

Hughes Shows Flare in Oil and Gas Tests



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The Importance of Water Quality

By Benjamin Massara, Marketing Manager, WARDJet

You can't spell waterjet without 'water.' Yet many people ignore the importance of water quality and temperature in a well-functioning waterjet cutting system. Water can have a tremendous effect on the life of your waterjet components, including the pump, seals, nozzles, and others. Learn how to save money by controlling water quality and temperature to extend the life of your waterjet parts.

Total Dissolved Solids

The first hurdle in water quality is to filter out impurities before they can reach the high pressure line or cutting head. Impurities in water are measured in parts per million, or ppm, and consist of dissolved and suspended solids. The total dissolved solids (TDS) in average American tap water ranges anywhere from 140-400 ppm, with 500 ppm considered unsafe for human consumption.

The quality of the water supplied to the intensifier pump can directly influence the service life of waterjet components. A high concentration of TDS causes accelerated wear of any components that come in contact with the high pressure water because of the increased abrasiveness of the water from the TDS.

Although it would seem logical that zero parts per million is the desired quality water for your waterjet, it is actually counterproductive to remove all impurities from your water. Pure water (H₂O) is considered 'the universal solvent' and its presence in your waterjet can cause major issues including metal pitting and other damage. Instead, most waterjet experts recommend aiming for low total dissolved solids in your water, with 60-70 ppm of total dissolved solids optimal.

Reverse osmosis (RO) and deionization (DI) units are available as add-ons for waterjet owners interested in regulating their total dissolved solids. There are many different brands of RO and DI systems on the market and your waterjet manufacturer can recommend which will work best with your machine. Many manufacturers also offer closed-loop systems, like the WARDJet WRS-3000 water recycler, which uses the same water over and over again. Typically, these systems have built-in water treatment to manage TDS.

Suspended Solids

In addition to the concern for total dissolved solids, water must be filtered for suspended solids. These are solids in water that can be trapped by a filter, whereas dissolved solids would pass through a filter. Suspended solids constitute a wide variety of material,

including silt, decaying plant matter, industrial wastes, etc.

Suspended solids can also cause shortened pump life as well as difficulty with seals and nozzles. Also, if suspended solids make it into the high pressure stream, they can act as an abrasive and damage high pressure equipment. There are both pre-filtration and final filters designed for this purpose, depending on the size of the particle that needs to be removed. These filters are located inside of the pump prior to the intensifier and can be easily changed by hand. Generally, the pump Programmable Logic Controller (PLC) will notify you when it is time to replace a clogged final filter.

pH Level

Water pH is just as important as total dissolved solids and suspended

(continued on page 4)

Fatal Injury During High Pressure Cleaning Project

According to a report on the British Water Jetting Association website, a contractor was fatally injured on April 17, 2014, during high pressure cleaning of a heat exchanger tube bundle at the Donges Refinery in France. The report states that the connection failed between the gun and flexible hose.

WJTA-IMCA has reached out to Total, the facility owner, to request a copy of the final report on the incident.

Share your learnings and help keep the industry safe with WJTA-IMCA's voluntary incident reporting web form. Online at www.wjta.org under "Resources," you can submit an anonymous report. Help us improve safety together.

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Centura Oil Downhole Casing and Pipe Cutting System

Centura Oil Inc., a Minnesota-based waterjet service contractor to the oil, gas and mining industries, has developed a unique downhole casing and pipe cutting system that can fit inside pipes as small as 2 inches ID (51 mm) and cut multiple layers of grouted casing in a single pass with a 55K psi (3800 bar) abrasive waterjet.

Operable in hazardous environments, Centura Oil's CenJet 90® casing and pipe cutting system is designed especially for oil, gas and mining applications, including plug



Four layers of casing were jet cut six inches below the surface casing at 30.5 feet.

and abandon operations. Its cutting process does not exceed 140°F (60°C), minimizing the chance of ignition.

The CenJet 90 is powered by a 55K psi, 200 hp Jet Edge waterjet intensifier pump and features a modified Jet Edge Permalign abrasivejet cutting head that is coupled to coiled steel tubing or conventional threaded rods. The system, which is capable of cutting 16-inch (406 mm) thick steel, is deployed into the pipe or casing and cuts from the inside. It can perform cuts up to 300 feet (91 m) from the surface and can cut at any angle, horizontal, vertical and even overhead. The CenJet 90 uses only four gallons (15 L) of water and one pound (.45 kg)

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The Importance of Water Quality, from page 2

solids. If your inlet water has a low pH, its acidic properties can damage the high pressure tubing, which would cause it to be replaced more often than necessary. Similarly, if your inlet water has a high pH, its basic properties can cause scaly buildup of calcium carbonate on the inside of high pressure tubing. This calcium carbonate buildup will eventually break off, move through the high pressure tubing gaining momentum, and damage the nozzle orifice. Water used in a waterjet cutting system should ideally have a pH level of 7, which is neither acidic nor basic. The addition of a water softener to regulate the pH level of your inlet water is an easy fix that is strongly recommended by waterjet technicians.

Water Temperature

Water temperature also has a big effect on the life of waterjet components. Water entering the high-pressure pumps must be kept cold (below 70°F) or else it can affect seal longevity. Water right out of the tap may already

be cool enough for some companies, but if not, manufacturers often suggest a chiller system.

Environmental factors like rainfall and temperature of the climate can also affect the initial water temperature. In this case, waterjet professionals often recommend a closed-loop system with chillers to keep everything at a constant temperature.

Opposing Theory

WARDJet has found that the use of a good quality water softener in conjunction with a 0.2 absolute final filter to be successful for treatment of water for the intensifier. Since 2003, WARDJet has installed hundreds of waterjet systems using this setup without any shortened component life. In the worst case scenario, if seal life does not live up to your expectations, then a DI or RO system can be installed.

Currently, WARDJet is the only manufacturer of waterjet systems that includes a 0.2 final filter standard with all pumps. The WARDJet Parts

Department is also able to supply consumable 0.2 final filters for use on nearly any brand of pump.

Conclusion

As part of installation planning, a water quality analysis should be performed by a commercial company that specializes in water conditioning equipment. The minimum information you should obtain from this analysis is TDS, silica content and pH value. Each waterjet manufacturer has different requirements for water quality. Check with your manufacturer to obtain the specifications for your particular machine.

As many waterjet technicians will attest, one of the best ways to improve machine life is to invest in water analysis and then incorporate the recommended water conditioning system into your machine. Although water quality should be analyzed by all waterjet owners, there are also instances where treatment is not necessary to have a well-functioning waterjet system. ■

Jetstream's hands-free waterblast solutions deliver improved operator safety, productivity

Provides broadest offering of hands-free cleaning solutions and training in the industry

Jetstream of Houston, LLP, a leading manufacturer of industrial high-pressure waterblasting equipment, parts and accessories, continues to invest and grow in providing industrial cleaning contractors with the most productive hands-free solutions available. By partnering with the leading manufacturers of automated tools and robotics – including Aquajet Systems, Peinemann, StoneAge and Terydon, Jetstream offers the industry's best total equipment solutions for such hands-free, high-pressure waterblasting applications as hydrodemolition, pipe cleaning, surface cleaning and preparation, tank and vessel cleaning and tube cleaning.

"These strategic partnerships enhance Jetstream's product offering and provide customers with greater access to category-leading specialty equipment and accessories that enhance operator safety and productivity and help contractors perform their jobs more profitably," said Joe Varca, business unit director at Jetstream. "The collaboration with these well-known automation partners, combined with our nine FS Solutions authorized retail support and rental centers across the United States, enables Jetstream to better meet our customers' needs for total hands-free solutions, including the purchase and/or rental of Jetstream waterblasting equipment, parts, accessories, training and service support."


With the goal of reducing the number of workplace fatalities and injuries related to improper use of high-pressure waterblasting and providing a safer environment for equipment operators, Jetstream is developing and delivering hands-free waterblasting solutions and training to industrial cleaning contractors. As part of the initiative, Jetstream's experts consult with customers, visiting job sites to identify the right hands-free waterblasting solutions for the location.

"Jetstream and FS Solutions can demo, sell and rent the broadest offering of hands-free cleaning solutions in the industry, including automated and robotic tools and accessories." Varca said.



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Hughes Shows Flare in Oil and Gas Tests

Hughes Pumps has supplied a precision, high pressure pumping system for use at ejector solutions specialists Transvac's new state-of-the-art UK test facility. This pumping system is used to simulate high-pressure liquid energy available in oil and gas fields during the company's functional validation tests for flare ejectors used in the oil and gas, nuclear and process industries.

Traditionally the oil and gas industry has disposed of waste and surplus gas by flaring to the atmosphere. This process is becoming increasingly unacceptable as the industry moves towards eliminating the emission of greenhouse gases into the atmosphere, while simultaneously conserving energy. Therefore, demand for equipment that can safely and economically

compress waste and surplus gas back into the production process is rapidly increasing.

Ejectors are ideally suited to this application because they employ either the available high-pressure gas or liquid energy to entrain and compress waste and surplus gas to a pressure where the gas can be recovered into production or used as fuel gas. Ejectors have no moving parts and require no maintenance, are simple to install as part of the existing pipework system and offer safe, reliable operation.

The Hughes HPS3000 high-pressure pumping system in use at the Transvac test facility delivers a performance of 350 lpm at 250 bar and is fitted with 65 mm solid ceramic plungers for maximum wear resistance and self-



Hughes HPS3000 pumpset installed.

adjusting plunger seals. A stainless steel pump-head delivers a variable flow rate from 116 to 349 lpm at 250 bar. The pump-set, driven by a 160 kW variable speed electric motor, is

(continued on page 27)



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Large-Scale GX-4816 Waterjet Cutting System Installed by WARDJet

WARDJet has completed installation of the largest waterjet cutting system that they have ever built – the GX-4816-5 located in eastern Pennsylvania. Designed to handle heavy duty parts, intricate cuts, and a variety of materials, the GX-4816-5 is a flagship member of the WARDJet G-Series waterjets.

With a cutting envelope of approximately 800 square feet, the GX-4816-5 joins the ranks of the largest waterjet cutting systems in the world. A similar large-scale waterjet was designed and installed by WARDJet in 2013 for the Advanced Manufacturing Research Centre with Boeing in the United Kingdom, which is currently used for aerospace composite research. “We based a lot of the initial design of the

GX-4816-5 from the experience we gained while building the GCM waterjet in the United Kingdom,” remarks Christopher Indermuhle, lead project engineer at WARDJet for both large-scale waterjets. All of WARDJet’s G-Series waterjets are built-to-order and can be designed to accommodate multiple gantries, mill heads, 5-axis cutting heads, and fit almost any space requirement.

The GX-4816-5 waterjet was designed closely with the customer, Greiner Industries of Mount Joy, Pennsylvania. After almost forty years of providing their customers with turnkey services including welding, forming, machining, lifting, and trucking all



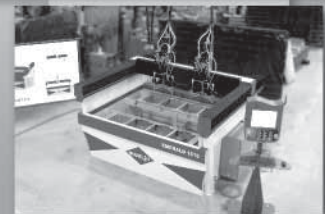
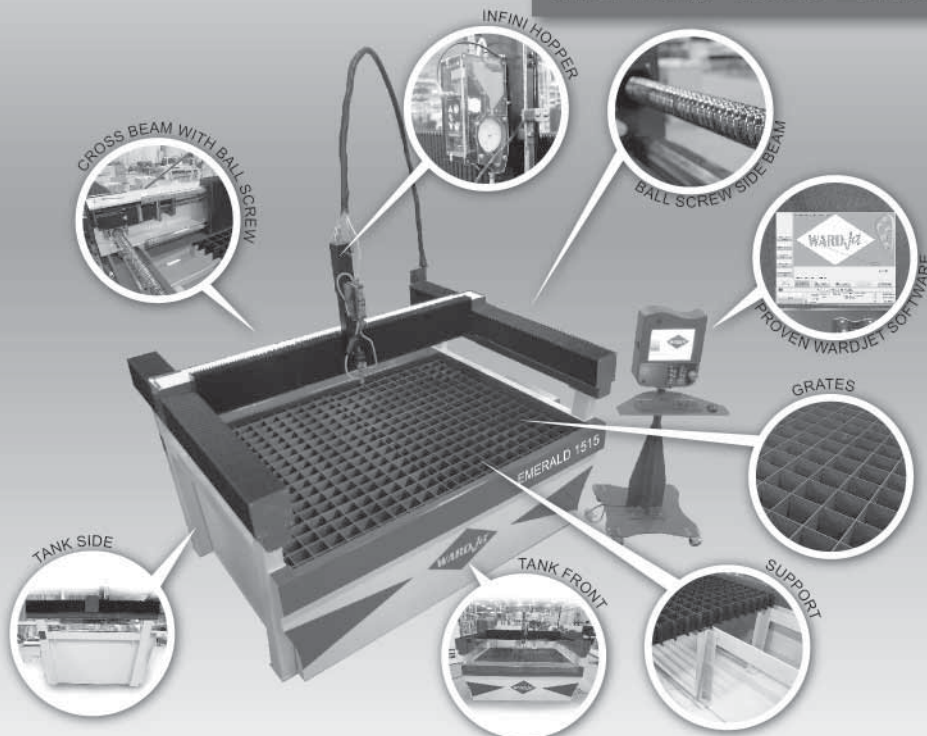
Greiner Industries added on to their existing building to accommodate the mammoth GX-4816-5 waterjet cutting system.

under one roof, Greiner added waterjet cutting to their long list of capabilities. Greiner is known for having jaw-dropping capacity, including a 40-foot press brake and a 160-foot-long

(continued on page 22)

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Retirement of a Sewer Industry Pioneer

Few people work in a single industry for 50 years, and few have as much impact on an industry as Caryl Corporation's Harold Kosova. After 54 years with Caryl and National Power Rodding Corp. (NPRC), Harold retired in May, leaving behind a legacy of innovation in the sewer cleaning industry. His primary focus was on developing practical technologies to make the job easier and safer. By doing so, he created new systems and techniques—from CCTV inspection cameras to sewer grouting—that revolutionized the way infrastructure is inspected and maintained worldwide.

Harold took a job out of college at an electronics supply house before joining National Power Rodding Corp. The Chicago-based sewer cleaning company was founded by Julius Hemmelstein in 1949 with a single truck and later became Caryl Corp. The innovations developed by Harold were a key catalyst in growing the company from a small sewer cleaning provider into one of the largest municipal and industrial contractors in North America.

When the only available technology for cleaning sewers was bucket machines, National Power Rodding built their own mechanical continuous rod rodding machine in the late 1950s. This mechanical technology was then passed to their industrial cleaning division to clean steel mill stove flumes. NPRC's success with this technology took them to countries such as Mexico, Brazil and Colombia to share their cleaning success with steel mills abroad.

In 1960, Harold developed the first camera system for inspecting sewers. At the time, sewer inspection involved sending workers into large diameter pipes and contending with fatigue and the potential presence of hazardous



Harold Kosova

gas. Techniques for inspecting small diameter pipe generally performed poorly. The ability to remotely inspect sewer pipe proved a revolutionary advance in safety and efficiency that is now in everyday use by contractors and municipalities.

After a 35 mm camera modified to take single-frame shots in the sewer proved unreliable, Harold built the camera system late at night after work. He adapted a television camera fed into a closed circuit and housed

in a smaller package, creating the first CCTV sewer inspection unit. He performed the first closed circuit TV inspection of sewers that year, 1960. The new housing was 5½ inches in diameter (14 cm) and 18 inches in length (46 cm), enabling it to inspect 8-inch (20 cm) sewer pipe. The camera system illuminated the sewer with a light bulb designed for use on airport runways and was pulled through the sewers with mechanical rodding machines.

The first video recordings were done on a 1-inch Ampex recorder. When reel-to-reel machines were introduced they provided a major upgrade, and VHS offered another significant improvement, making it even easier to record and store information. The camera's cables were soldered by hand to make them waterproof. The first camera system was housed in a 10-foot trailer and allowed adequate inspection of up to 1,000 ft (305 m) of pipe in an 8-hour day.

(continued on page 25)

Connect with WJTA-IMCA on Social Media

WJTA-IMCA has launched a new social media presence to connect with members and the industry. You'll be able to keep up-to-date on industry and association news and trends, connect with other members, and more.

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- Articles specific to any specialty area
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New, Mobile-Friendly WJTA-IMCA Website with Enhanced Content

WJTA-IMCA has launched a new, mobile-friendly, redesigned website.

Key features of the new site:

- Anonymous Incident/Near Miss Reporting Form
- Research Papers
- Technical Articles
- and more...

Take a look and let us know what you think! New content will continue to be added, so check back for news and updates. To suggest or contribute new content, please contact Peter Wright in the WJTA-IMCA office by email: wjta-imca@wjta.org or phone: 314/241-1445.



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USES and K2 Industrial Services Announce Merger

United States Environmental Services (USES) and K2 Industrial Services has announced the merger of the two prominent, regional service providers, creating the first fully-comprehensive environmental and industrial services company of its kind. The new company will operate coast-to-coast and will continue to be known as United States Environmental Services (USES).

“Through this merger with K2 Industrial Services, the new USES has a larger, national footprint and an impressive range of services that neither company could offer on its own,” says USES CEO Greg Johnson. “Our sweat and know-how will go hand-in-hand with automated technologies and real-time data. Together, we have the size and strength to handle any project – from industrial spaces to the outdoors, on land and at sea.”

With 41 locations around the country, the new USES has over 2,000 employees equipped to complete the growing number of assignments that require great care to protect the environment and comply with environmental regulations. A larger footprint will allow the new USES to reach more clients and serve them more fully, with the goal of becoming the biggest and most comprehensive source for environmental, industrial, and specialty craft services.

“It’s a smart business move to merge these two great companies, because we’ll be stronger and more competitive together,” says David Johnson, the CEO of K2 Industrial Services. “Our shared goal is to win every day, and we are setting our sights on becoming number one in our industry.”

Career development is forefront in the company’s growth strategy. Through the company’s national training center, the new USES provides a path for employees to grow and advance within the organization, while equipping them with key certifications and the skills needed to solve challenging problems.

For decades, USES and K2 have worked in different regions of the country, providing some similar services, as well as some complementary ones that will enhance service offerings to their combined customer base. The new USES offers services in 17 different categories, including industrial cleaning and maintenance, hazardous

material emergency response, oil spill cleanup, industrial coatings, insulation, fireproofing and scaffolding.

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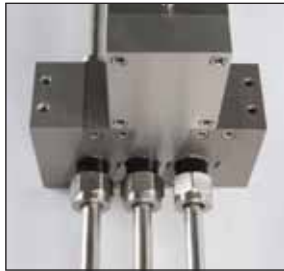
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DERC Salotech Introduces Rigid Lance Tube Cleaning Machines for 1 Up to 5 Lances and More

Since most rotary rigid lance machines operate with fixed gearboxes, they are only suitable for 1, 2 or 3 lances. DERC Salotech is introducing the DERC Modular Lance Rotation Block for 1 up to 5 or more lances.

The DERC Modular Lance Rotation Block is unique because of the small pitch of the rotating lances. Where most of the pitch distance is not less than about 63 mm (2.5"), the engineers of DERC managed to create a pitch distance of no less than 38 mm (1½"). This is a major innovation, which means that the rotary unit with, by example, 5 rotating lances will not be wider than 166 mm (6.5"). This offers huge benefits for the lifetime of the high pressure lances, installation dimensions for cleaning on site and



the system will be easier to handle. This is an innovative design for unique small pitch distance.

The DERC Modular Lance Rotation Block is ideal for new or existing lancing machines or inside bundle cleaners.

The modular design allows the easy and flexible assembly as a single, dual, triple or even a quintuple module. It is suitable for various diameter lances up to a maximum diameter of 14 mm (9/16") and working pressure up to 3000 bar (43500 psi). The Modular Lance Rotation Block is available in air or hydraulic driven version.



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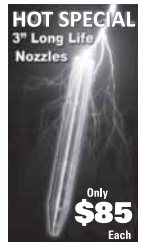
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Ascentium Capital LLC	Maxpro Technologies
Autoclave Engineers/Parker Hannifin	NLB Corp.
BIC Alliance	Newson Gale, Inc.
Blasters, Inc.	Northern Safety & Industrial
CESCO/Aquamiser	PSI Pressure Systems International
CRP Industrial	Parker Hannifin-EPD
Cat Pumps	Peinemann Equipment B.V.
Cleaner Times	Powertrack International Inc.
D&S Professional Services	Presvac Systems
DeBusk Services Group, LLC	Safety Lamp of Houston, Inc.
Diesse Rubber Hoses S.p.A.	SPIR STAR
Dragon Products, Ltd.	Stewart R. Browne Manufacturing Co.
ENZ USA Inc.	StoneAge, Inc.
FS Solutions	Stutes Enterprise Systems, Inc.
Fruitland Manufacturing	Sugino Corp.
GHX Industrial, LLC	Terydon, Inc.
Gamajet, part of the Alfa Laval Group	The Blast Bag Company, Inc.
GapVax, Inc.	Trillium Industrial Services
Gardner Denver Water Jetting Systems, Inc.	US Jetting, Inc.
General Pump	Under Pressure Systems, Inc.
Giant Industries, Inc.	United States Environmental Services
Global Vacuum Systems, Inc.	Vac-Con, Inc.
Guzzler Manufacturing	Vacall
Hammelmann Corp.	Vactor Manufacturing
High Pressure Equipment Co.	Vacuum Truck Rentals, LLC
Hydra-Flex, Inc.	Veolia Environmental Services
JGB Enterprises, Inc.	Warwick Mills, Inc.
Jack Doheny Companies, Inc.	Wilco Supply, LP
Jetstream of Houston, LLP	WOMA Corporation

As of 6-26-14

Live Demos



Tuesday, October 14

Waterblast Track

10:40 a.m.-11:25 a.m.	Mythbusting <i>Bill Shires, StoneAge</i>
11:30 a.m.-12:15 p.m.	Nozzle Selection <i>Bill Shires, StoneAge</i>
12:20 p.m.-1:05 p.m.	Hose Inspection and <i>Jeff Davis, GHX Ind</i>

Vacuum/HX Track

10:35 a.m.-11:35 a.m.	Hydroexcavation <i>Neil McLean, Hydro</i>
11:40 a.m.-1:40 p.m.	Power of Vacuum <i>Phil Stein</i>
1:10 p.m.-1:40 p.m.	Grounding and Bonding <i>Mike O'Brien, News</i>

Wednesday, October 15

11:00 a.m.-11:45 a.m.	Robotics in Hydroexcavation <i>Patrik Andersson, A</i>
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Preliminary Schedule of Events

Monday, October 13, 2014

Setup for Exhibits and Live Demonstrations

Tuesday, October 14, 2014

8:00 a.m.-10:30 a.m.
Live Demonstrations
10:30 a.m.-5:00 p.m.
Exhibit Hall Open
10:30 a.m.-3:00 p.m.
Boot Camp

3:00 p.m.-5:00 p.m.
Reception in Exhibit Hall

Wednesday, October 15, 2014

8:00 a.m.-10:30 a.m.
Live Demonstrations
10:30 a.m.-1:00 p.m.
Exhibit Hall Open
11:00 a.m.-11:45 a.m.
Boot Camp

Safety



October 13-15, 2014

Ernest N. Morial Convention Center
New Orleans, Louisiana

Exhibits



Training



Hot Camp Preliminary Schedule

Combined Track

1:45 p.m.-3:00 p.m.

Panel Discussion with End Users and Service Providers

Hands Free Hydroblasting

Featuring panelists from *BASF Corporation, Dow Chemical, DuPont, HydroChem, PSC Industrial Services, Veolia Environmental Services.*

Moderated by *Kathy Krupp, The Dow Chemical Company.*

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Expo Group Hotels

Astor Crowne Plaza - New Orleans French Quarter

The Astor Crowne Plaza, 739 Canal Street at Bourbon Street, is a classic New Orleans-style hotel in the French Quarter. The room rate is \$189 single/double occupancy. For reservations, use group block code **WJT** to **register online at www.wjta.org**, or call (888)696-4806 or (504)962-0500 and ask for the WaterJet Technology Association group rate.

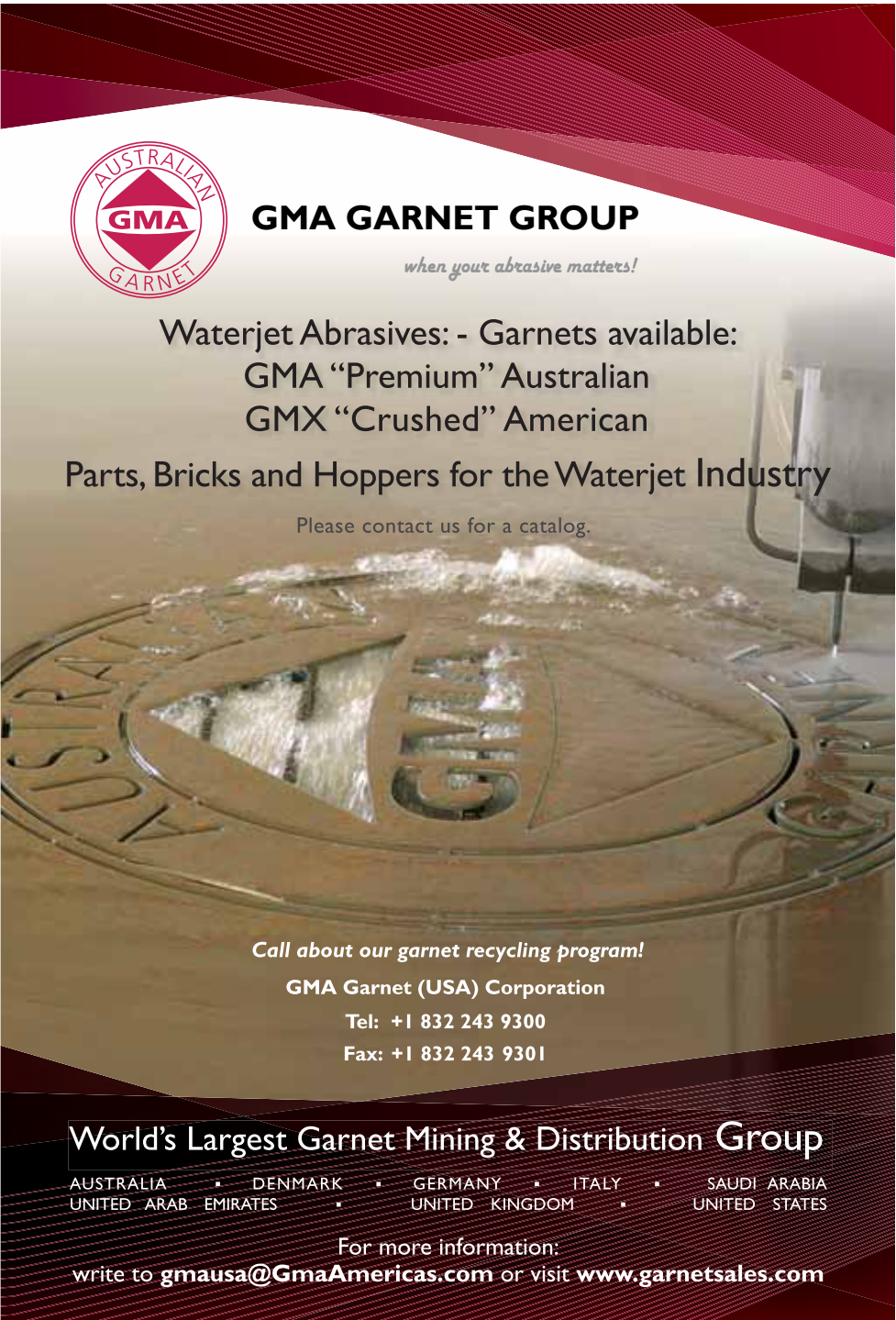
Thursday, September 18, 2014, is the deadline for guaranteed room availability. Reservations received after September 18 will be confirmed on a space-available basis. Rooms may still be available after September 18, but not necessarily at the group rate.


Note: The Astor Crowne Plaza is sold out for the date of Saturday, October 11.

Hampton Inn & Suites - New Orleans Convention Center

Located in New Orleans' Warehouse District across the street from the convention center, the Hampton Inn & Suites is at 1201 Convention Center Boulevard. The room rate is \$215 single/\$225 double occupancy. Reserve your room online at www.wjta.org, or call (866)311-1200 or (504)566-9990 and request a reservation under the **WaterJet Technology Association** room block, coded **WJT** in the system.

Thursday, September 11, 2014, is the deadline for guaranteed room availability. Reser-



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ervations received after September 11 will be confirmed on a space-available basis. Rooms may still be available after September 11, but not necessarily at the rate listed above.

Jet News is published by the WaterJet Technology Association (WJTA)-Industrial & Municipal Cleaning Association (IMCA) and is a benefit of membership in the Association.

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Jetstream Appoints Sean Baker as Automation Applications Specialist

Jetstream of Houston, LLP, has announced the appointment of Sean Baker as automation applications specialist. In this new role, Baker will lead the company's hands-free automation solutions efforts and will consult directly with Jetstream customers to identify appropriate hands-free waterblasting solutions to match their applications and job environments.

Baker's appointment is part of a broader initiative by Jetstream to further enhance operator safety, productivity and efficiency by providing cleaning contractors with the best hands-free waterblasting tools and training available. Jetstream's hands-free automation solutions use the equipment of leading manufacturers, including Aquajet Systems, Peinemann, StoneAge and Terydon. By partnering with these manufacturers, Jetstream offers customers category-leading specialty equipment, automated and robotic tools and accessories.

"As Jetstream's resident expert on everything hands-free, Sean is responsible for formulating the ideal hands-free high-pressure waterblasting solutions for our industrial cleaning customers, coordinating product demonstrations in the field and working with our FS Solutions rental centers to develop and provide hands-free operation training to customers," says Joe Varca, business unit director at Jetstream.

With more than 20 years of industry experience, Baker has an intimate understanding of the industrial cleaning environment and the unique demands of industrial cleaning contractors. Prior to joining Jetstream, Baker was responsible for the repair, training and troubleshooting of automated waterblast tooling at Peinemann USA. He also worked at NLB Corp., where he provided pump rental and parts sales support.



Sean Baker, Jetstream's new automation applications specialist, has an intimate understanding of the industrial cleaning environment and the unique demands of industrial cleaning contractors.



Jetstream has partnered with manufacturers, like Aquajet Systems, to offer customers category-leading specialty equipment, automated and robotic tools and accessories. The Aquajet Cutter 710 robot is ideal for hydrodemolition work on roads, bridges and runways.



Jetstream's hands-free waterblasting solutions cover a variety of applications, including cleaning tanks, reactors and other large vessels.

"Having worked extensively with waterblast contractors to develop hands-free solutions for safer, more efficient cleaning processes, I'm honored to have the opportunity to help advance Jetstream's commitment to hands-free automated operations by delivering better, safer and faster



Baker helps Jetstream's customers identify appropriate hands-free waterblasting solutions, such as bundle cleaning systems for cleaning heat exchangers, evaporators, condensers and similar tube bundles.



Jetstream is committed to further enhancing operator safety, productivity and efficiency by providing cleaning contractors with the best hands-free waterblasting tools for a variety of applications, including cleaning conveyors, outsides of tube bundles, walls and other surfaces.



Jetstream's Baker coordinates product demonstrations in the field and works with Jetstream's FS Solutions rental centers to develop and provide hands-free operation training for an array of products, including equipment used for high-pressure cleaning of tunnels and other flat surfaces.

cleaning solutions to our customers," Baker says.

For more information about Jetstream's hands-free waterblasting solutions, call 800/231-8192, or visit www.waterblast.com.

Centura Oil Downhole Casing and Pipe Cutting System, from page 4

of garnet abrasive per minute. Garnet is a natural mineral that can normally be disposed of in a landfill. The effluent created by the waterjet cutting process is circulated to the surface using formation water, treated water in strata prone to swelling, or nitrogen for an explosion-proof environment. The returns and cuttings are handled in accordance with industry standards.

Centura Oil originally developed the CenJet 90 as an environmentally friendly downhole waterjet cutting system for stimulating oil and gas well production at depths of 4000+ feet (1219 m). It modified the system for casing and pipe cutting for a recently completed project at a uranium mine. During this 2.5 year project, Centura Oil staff worked 2,100 feet (640 m) underground and successfully cut hundreds of pipes and grouted casings at distances up to 300 feet, many at a 70° angle.

Centura Oil's worldwide services include waterjet well recompletion and production enhancement, well plug and abandonment,

and mobile waterjet cutting. The company also sells its CenJet 90 systems under a licensing agreement.

For more information, visit www.centuraoil.com or www.jetedge.com. ■

Free Utility Calculator App Available From Terydon

Terydon's **free** utility calculator is the first mobile app designed as a tool to specifically complement the waterjetting industry. In the field or in the office, Terydon's utility calculator delivers quick solutions including orifice size, flow, pressure and more at the touch of a button. The mobile app is available for Android, Blackberry and Apple based interfaces.



For more information, contact Terydon by email: sales@terrydon.com or telephone: (330)879-2448.



The hydraulic cylinders on the drill supporting the cutting head bled down while cutting causing this spiral effect.



Very small casing sever and slot cut, 300 feet deep.



Various used cutting heads, 4-inch OD to less than 2-inch OD.



Jet Edge pump 2,000 feet below surface in a mine.



Three layers of casing cut at 300 feet deep recovered after over-coring.



Jet cutting using polymer enhanced circulation aids in carrying returns to the surface.

All photos courtesy of Centura Oil Inc.

New Accessories for the Woma Jetty

An extensive range of accessories is now available for the remotely operated robot "Woma Jetty." The new accessories are matched to the machine and cover a wide range of applications. These accessories are suitable for cleaning large and small areas safely and efficiently.

All water tools are easy to mount on the adapter plate of the Woma Jetty, which is located on the front of its arm for easy access.

A short version of the system consisting of lance support and pipe is available for use in areas where space is limited. This allows the Woma Jetty to also be used in very confined spaces, which was previously rarely possible due to a lack of freedom of movement. The long version of the lance support is used in areas that are difficult to access and located further away and obviates the need for strenuous manual work, e.g. on decks. The support is connected with lance pipe and standard nozzles or – for greater effectiveness



Versatile: The Woma Jetty - here with short lance support, suitable for working in areas where hand-held water tools cannot be used.

– also with turbo nozzles. The double lance support for operating pressures up to 3,000 bar is designed for easier working and greater efficiency. It is suitable for cleaning large areas, including concrete. Two nozzle heads operate simultaneously – work is completed in half the time. The nozzle bar is suitable for rinsing or cleaning where high area performance is needed. It is available as a short version with four nozzles and a long version with ten nozzles. Concrete walls can also be cleaned or roughened in next to no time. Further applications include paint removal and stripping over large areas or external cleaning of tanks.



The nozzle bar is suitable for use where high area performance is needed.

The robot is used where hand-held high-pressure tools reach their limits, e.g. when recoil forces are too high or a safety distance must be maintained to areas to be cleaned. Control takes place via radio remote control or cable for efficient and safe working without the need to enter hazard zones.

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Large-Scale GX-4816 Waterjet Cutting System Installed by WARDJet, from page 8

plasma table with three gantries that sits next to their newly installed, giant WARDJet waterjet. Naturally, when looking for a waterjet manufacturer, Greiner opted for a similarly impressive waterjet cutting system to offer their customers exceptional waterjet cutting services.

WARDJet worked in conjunction with Greiner in order to make the heavy duty elements for their GX-4816-5 waterjet. "Greiner is one of a few businesses in the USA who could bend a 20-foot section of the 1" thick steel that was used for the crossbeam," points out Indermuhle. "Greiner employees also completed the foundation work for the GX-4816-5 and fabricated their own waterjet tank from our designs." The tank of the GX-4816-5 was sunk into the floor so that the cutting surface is below ground-level. The sunken tank will allow Greiner greater flexibility when loading large, heavy materials onto the cutting table.

One of the most sensational aspects of the GX-4816-5 waterjet cutting system is the patent-pending Waterjet SafeWall™ safety partition system. Electronically integrated into the GX-4816-5 controller, the Waterjet SafeWall protects operators while the 5-axis cutting head is in use. Non-contact safety switches sense when the wall is in position. The Waterjet SafeWall uses a series of metal walls and steam-sensing electronics to e-stop the machine if the wall has been breached. With the repositionable walls in place, employees can work on the waterjet table even while the system is cutting in another cutting zone on the other side of the wall. As a result, dead time associated with loading and unloading is virtually zero.

The GX-4816-5 features an Infini Winder 5-axis cutting head alongside a

standard 2D cutting head. The GX-4816-5 was also designed to accept a second gantry with milling capability should Greiner want to add more functionality to this one-stop workstation in the future. Other features include AROS abrasive removal units, a WRS-3000 water recycler and the dual screen X-Classic controller. The interior of the GX-4816-5 crossbeam is accessible and lit for easy maintenance by service technicians. A live camera was mounted underneath the gantry near the cutting heads so that the operator can observe the table from the controller even with the Waterjet SafeWalls in place. "We also designed in some storage space underneath the walkway for cables and hoses, as well as interlocked doors near the rear of the waterjet for easy access," adds Indermuhle. The GX-4816-5 waterjet sits directly in front of a large bay door to provide Greiner employees with easy access for loading their cutting system.

On April 23, 2014, WARDJet President Richard Ward and Greiner Industries President Frank Greiner met to inaugurate the GX-4816-5 waterjet with a ribbon cutting ceremony. On hand were WARDJet engineers and marketing representatives, as well as the Greiner project manager and waterjet operators. "We are excited to continue working with Greiner to see what interesting parts will be cut on the GX-4816-5 in the future," states Ward. Indermuhle adds "WARDJet excels at designing and integrating complex custom machines. Greiner represents an ideal WARDJet customer, and we enjoyed designing a customized waterjet specific to their needs."

For more information on the GX-4816-5, including videos and pictures, visit the WARDJet G-Series webpage at www.wardjet.com/gseries. ■



The GX-4816-5 large-scale waterjet features dual cutting heads with five feet of Z-travel and both 2D and 5-Axis capabilities.



Richard Ward stands beside the giant-sized GS-4816-5 waterjet – can you spot him?



Greiner Industries owner Frank Greiner and WARDJet owner Richard Ward join together with their teams to cut the inaugural ribbon for the GX-4816-5 waterjet.



Check out a quick video of the GX-4816-5 waterjet by using a QR code app on your phone or mobile device.

OMAX® Corporation Raises the Bar With its Next Generation MAXIEM® Line



The next generation MAXIEM JetMachining® Center product line launched by OMAX Corporation encompasses five machine models making abrasive waterjet technology more accessible to fabrication and job shops, OEMs, metal service centers, trade schools, and architectural, sign, stone and gasket shops.

The next generation MAXIEM lineup continues the tradition of easy-to-use, reliable and efficient abrasive waterjet machines designed and built in the United States. The most recent versions feature updated linear drive systems, an innovative Z-axis core with optional multi-axis cutting heads and the lowest ceiling height in the industry, along with several additional machine enhancements that include faster cutting speeds, streamlined abrasive hopper designs, selfleveling base legs, and more.

MAXIEM machines are equipped with OMAX's Intelli-TRAX™ linear drive system that utilizes brushless servo motors, integrated servo drives and high precision linear encoders that provide constant and continuous feedback on the actual cutting head position. In addition to increased part cutting accuracy, the advanced drive system delivers much faster and smoother motion.

OMAX configures the next generation MAXIEM with an all-new universal Z-axis core equipped with a precision MAXJET® 5 nozzle. This completely revamped universal Z-axis design with an updated modular head interface features 12 inches of controlled height travel. Its innovative design allows users to easily switch from a simple fixed cutting head to the versatile A-Jet® multi-axis cutting head in a matter of minutes.

MAXIEM machines build on OMAX's 20 years of direct-drive pump technology with the 50,000-psi pump that includes Variable Frequency Drive (VFD) technology for precise cutting pressure control. The pumps deliver more cutting power per kilowatt than intensifier-type pumps and are available in 20-, 30- and 40-horsepower versions for MAXIEM machines.

(continued on page 28)

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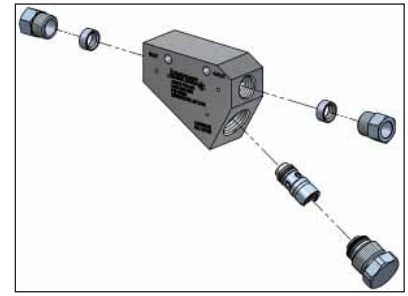
Jetstream of Houston, LLP, has introduced the Jetstream® 20K psi cartridge-style check valve for use in configuring plumbing to perform a hydrostatic pressure test. Designed with proven cartridge technology, the 20K check valve can retrofit most current plumbing systems and eliminates the need for complete disassembly of the system when routine maintenance is required.



“When configuring the plumbing to perform a hydrostatic test, check valves have typically been placed in the middle of the system, making access difficult and often resulting in costly interruptions and downtime,” says Anthony Washington, product manager at Jetstream. “With Jet-

stream’s new 20K check valve, the operator is up and running in a fraction of the time, with no need to send out for repair or wait for replacements. Performing maintenance has just been made faster and easier.”

The new Jetstream 20K check valve features a unique and durable Y-Block, stainless-steel body style, mounting holes at the top of the valve, low torque connections and soft seal for longer wear.



For more information about the Jetstream 20K check valve, call 800/231-8192, or visit www.waterblast.com.

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 Water-jetting 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 sug-

gestions 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.

New NLB Waterjet Lance Has More Safety Features

The new NCG24-535 waterjet lances from NLB Corp. are rated for applications requiring operating pressures of up to 24,000 psi (1,656 bar) and designed to reduce the chance of hose or fitting failure.

The new lances reduce stress on the inlet connection by eliminating the bend radius in the hose that supplies high-pressure water. Instead, they have an inlet tube with a 90-degree bend and a safety shroud that surrounds the hose where it attaches to the lance. This safety shroud complies with WJTA-IMCA recommended



practices, as does the color-coded handle that identifies the lance’s operating pressure.

The NCG24-535 comes with the usual protective features found in other NLB lances, including a one-finger latch to prevent accidental actuation and a patented trigger that immediately dumps pressure when the operator pushes it forward. It also features

the NLB quick-change cartridge seal that can be replaced in the field in 60 seconds.

Other ergonomic features include an adjustable shoulder stock and hand grip. The lance weighs just 12 lbs. (5.5 kg) with its standard 36-inch barrel. Longer barrels are available.

The NCG24-535 waterjet lance is also available in a dual-trigger version (NCG24-535DT) and an underwater version (NCG24-535UW).

For more information, visit www.nlbcorp.com or call (248)624-5555.

Retirement of a Sewer Industry Pioneer, from page 10

Camera inspection technology continued to be refined, and in 1996 the first pan, tilt and zoom camera was developed with another manufacturer for Carylton use. The introduction and improvements of closed circuit television cameras in the sewers allowed infrastructure to be inspected safely and easily, so that problems can now be detected early and repaired.

Another early innovation came in 1962, when Harold developing the process of sealing sewer joints by grouting, after experimenting with the cure time of resin materials. For the first jobs, he mixed the grout using a boat paddle. By 1963, the first grout truck was introduced and chemical grouting was used to seal leaking sewer joints and manholes. Eleven years later, Washington Suburban Sanitary District would approach Carylton about

sealing service connections, and they once again developed grouting technology for this new purpose.

His inventive work continued, and in 1966 Harold worked with Fred Horn of Vapor Rooter to develop herbicidal chemical foam root control methods for sewers. A year later, he used cement and epoxy coatings in manholes with Dry Con, developed by IPA Systems for Carylton's use. The cement grout was applied in two colors, four hours apart, to visualize wear when the initial layer became visible. Harold went on to develop root cutting cans for use in cutting roots in pipes up to 36 inches in diameter where existing root saws performed poorly.

Harold never applied for patents because his work was intended to

develop products to make the job safer and easier and because with the rapid evolution of technology he wanted to keep looking forward, innovating and finding new solutions. Harold has been quick to share his knowledge with others, including at Carylton TV and Grouting seminars. He has also been active on numerous committees for NASSCO (National Association of Sewer Service Companies), including sewer cleaning, sewer inspection and grouting. In his 54 years with Carylton Corp., Harold's inventive work has helped drive his company's growth while spreading throughout the industry. His efforts have proven a monumental contribution towards the effort of rehabilitating America's aging infrastructure and advancing the science of sewer cleaning worldwide. ■



The range of **THE PEINEMANN 2LTC** cleaning equipment is continuously being expanded.

Because of the limited access at Air Fin Coolers Peinemann has developed a new piece of equipment called the: 2LTC Fin Fan. This very compact piece of equipment will allow for a safe working method that is also much more effective. Thanks to a Flex Frame set up you can now clean Air Fin Coolers with 2 flex lances at a time while only a single operator is required for carrying and assembly. The remote control will give added safety and control while only a small HP pump needs to be used. The 2LTC Fin Fan, as it is modular in design, can even be used with a standard horizontal set up or in a vertical position. **Safer, Quicker, Portable, Versatile and much more efficient cleaning comes standard with Peinemann Equipment.**

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StarJet® SRV-1 for Small Stripe Removal Jobs

NLB has introduced the StarJet® SRV-1, a smaller pavement marking removal system that gives contractors more maneuverability for intersections, parking lots and other small jobs. At 20 percent shorter and 40 percent lighter (with a full water tank) than previous StarJet models, it offers the same advantages over other waterjet systems.

Patented ultra-high pressure waterjets (up to 40,000 psi, or 2,800 bar) can be deployed on either side of the cab to remove markings without damaging the pavement. Productivity and reliability are enhanced by providing dedicated horsepower to the high-pressure waterjet pump, instead of diverting it from the truck engine as some other systems do. NLB stands behind that reliability with a unique guarantee that customers will spend nothing on replacement pump parts, for one year or five years.

Operation and maintenance are easy, with in-cab controls conveniently located for the driver.

IMPORTANT NOTICE REGARDING SPAM

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The WJTA-IMCA leadership requests that members respect the contact information of fellow members and not use that information for the dissemination of spam or junk email. Membership information is not meant to be circulated beyond the WJTA-IMCA membership.



Advanced troubleshooting features include fault alerts that not only identify

an issue, but launch a how-to-solve-it video. Like all StarJet systems, the SRV-1 is a closed-loop system that includes the robotically-mounted waterjets, pump, water tanks, vacuum recovery of water and debris, and a large debris tank.

For more information, visit www.nlbcorp.com or call (248)624-5555.



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☐ **Exhibit Hall - Wednesday, October 15**

Admission to the WJTA-IMCA exhibit hall and live demonstrations.

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Admission to boot camp and reception on Tuesday.

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Jet Edge's EDGE X-5 5-Axis Waterjet Cuts Sophisticated 3D Parts from Virtually Any Material

Jet Edge's EDGE X-5 5-axis waterjet system with AquaVision Di Controller cuts precise taper-free parts from virtually any material. Capable of cutting sophisticated 3D parts such as impellers and bevels up to 50°, this workhorse waterjet system is designed to provide years of dependable service in harsh industrial environments.

The EDGE X-5's sturdy design separates the motion system from the catcher tank, eliminating vibration and ensuring maximum part quality. The system utilizes an industrial PC controller. It is ball-screw driven for optimal precision and features direct-couple AC brushless digital servo motors and single or double carriages. Critical bearing components are protected with heavy metal covers with brush seals and positive air pressure. The Jet Edge EDGE X-5 waterjet machine is available in many sizes, from 5'x5' to 24'x13'. An optional second cutting head can be added to double productivity.

For more information, visit www.jetedge.com, e-mail sales@jetedge.com or call 1-800-JET-EDGE.





Jet Edge Highlights Precision Waterjet Pumps in New Brochure

Jet Edge, Inc., recently released a new brochure highlighting its precision waterjet pumps.

Featuring Jet Edge's 90KSI X-Stream and 60KSI Dominator Series hydraulic intensifier pumps and Eco-Jet direct drive pumps, the brochure provides an overview of Jet Edge's ultra-high pressure pump technology for precision waterjet cutting, as well as a side-by-side comparison of the two pump styles.

To request a brochure, call 1-800-JET-EDGE, email sales@jetedge.com or view the brochure as a PDF at www.jetedge.com.







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Hughes Shows Flare in Oil and Gas Tests,

from page 6

fitted with twin high capacity water filters allowing filter change over without interrupting the process.

The Hughes HPS3000 uses a number of high specification critical components to deliver a heavy-duty capability that is suited to more complex industrial pumping applications. The close coupled, gear driven power end of the unit has pressure lubrication, filtration and oil cooling. An SAE 1 adapter housing is also available, enabling the pump to be flange mounted to a diesel engine flywheel housing or electric motor ensuring extremely compact, perfectly aligned installations with all moving parts enclosed.

For maximum hydraulic efficiency, the inline valve arrangement is designed to minimize the un-swept volume and prevents the adverse effects of cyclic stress within the head block, while allowing all working components to be easily removed on site for service. This unique design is capable of high pressure to high volume with outstanding seal, plunger and valve life.

For more information, telephone: +44 (0)1903 892358, email: sales@hughes-pumps.co.uk, or visit: www.hughes-pumps.co.uk. ■

H2O Names Alan Bennett Director of Sales

H2O Jet has named Alan Bennett it's new director of sales and marketing with the responsibility of overseeing new pump and aftermarket sales functions for the North American market as well as new product development.

Before joining H2O Jet, Bennett spent over 20 years in the industry with sales and management positions and most recently as the market manager for waterjet products at a major abrasives manufacturer. He has a BS degree in Business Administration and has also spent many years in sales in the metals industry.



Alan Bennett

Hal Arnold, president of H2O Jet, says, "Alan is a great addition to our organization as he brings many years of waterjet market experience to the company. With his background, we expect to expand our standard lines along with the H2O Jet Extended Life product lines significantly, as the waterjet market continues to develop."

DERC Salotech Launches a New Website for Waterjetting Products and Custom Solutions

DERC Salotech has launched a complete new website: www.salotech.nl. The new website offers quick and easy access to essential information for the high pressure waterjetting professional. Products and solutions are now only a click away. The new website also gives information about the possibilities of innovative custom made products and custom solutions.

For more information, visit www.salotech.nl, email info@salotech.nl or call +31 (0)186- 62 14 84.



MultiCam Hires New Human Resources Manager

MultiCam has announced Corie Clifton as its new human resources manager.

Clifton has over 18 years of managerial and human resource experience in the distribution industry and received her degree from the University of Southern Indiana. At MultiCam, she will focus on staff benefits, recruitment and employee relations.



Corie Clifton

For more information, visit www.MultiCam.com.

OMAX® Corporation Raises the Bar With its Next Generation MAXIEM® Line, from page 23

The new all-in-one Windows® 8 controllers on the MAXIEM machines come pre-loaded with the powerful OMAX Intelli-MAX® Software Suite and feature large 23-inch display screens that provide easy viewing of part files and tool paths. The Intelli-MAX software makes it easy to generate complex geometries and produce quality parts from virtually any type of material. The software is extremely user friendly for both the novice operator and the skilled machinist. The software also features Intelli-VISOR®, OMAX's system monitoring for predictable machine maintenance capability.

In addition to models with larger tank sizes and those specific ones featuring bigger cutting areas for processing standard size sheets of material from end to end, all the next generation MAXIEM machines sport a rigid tank design with leveling feet that maintains accuracy while simplifying installation. The optional Rapid Water Level Control fits into all the MAXIEM JetMachining Centers and allows for quiet and clean submerged cutting.

Next generation MAXIEMs will come as core machines, allowing shops to equip their particular machine with specific OMAX options and accessories. Upgrading is easy, allowing shops to quickly equip their machine with other OMAX options and accessories as their production needs change.

For more information on the complete line of next generation MAXIEM brand abrasive waterjet machines and accessories, please visit www.maxiemwaterjets.com. ■

Expanding Facilities at Maxpro Technologies

Construction is currently under way on a 3,000 square foot expansion to the Maxpro Technologies warehouse and production facility in Fairview, Pennsylvania. "The added floor space will allow us to devote specific areas to handling and storing large quantities and long lengths of stainless steel tubing," says Maxpro's President, Paul Bowser. "Additionally, the need to expand the assembly area for the Coning and Threading Machine, and to add a space in order to safely and conveniently autofret-tage high pressure tubing, an addition was our best option." Total footage after the addition will be 16,300 square feet.

Construction is scheduled to be complete by the end of June 2014.

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