch Serves Chicago and Upper Midwest

NLB Corp. has opened a regional branch facility in Crown Point, Indiana, to provide customers in the Chicago area and the upper midwest with waterjet pump units, accessories, training, and service.

The Crown Point branch, about 15 miles south of Gary off I-65, has NLB pump units and accessories for rent, sale and lease. It also offers genuine NLB replacement parts, factory-trained service, and training in safety and operating procedures.

The new NLB branch is located at 1075 Breuckman Drive, Crown Point, IN 46307; telephone (219) 662-6800; fax (219) 662-1400. It is managed by



Craig Houghtaling, who has more than 20 years of waterjet industry experience.

The addition of the Indiana facility expands NLB's network of convenient regional branch locations to six. The others are in Michigan, Texas, Louisiana, California, and New Jersey.

WJTA-IMCA ListServ

A Free Service To WJTA-IMCA Members

The **WJTA-IMCA**ListServ enables you to take advantage of prompt email interaction with your colleagues. **WJTA-IMCA**ListServ is a **FREE** email broadcast system developed by WJTA-IMCA to help you communicate and network with other waterjet and industrial cleaning and vacuuming professionals.

Participation is limited to WJTA-IMCA members in good standing. You must sign up in order to participate. To sign up for the **WJTA-IMCA**ListServ, contact Pete at the WJTA-IMCA office by email: wjta-imca@wjta.org, phone: 314-241-1445, or fax: 314-241-1449.

WJTA-IMCA 2013 Conference and Expo

September 9-11, 2013 • George R. Brown Convention Center • Houston, Texas, USA

The WJTA-IMCA 2013 Conference and Expo

The largest Conference devoted exclusively to high and ultra high pressure waterjet and abrasive waterjet technology and related equipment and services.

The WJTA-IMCA 2013 Conference and Expo will include:

- **Educational Program**

- **Boot Camp** for contractors and end users to learn new business ideas, safety recommendations, and tips and techniques to improve workforce productivity and stay competitive in today's marketplace.

- **Waterjet Technology: Basics and Beyond Pre-Conference Workshop**

- **High-Tech Products and Equipment Displays** by leading industry manufacturers and suppliers from around the world.
- **Live Demonstrations** of precision waterjet cutting, equipment/system conversions, industrial vacuuming and offloading, rotary line cleaning, sewer line cleaning, tank/vessel cleaning, tube and bundle lancing, waterblasting, waterjet gun operations, and waterjet pumps.
- **Emerging Technology, New Applications** - The world's leading engineers and researchers will present papers that address new developments in applications, equipment, and procedures. The *WJTA-IMCA 2013 Conference and Expo Proceedings* will be available on CD-ROM.



Announcement and Call for Papers

The WJTA-IMCA invites you to submit an abstract for the WJTA-IMCA 2013 Conference and Expo. This program offers an excellent opportunity to highlight your work and research, network with the world's top waterjet professionals, and see and learn about new and innovative tools and equipment.

New techniques and applications are being developed and current ones are being improved. Waterjet technology, now being used in nearly all types of industry — manufacturing, mining, construction, concrete, stone, aerospace, engineering, oil and gas, power plants, process, and medical industries — continues to expand at a rapid pace.

Commercial and academic authors are encouraged to submit titles and abstracts for consideration. To submit an abstract(s), please complete the abstract submission form on page 34, attach a copy of your abstract(s), and mail to: Conference Coordinator, WJTA-IMCA, 906 Olive Street, Suite 1200, Saint Louis, MO 63101-1448, USA, or fax to: (314)241-1449. You can also go to www.wjta.org, fill out the abstract submission form online and email it along with a copy of the abstract to wjta-imca@wjta.org. **The deadline date for submission of abstracts is December 31, 2012.**

An Abstract Review Committee will review the abstracts. Authors will be advised beginning **February 28, 2013**, regarding the decision of the Abstract Review Committee.

The **WJTA-IMCA 2013 Conference and Expo** will focus, from a practical and scientific viewpoint, on the most up-to-date advances in waterjetting equipment, techniques, and applications. The areas to be addressed include, but are not limited to:

- Abrasives, Water, and the Environment
- Advanced Industrial Applications
- Advances in High Pressure Technology and Equipment
- Automotive and Aerospace Applications
- Cleaning and Coating Removal
- Components and Systems
- Construction and Non-Manufacturing Applications
- Contractor Applications and Processes
- Demilitarization, including Removal of Land Mines (Demining)
- Drilling Applications
- Excavation, Tunneling, and Mining Applications
- Hydrodemolition
- Hydro-excavation and Vacuum Excavation
- Jet Mechanics and Visualization
- Jet-Material Interaction
- Manufacturing Processes
- Market and Future Needs
- Novel Jets and Applications
- Process Modeling and Control Studies
- Rock Cutting
- Safety, Training, and Environmental Protection
- Vacuum Equipment

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Abstract Submission Form

For each paper to be submitted for consideration, please complete this form, **attach a copy of the abstract**, and mail, fax or email to WJTA-IMCA by **December 31, 2012**. Authors will be advised beginning **February 28, 2013**, regarding the decision of the Abstract Review Committee.

Paper Information

Paper Title _____

Authors _____

Please check the category that best describes the general nature of your paper.

☐ Applications ☐ Research

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Mail completed form and abstract, **NO LATER THAN DECEMBER 31, 2012**, to: Conference Coordinator, WJTA-IMCA, 906 Olive Street, Suite 1200, Saint Louis, MO 63101-1448, USA, or go to www.wjta.org, fill out the abstract submission form online and email it along with a copy of the abstract to wjta-imca@wjta.org.

*September 9 is reserved for pre-conference workshop.

Key words

(Check the boxes that apply to your paper):

Type of Study

- ☐ Modeling
- ☐ Experimental study
- ☐ Hardware development
- ☐ Contractor case study
- ☐ Manufacturing case study
- ☐ Software development
- ☐ Economic analysis
- ☐ Legal and Safety
- ☐ Other _____

Process

- ☐ Cutting
- ☐ Drilling
- ☐ Surface preparation
- ☐ Cleaning
- ☐ Stripping
- ☐ Safety
- ☐ Milling
- ☐ Jet-assisted
- ☐ Other _____

Related Industry

- ☐ Generic
- ☐ Shipyard
- ☐ Mining
- ☐ Construction
- ☐ Aerospace/Aircraft
- ☐ Automotive
- ☐ Oil/Gas/Refinery
- ☐ Quarrying
- ☐ Other _____

Environment

- ☐ Field work
- ☐ Factory work
- ☐ Submerged
- ☐ Nuclear
- ☐ Demilitarization
- ☐ Offshore
- ☐ Other _____

Material

- ☐ Metal
- ☐ Rock
- ☐ Glass
- ☐ Ceramic
- ☐ Composite
- ☐ Concrete
- ☐ Other _____

Jets

- ☐ Waterjet
- ☐ Abrasive-waterjet
- ☐ Abrasive suspension jet
- ☐ Pulsed
- ☐ Cavitation
- ☐ Polymer Jets
- ☐ Other _____

Important Information for Authors

- Papers must be original. Papers must not have been published elsewhere or be pending publication.
- **Publication Fee.** A nonrefundable publication fee of \$229 is required. One publication fee is good for 2 (two) papers. Paper(s) will **NOT** be included in the Proceedings if the publication fee is not paid. The presenting author can use this publication fee as their registration fee, equal to a Full Conference registrant. Any additional authors can also register as a Full Conference registrant at the discounted price of \$229. (A member Full Conference registration is equal to \$299.) If an author wants to attend the Pre-Conference workshop (Combo registration), they will need to pay the difference at the applicable member or nonmember price.
- Papers and presentations must be in English. Papers should be no longer than 15 printed pages. A "Paper Guide" containing directions for submitting papers will be forwarded to you after your abstract is accepted. Papers that do not follow the "Guide" will be returned to the author(s) for correction(s) or charged a fee for revisions made by the WJTA-IMCA office.
- Papers should be free of commercialism.
- Papers should be submitted as a Word file and a PDF file.



Dates to Remember

December 31, 2012Abstracts Due
February 28, 2013Papers Accepted
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OMAX® Corporation Announces Major Headquarters Expansion

OMAX Corporation has announced the largest expansion of its campus since opening the Kent, Washington, facility in 1999, adding a new 22,000-squarefoot building that will extend OMAX's training, research and development, and engineering efforts.

The company has experienced significant growth over the past several years, making the expansion necessary. OMAX Corporation was recently named, for the second time, to Inc. Magazine's 500/5000 list of the fastest-growing private companies in America for achieving 21 percent business growth between 2008 and 2011.

According to Dr. John Cheung, CEO of OMAX Corporation, such growth

can be attributed in part to the company's 2009 launch of its cost-effective MAXIEM® JetCutting® Center Series, which makes abrasive waterjet technology more accessible. Another key growth contributor is the OMAX team's commitment to continuously developing and supporting new and improved technologies that meet the diverse and ever-changing needs of manufacturers worldwide.

The building expansion allows for a new dedicated training space, including a lab area, where OMAX sales representatives, distributors and end-users can gain the highest levels of understanding and retention of the world's most advanced abrasive waterjet technology. The expansion will also increase the company's research and development and engineering ca-

pacities, allowing for better support of existing solutions and faster, more efficient development of new machines and accessories.

The company plans to complete the building expansion in October, at which point the entire OMAX campus in Kent will encompass 130,000 square feet of space spread across three buildings.

OMAX® Boosts Customer Support in Europe and Other International Markets

OMAX Corporation is responding to the growing demand for its prod-

(continued on page 38)



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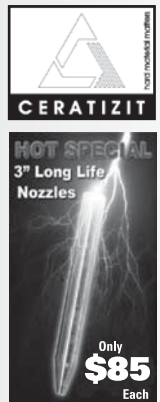


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Hughes Pumps Ultrabar 10EC

The Ultrabar 10EC Ultra High Pressure Zone 2 Offshore Unit is one of the most compact UHP units on the market, measuring 1.8 m by 1 m wide by 1.5 m high and weighing only 1100 kg. It is designed for spot blasting, beam and general surface preparation. A gun reaction force of less than 70 N (15 lb) makes this machine ideal for areas where access, such as behind pipe work, is difficult.



The low gun reaction force is ideal for where access is difficult.

Specialist Danish offshore equipment company Pieter Mouritsen A/S uses the Ultrabar 10EC for surface preparation projects on oil and gas rigs throughout the North Sea's Danish oil and gas fields.

Managing Director Pieter Mouritsen says, "Our sister company, Fire Protect A/S, is a specialist in onshore and offshore application of passive fire protection. Using the Ultrabar 10 units for surface preparation puts us in a strong position to provide the very best solutions for the protection of crew, valuable equipment or steel structures in areas at risk of fire."

The ATEX compliant Ultrabar 10EC unit develops 8.6 lpm at 2100 bar, is Zone 1 or 2 EEx nA T3 electric motor driven, suitable for use from a 63-amp socket, and comes mounted in a compact EN12079/DNV 2.7-1 offshore crash frame.

The Hughes Pumps Ultrabar 10EC is one of a range of high pressure positive displacement plunger pumps and water jetting equipment, designed for heavy duty cleaning and cutting at pressures to 2,750 bar (40,000 psi) and power ratings to 375 kW (500 hp). Options available include diesel engine or electric motor drive, trailer or skid mounted, with variants to suit any specific requirements plus a full range of accessories. For more information, visit www.hughes-pumps.co.uk, email: sales@hughes-pumps.co.uk, or call: +44 (0)1903 892358.



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Jet Edge Modular Waterjet Pump Ideal for Tight Spaces, Shipboard Use, from page 31

components to produce the hydraulic power to operate the intensifier. The hydraulic module also has an adjustment to set the hydraulic pressure that controls the ultra-high pressure. The pump's water module contains the intensifier, attenuator, bleed down valve, water filters, and related components to produce the UHP water. The electrical module contains the electrical components to operate the electric motor and intensifier. The electrical module also issues control signals and monitors sensor signals. The modules are linked together by hydraulic hoses and electrical cables which allows for separation of the modules from each other to a distance of 10 feet (3m).

Jet Edge offers a wide range of waterjet pumps, including 30-280hp waterjet pumps in 36KSI, 60KSI and 90KSI models, electric and diesel. Jet Edge also manufactures precision waterjet cutting systems, mobile waterjet cutters, UHP surface preparation equipment and waterjet parts. Jet Edge waterjets are made in U.S.A.

For more information, visit www.jetedge.com, email sales@jetedge.com, call 800-JET-EDGE (538-3343) or 763-497-8700.

OMAX® Corporation Announces Major Headquarters Expansion, from page 36

ucts and services in Europe and other international markets by enhancing its global distribution and support network.

The company now holds close business partnerships with distributors in 50 countries, including 12 European distributors. These collaborations increase the availability of OMAX Corporation's premium OMAX and versatile MAXIEM® waterjet machines around the world, as well as utilize the distributors' highly trained support and field technicians to engage OMAX and MAXIEM customers on emerging technology and solution ideas for boosting productivity and profitability. Additionally, OMAX has its own technical support team members located in Europe, Canada, and Central America, with plans on locating more technical support employees in India and Asia in the near future.

According to Steve Ulmer, vice president of international sales for

OMAX Corporation, the company is committed to expanding its presence in Europe and other countries through the continuous addition of new distribution partners. OMAX Corporation recently named German-Gulf its new distributor for Saudi Arabia, Qatar, Oman, and United Arab Emirates.

"We take great care in selecting our distribution partners, looking at only those companies that have proven success in selling machine tools and high marks for customer support," Ulmer notes.

OMAX Corporation recently overhauled its corporate web site, www.omas.com.

omas.com, to improve communications with its international customers. The site's content is currently available in English, Swedish, Portuguese, French, Spanish, Polish, German, Hindi, Russian, Korean and Chinese, with plans to expand into more languages in the future.

To locate a specific regional distributor within the company's expansive global service and support network, please visit <http://www.omas.com/sales/international>.

For more information on OMAX products and accessories, call 253-872-2300 or visit www.omas.com.

Visit these WJTA-IMCA Members at FABTECH 2012

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