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August 18-20, 2009, Houston, Texas**

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Optimizing Flow And Pressure In Waterblast Cleaning

By: D. Wright and T. Mathis, StoneAge, Inc., Durango, Colorado, U.S.A.

ABSTRACT

To increase the rate of material removal in waterblast cleaning, the power applied through the water must be increased. This can be done by increasing the pressure, the flow, or both. It is commonly known that the most effective cleaning pressure occurs at three to five times the threshold pressure, and as a rule of thumb the flow rate is increased at this point. The purpose of this research is to determine the efficiency of material removal through increasing flow rate by increasing the orifice size compared to increasing pressure in several materials with widely varying jetting properties.

1. INTRODUCTION

While it is known that increasing power applied through water will increase the material removal rate, the purpose of these tests was to determine whether increasing pressure or increasing flow was the most efficient means. There are many different material types that will respond differently, but this testing was intended to provide some guidelines for what might be expected.

2. TEST METHOD

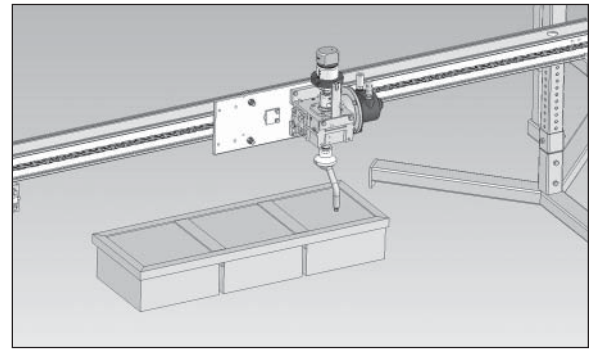
Blocks of concrete and rubber were placed under a rotating and traversing single waterjet nozzle as shown in Figure 1, with a feed rate of .46 m/min (1.5 ft/min) and a rotation speed of 400 rpm; all tests were conducted at a constant standoff distance of 76 mm (3 in.), with pressures from 52 to 276 MPa (7,500 to 40,000 psi) and flows from 3.8 to 129 l/min (1 to 34 gpm), producing powers from 19 to 149 kW (25 to 200 hp). The jet path diameter was 152 mm (6 in.) and the test samples were masked by steel to expose a

test surface of 76 x 76 mm (3 x 3 in.) The samples were measured for depth of cut and volume removed.

3. RESULTS

3.1 Effect of Pressure

The results for the concrete samples were averaged for all the powers to determine the effect of increasing pressure on this material; this curve is shown in Figure 2. As is typical of all materials, the efficiency improves with



Arrangement Used for Testing - Figure 1.

increasing pressure up to a maximum, after which an increase pressure results in decreasing efficiency.

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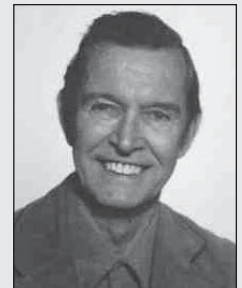
In Memoriam

Richard R. Paseman

Richard R. Paseman, Houston, Texas, passed away on August 11, 2009, following a battle with Chronic Obstructive Pulmonary Disease (COPD).

After graduating from the Henry Ford Trade School in June 1944, Dick joined the Merchant Marines and made his last voyage from New York City in June 1950. Dick was a licensed steeplejack in New York and worked for industrial painting contractors in Texas. His work experience gave him a competitive edge when he and John Goss formed the American Powerstage Company in January 1960. They designed and manufactured power driven stages, rigging devices, and also the American Water Blaster, all of which were acquired by Weatherford International. Dick formed the American Powerlance Company in 1979, which had patents on a device to clean the

tube side of heat exchangers. He was proud of the fact that Powerlances were working in 27 international countries when he sold the company in 1995.



Richard R. Paseman

Dick was a long-time WJTA member, and in 1989 WJTA honored his contributions to the industry by presenting him with the Pioneer Award. The Houston Coating Society and Industrial Maintenance Institute also recognized Dick's contributions to the industrial maintenance industry.

Dick is survived by his sons Bill and Gerhard and grandchildren Raymond, Sabrina, Katherine and Richard.

(continued on page 8)

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John Wolgamott Receives 2009 WJTA Pioneer Award

The 2009 WJTA Pioneer Award was presented to John Wolgamott, StoneAge, Inc., Durango, Colorado, in recognition of his significant contributions to the advancement, development, and application of waterjet technology. Pat DeBusk presented the award to Mr. Wolgamott at the WJTA Awards Presentation held on August 19, 2009, in conjunction with the 2009 American Waterjet Conference and Expo in Houston, Texas. The Pioneer Award is the highest recognition and honor presented by the WJTA. The text of Mr. Wolgamott's acceptance speech appears below.

I'm humbled and very honored to be included with my esteemed colleagues who have received this award in the past. I'm a bit surprised however, because all the previous recipients have been old guys. How did this happen to me?

Perhaps, as they say "time flies when you're having fun." And being involved in waterjet technology has been very fun for me. It has also been interesting, challenging, and rewarding. Looking back now, I see that I was lucky to get into an industry that was in the early stages of taking off. So as it turns out I've grown "up" with the industry.

The first high-pressure pump I ever saw was in 1975 at the Colorado School of Mines (CSM). Fun Den Wang (another Pioneer Award winner) had hired me as part of a research group where waterjets were of great interest for mining and civil engineering applications. The pump was one of the first 40k psi intensifier units that John Olsen (another Pioneer)



John Wolgamott

designed, and he instructed me on how to maintain it. It was there that I met Jerry Zink, first as a graduate student and later as fellow research engineer. We worked well together. He is a technical genius, and I was just smart enough to know that by working with him we could accomplish great things.

After five years of research, Jerry and I were lured away from academia intrigued by the idea of making tools for real world applications. The fact that Fun Den fired me for spending too much time working with Jerry on a side project was just the boost we needed!

Our business goal was to invent and produce a waterjet assisted rock drill for underground uranium mining. It took about a year for us to develop a working prototype and patent a new high-pressure water swivel. Unfortunately, shortly thereafter the uranium mines closed (Three Mile Island accident occurred and the price bubble for uranium popped), so we found ourselves with an interesting tool, but no customers and plenty of debt.

We survived the next year by procuring small jobs using our WJ-drill to assist with constructing homes in rock (that's where the StoneAge name came from) and work on a dam project's access tunnel and cut-off trench.

Then we got really lucky. Pat DeBusk (another Pioneer) and JD Frye with HydroServices (precursor to HydroChem), discovered us at the first US waterjet conference and introduced us to the industrial cleaning industry. They wanted to know if our rock drill could take plastic out of tubes. We didn't know, but we were sure motivated to try. Wow, what a great opportunity! We soon adapted our rock drill into a hand-held rotary lancer for tube bundle cleaning. This was followed by a heavy-duty pipe cleaning version, and later an air-powered rotary lancing machine for tube bundles. It took several years and many designs before we developed a line of successful self-rotary nozzles, but they are now our most popular products.

The evolution and improvement of equipment in the industry has been substantial. When we started most "hydroblast" jobs were done at 6000 psi, and 10k psi pumps were being developed for the really tough jobs. Over the years, operating pressures have increased and pumps can now deliver 40k psi reliably. Waterblast tools have evolved from simple handheld "shotguns" of old, to the mechanized and sophisticated

(continued on page 31)

WJTA Announces Officers, Board Of Directors

Bill Gaff, vice president of strategic sales for the Environmental Solutions Group of Federal Signal Corporation, Streator, IL, has been elected the 2009-2011 chairman of the board of the WaterJet Technology Association (WJTA). Also elected for the 2009-2011 term are President **George A. Savanick, Ph.D.**, consultant, Apple Valley, MN; Vice President **Pat DeBusk**, DeBusk Industrial Services Company, La Porte, TX; Secretary **Paul Webster**, engineering manager, Parker Hannifin-EPD, Stafford, TX; and Treasurer **Larry Loper**, vice president of marketing and sales, High Pressure Equipment Company, Erie, PA.

Gary Noto, executive vice president and chief operating officer of Veolia Environmental Services, League City, TX, is newly elected to the WJTA board of directors. **Mohamed Hashish, Ph.D.**, senior vice president of technology, Flow International Corp., Kent, WA; **Hugh B. Miller, Ph.D.**, associate professor, Colorado School of Mines, Golden, CO; and **B.T. Steadman**, managing member, Vacuum Truck Rentals, LLC, Richland, MS, were re-elected to the board of directors.

Newly elected officers and board members assumed office at the 2009 American WJTA Conference and Expo held August 18-20, 2009, at the Marriott Westchase Hotel in Houston, Texas.

Grzegorz J. Galecki, Ph.D., research associate professor, Missouri University of Science and Technology, Rolla, MO; **Forrest Shook**, president, NLB Corporation, Wixom, MI; and **John Wolgamott**, president, StoneAge, Inc., Durango, CO, continue to serve remaining terms on the board.

WJTAListServ - A Free Service To WJTA Members

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2009 American WJTA Conference and Expo

The WaterJet Technology Association (WJTA) welcomed nearly 900 participants from 34 countries to the 2009 American WJTA Conference and Expo held August 18-20, 2009, at the Marriott Westchase Hotel in Houston, Texas.

Sixty-two companies displayed waterjet supplies, equipment, systems, and services; industrial cleaning equipment; and vacuum trucks and hydro-excavators.

“The waterjet and industrial cleaning industries, like many other industries, have been adversely affected by the tough economic times, but attendance was high,” says WJTA Association Manager **Ken Carroll**. “We are grateful for the strong turnout and for everyone’s participation.”

The pre-Conference workshops, *WaterJet Technology: Basics and Beyond* and *Recommended Practices for the Use of Industrial Vacuum Equipment*, were held on Tuesday, August 18, 2009. *Basics and Beyond* covered the fundamentals of waterjets – history, equipment, applications, and safety, followed by sessions on hydro-excavation, cleaning, surface preparation, and precision waterjet cutting. The *Recommended Practices* workshop included a hands-on review of vacuum trucks, a “science lab” review of the power of vacuum and how vacuum loaders work, controlling diesel engine runaway, getting peak production and performance out of an air mover, and electrical and static electricity issues.

The *WJTA Boot Camp*, back by popular demand, gave contractors an opportunity to hear industry experts discuss electrical safety, DOT regulations for trucks and trailers, proper inlet pump suction conditions, safety in waterjetting, high pressure waterblasting applications and safety, abrasive waterjet cutting



applications, hose fittings and pressure testing, choosing a contractor, hydro-excavation, and OSHA’s combustible dust national emphasis program.

Live demonstrations included waterjet cutting applications; paint removal; tank cleaning; robotically controlled waterjet systems; cleaning narrow tubes, various sizes of pipes, and tube bundles; industrial vacuuming; variations in waterjet

capabilities using different nozzle types, pumps and other accessories; and the effectiveness of safety gear in protecting the body from potentially harmful swipes with high pressure waterjet equipment. Outdoor static displays featured air machines, liquid vacuum trucks, and hydro-excavators.

The WJTA awards presentation

was held on Wednesday evening, August 19. **John Wolgamott**, StoneAge, Inc., received the WJTA Pioneer Award in recognition of his significant contributions to the advancement, development, and application of waterjet technology.

Also recognized for special achievements were Technology Award recipient **Seiji Shimizu, Ph.D.**, Nihon University, Fukushima, Japan; Safety Award recipients **Philip Stein**, Vactor Manufacturing, Inc. (retired), Fayetteville, TX, and **Gary Toothe**, FS Solutions, Sumter, SC; Service Award recipients: **Bill McClister**, Veolia Environmental Services, Baytown, TX, and **Pat DeBusk**, DeBusk Industrial Services Co., La Porte, TX.

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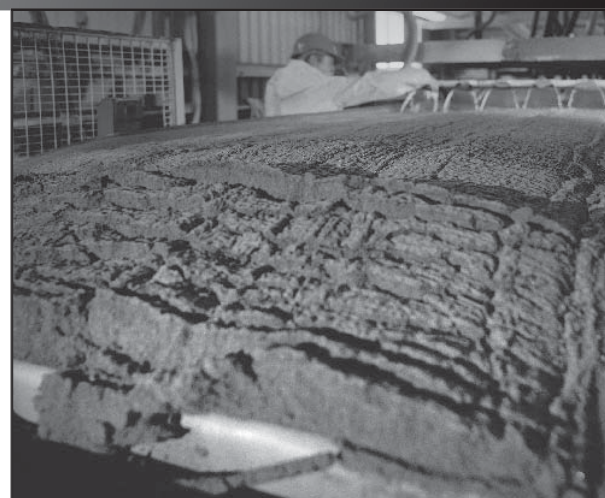
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In Memoriam, from page 2

Anthony V. Ursic



Anthony V. Ursic

Retired A.M. Gatti, Inc. CEO Anthony V. "Tony" Ursic, 85, died on Tuesday, July 7, 2009, at his residence in Langhorne, PA. Tony was actively involved with the Gatti business for over 50 years, and was instrumental in the development of the original sapphire orifices used over 30 years ago in the early days of UHP waterjetting.

After graduating from Lehigh University ('48) with a degree in Industrial Engineering, Tony was employed at A.M. Gatti in early 1955. Gatti was a highly regarded precision manufacturing firm in Trenton, NJ, specializing in sapphire and ruby bearings and metering instruments. In a short time, he advanced to General Manager of all manufacturing and administrative operations. Several years later after the death of the company founder's son Orville Gatti, Tony obtained controlling interest of the business from the Gatti family.

In January of 1977, as UHP waterjetting was in its infancy, Gatti supplied the first sapphire orifices to Flow Industries (now Flow International). Tony was instrumental in the development and design of the sapphire orifice jewel that would become the industry standard which continues to this day. In the years following, Gatti developed and patented many innovative orifice and nozzle designs which have been used in almost every imaginable waterjet application. Under Tony's guidance and expertise, the company became primarily focused on the development and manufacture of sapphire nozzle assemblies while still maintaining business in the original line of Gatti products.

Tony's legacy at Gatti is carried on under the direction of his son, company President, Tom Ursic, and his grandson, Vice President, Bryan Ursic. The family business continues operations at its original location in Trenton, NJ. A.M. Gatti, Inc. is widely recognized as the premier manufacturer of sapphire nozzle assemblies – a testament to Tony's dedication and many years of service to the company and the waterjetting industry.

Gates Corporation Acquires Hydrolink Group

Gates Corporation has announced its acquisition of Hydrolink Group of Companies.

Since 1988, when Hydrolink first began operating in the United Arab Emirates, the company has provided customers from a broad set of industries with a comprehensive range of engineering, fabrication, testing and service operations for fluid power products in the rapidly developing Persian Gulf region. Founded and headquartered in Dubai, United Arab Emirates, Hydrolink currently operates 20 locations in the Middle East and CIS regions. The collective market size for fluid power products in this region is estimated to be worth around US\$480 million per annum. By allowing Gates to accelerate its market penetration for fluid power products into this high-growth market, Hydrolink will be a strategic addition to Gates Corporation.

“As an established leader in this vibrant and growing market, Hydrolink is uniquely positioned to serve the needs of the oil and gas industry, and is a natural addition to Gates Engineering & Services group,” says Gates Fluid Power President, David Gau. “The acquisition creates new opportunities for Gates to expand our product and services offering to existing clients and to extend some of our core competencies to Hydrolink.”

Kevin Roberts, managing director of Hydrolink, says, “The alignment with Gates will give us a great opportunity to accelerate growth in the region and other oil and gas hotspots, and to further enhance customer satisfaction. I am delighted to be associated with an internationally respected company

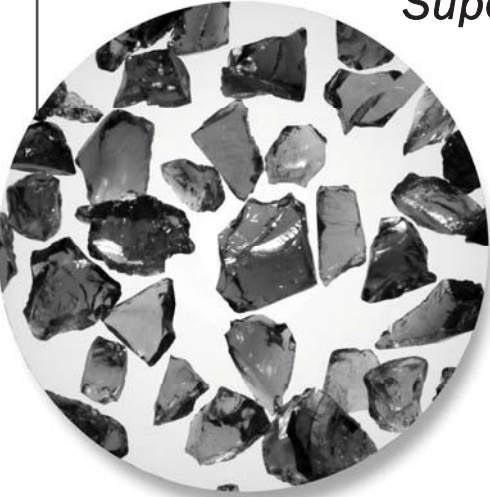
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like Gates.” Roberts will remain with the company and will be deeply involved in its integration with Gates Corporation.

For additional information on Gates and Hydrolink, visit www.gates.com or www.hydrolinkgroup.com.

The *Jet News* is published by the WaterJet Technology Association (WJTA) and is a benefit of membership in the Association.

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Hydrodemolition On A German Lock

As part of Germany's WSV and the Bundersministerium's strategy to upgrade its locks on the River Neckar, hydrodemolition techniques are being employed at the Guttenbach lock where weight loadings are critical to prevent badly cracked lock walls from collapsing.

Hydrodemolition techniques using an Aqua cutter HD RA system with a robot arm from Sweden's Aquajet Systems and weighing just 1700kg, was chosen to remove poor quality and cracked concrete on the Guttenbach Lock.

Located on Germany's River Neckar, the twin Guttenbach Locks were first built in 1939 with a second lock being added in 1955.

The middle wall separating both locks and also built in 1939 is just 1.2m wide. With excessive cracking on both sides of the lock walls, weight loadings was a critical factor in determining the method of removing the concrete slab across the full 1.2m width.

Hydrodemolition specialist Luckei Betonfrästechnik based in Bendorf, Germany, was awarded the contract for the concrete removal; opting to use its Aqua cutter HD RA robot – weighing just 1700kg.

Luckei is using the Hydrodemolition robot to remove 400mm of concrete along the full 100m long lock wall; totalling 280m³.

The compact and versatile HD Robot Arm is proving ideal for working on the 1.2m wide strip. It features Aquajet's improved EDS cutting head which keeps the set distance from the nozzle to the surface independent of the selected lance angle: optimizing the removal rate and saving energy. The system also has no electric cables or sensors at the

front, eliminating the risk of malfunction due to moisture.

All movements are hydraulically manoeuvred by remote control, a safe distance from the unit. No manual adjustments or use of tools is required to position the robot arm.

Use of hydrodemolition techniques ensures no rebar damage, minimised risk of good concrete removal, eliminates dust and crystalline silica pollution and leaves a superior bonding surface. It is also substantially faster than mechanical removing methods and is also considerably less labour intensive.

Together with the robot, Luckei is operating a high pressure Power Pack with the capacity of 250 litres/ min of water at 1000 bar pressure, water is taken from the river and filtered to ensure performance is not affected by dirty water.

After use, the water is again filtered and returned to the river.

A temporary gate barrage has been placed across the upstream end of the lock closest to the river bank and water pumped out to provide a dry lock for Luckei to prepare the 9.50m wall.



The lightweight Aqua Cutter was chosen to meet critical weight loadings in order to prevent the badly cracked lock wall from collapsing.



Traffic is able to use one lock while Luckei uses the Aqua Cutter to remove 400mm of concrete along the full length of the 100m long wall.

Luckei will then use hydrodemolition techniques for the severely cracked walls and is considering the use of Aquajet's recently introduced hybrid robot offering an extended vertical cutting reach of 9m.

Once reconcreted and additional strengthening completed with the installation of 20m deep pre-stressed anchors along both sides of the lock, new gates will be installed for the lock to resume normal duties.

The River Neckar is 367km long and forms a major tributary to the River Rhine which it joins at Mannheim discharging an average 145m³/s of water into the Rhine; making it the fourth largest tributary and Germany's 10th largest river.

It is navigable for cargo ships up to the river port of Plochingen, some 200km upstream from Mannheim and features 27 locks dropping the river from 247.32m to 86.50m.

With barge traffic using the Guttenbach Lock every 10 to 15 minutes between 7 a.m. – 10 p.m., plans are underway to increase the length of the lock from 100m to 130m in readiness for the new generation of longer barges.

The main contractor for the Guttenbach Lock project is Echterhoff GmbH & Co Kg and the consulting engineer is Glass Bauunternehmen GmbH.

Metal Service Center Jacquet Installs 21'x13' Jet Edge Waterjet System

Jacquet Mid Atlantic of Pottstown, Pennsylvania, has installed the new Jet Edge, Inc., 21'X13' large-format Mid Rail Gantry Waterjet System. The Mid Rail Gantry is the third Jet Edge waterjet system at Jacquet's Mid Atlantic service center and the company's sixth Jet Edge waterjet system nationwide.

Jacquet's new Jet Edge Mid Rail Gantry waterjet system features a 21'X13' work envelope with a system design that easily accommodates overhead loading with the bridge clearing the tank. Jacquet equipped the waterjet table with two Jet Edge Permalign II abrasivejet cutting heads and a 100HP intensifier pump to increase productivity. They also added an optional mirroring package, independent programmable Z carriages, programmable height sensing, a fully-functional remote pendant, large-capacity bulk abrasive hopper, submerged cutting package, closed-loop water filtration system, and garnet removal system.

A subsidiary of Jacquet Metals of Lyon Saint Priest, France, Jacquet Mid Atlantic is one of four Jacquet metal service centers in North America.

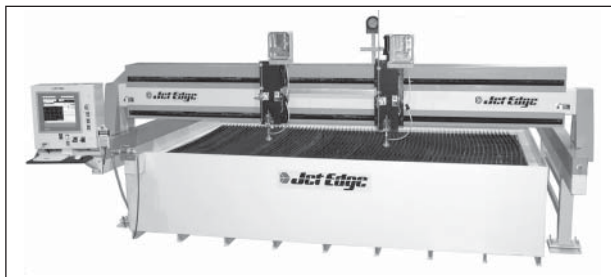
The company also has metal service centers in Houston, Texas., Racine, Wisconsin, and Irvine, California.

Jacquet specializes in supplying and processing stainless steel and nickel alloys for OEMs, fabricators and machine shops that support primarily the oil and gas, power generation, pollution control systems and water purification industries. Jacquet's North American service centers provide waterjet and plasma part cutting. The company stocks 19 different grades of stainless steel and nickel alloy plates

in a wide variety of sizes and thicknesses.

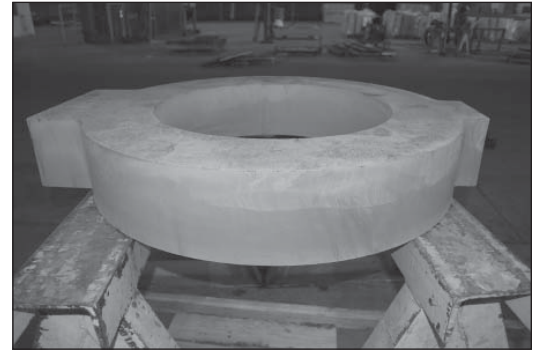
"We have a very large inventory of stainless steel and nickel in many different grades, thicknesses and widths, and we are able to cut near net-shape parts," says Jacquet CEO Terry Engle. "Having the combination of that, plus our fast turnaround, has really helped our growth."

When Jacquet opened its North American operations in 2006, Engle decided to install the largest waterjet cutting systems available on the market to meet a growing demand for large-format cold cutting. Over a two-year period, Engle installed massive Jet Edge Low Rail Gantries at each of his plants. With waterjet tables as large as 15'X22', Jacquet can claim some of the largest waterjet cutting tables in North America.



"Because the tables are so large, we can hold extremely large plates up to 15'X21'," Engle says. "We also have two cutting heads on each table, so we can process two plates simultaneously or utilize two heads on one nested plate of parts, doubling our productivity. This has gotten us some work because we can cut two parts at a time and reduce the cost and turnaround to the customer."

Engle noted that waterjet is the ideal cutting method for most of his applications because it eliminates heat-



The 6-inch 316 stainless steel valve body was cut by Jacquet West in Irvine, California. Courtesy Jacquet West.

affected zones (HAZ) and reduces the need for secondary finishing operations, which results in lower finished part costs for his customers. If a customer desires a polished near-finished part, Jacquet typically cuts the part from polished plates. This saves time and money for customers because it eliminates the need for them to polish individual parts.

"Whenever we have customers who need small parts or tight tolerances or special sketch cuts, we push them toward waterjet. Also, when we are cutting heavy plate, we try to convince them to go with waterjet because they can save on material. When you cut with plasma, you have to add additional kerf and material for machining. Waterjet saves on material and machining. When roughing material to allow for machining afterwards, waterjet does not put any heat into the part, allowing the material to be machined much easier and saving on tooling costs."

Engle decided to buy his waterjet systems from Jet Edge after extensively researching several waterjet manufacturers and interviewing Jet Edge's references.

"I did a very thorough follow up with Jet Edge's references," he says.

(continued on page 21)

GMA Garnet Opens Garnet Recycling Plant In Reserve-Louisiana

GMA Garnet opened its newest garnet recycling plant at 356 West 19th Street in Reserve, Louisiana, on August 21, 2009. Reportedly the world's largest, the recycling plant is one of four the company has opened in the last five years to address the need for cost-effective and environmentally-friendly disposal of used garnet.

GMA's industrial recycling plants in Italy, Dubai, Jubail, and now Reserve, Louisiana, clean the used garnet removing all contaminants and ineffective fines and dust before the re-processed garnet is packaged in paper bags or loose bulk bags. The new US processing plant has the capacity to receive and process up to 25,000 tons of spent garnet and carry out final processing and packing of the product to fulfill individual customer requirements. The re-processed product, GMR GARNET™, meets all technical, environmental, health and safety specifications in both the waterjet cutting and abrasive blasting applications.

GMA USA President Aaron Williams says, "The immediate benefit of recycling garnet is a huge reduction in waste disposal volume and cost and optimum usage of a non-renewable resource—both extremely important environmental considerations. GMA Garnet is committed to recycling because, yes, it is good for the environment, but it also makes good sense economically for our customers."



Customers, vendors and government officials see the start-up of the new GMA recycling plant.

GMA Garnet is a market leader for industrial garnet abrasives that includes sand-blast and high pressure waterjet cutting applications, parts, and equipment. The company mines and processes industrial garnet in the midwest of Western Australia, and also distributes garnet mined in Montana, USA. GMA Garnet is processed to the highest standard of quality in respect of mineral purity and meets stringent requirements for chlorides and free silica content. The company has been distributing GMA Garnet in the Middle East, Europe, Africa, South East Asia, and the USA for over 15 years.



Ribbon cutting ceremony marks the opening of GMA's new USA garnet recycling plant. Pictured left to right: Plant Manager Donnie Torres, GMA Group Managing Director Torsten Ketelson, Parrish President Bill Hubbard, GMA Group Managing Partner Wolfhart Putzier, GMA VP Sales Pete Mitchell, Senior Australian Trade Commissioner Alison McGuigan, and GMA Group General Manager Aaron Williams.

For more information, visit www.garnetsales.com or call (832)243-9300.

Semi-Automated Tube Lancers

NLB's new semi-automated tube lancers, the ATL-5000, Safflex-2000, and Safflex-3000, are safe and effective tools for waterjet cleaning the inside of tubes. These systems not only clean heat exchangers and tube bundles up to three times faster than manual methods, they minimize operator exposure to debris or high-pressure water.

The Safflex units feature an all-new hose drive system that is powerful enough to drive hoses with an O.D. range of 4 to 15 mm at pressures to 40,000 psi (2,800 bar). NLB's new ATL-5000 bundle cleaning system

is designed to allow the inside of tube bundles to be cleaned by a single operator from the comfort of a climate-controlled operator station. From the station, the operator controls the up, down, left and right movements of the lance bed. The in and out movements of the lances, and the up and down movement of the outriggers/levelers can be also be controlled. And, with the addition of the bundle roller control package, the operator can control the rotation of the bundles. (US Patent Pending.)

For more information, visit www.nlbusa.com.

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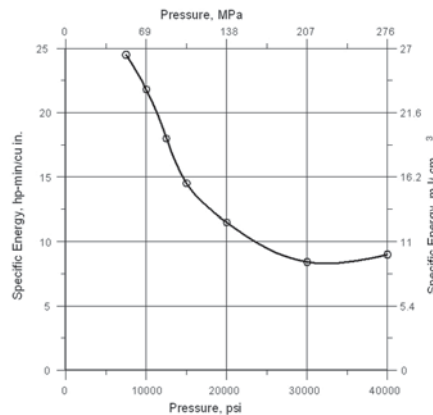
A.M. Gatti

Optimizing Flow And Pressure In Waterblast Cleaning, from page 2

Figure 3 shows this curve for the rubber samples with the same type of result relative to pressure, with the optimum efficiency occurring around 207 MPa (30,000 psi).

3.2 Effect of Flow

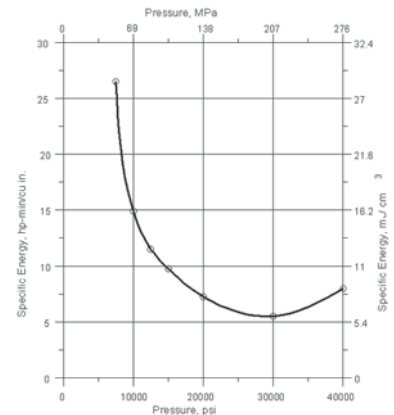
Figure 4 shows the results for increasing power at each pressure tested in the concrete, which is an expression of the effect of flow rate. In this family of curves, it can be seen that the effect of pressure plays a very strong part in efficiency. At the lower pressures, efficiency rapidly got worse with increasing power, while at the higher pressures the efficiency stayed nearly constant. The variation in efficiency was mostly constant other than at the lowest pressure, with an average difference of 30% between the pressures. In this material, efficiency did not improve at any point with increasing



Relationship of Pressure and Efficiency in Concrete Test Samples - Figure 2.

power. The overall average of efficiency for increasing power is shown in Figure 5, with a variation in range of 49%.

Figure 6 shows the results for increasing power in the rubber at each pressure. At the lowest pressure tested,



Relationship of Pressure and Efficiency in Rubber Test Samples - Figure 3.

the efficiency rapidly improved with increasing flow rate, which was the complete opposite of the response in the concrete. While not as pronounced, this trend continues with increasing pressures. The variation in efficiency

(continued on page 15)

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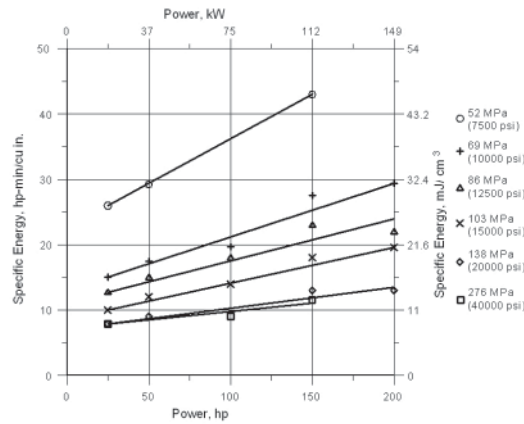
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was mostly constant but with much less difference between the pressures than in the concrete, averaging 15%. The overall average of efficiency for increasing power in rubber is shown in Figure 7; efficiency initially improves with increasing power, it then flattens before slightly deteriorating; it varied over a range of 30%.

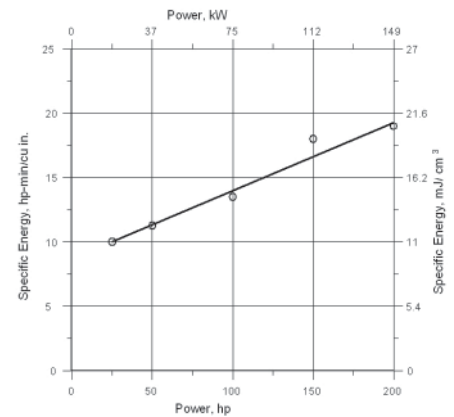
Figures 8 and 9 illustrate the effect of increasing power for the two materials at each pressure tested. The slopes of the curves for increasing power were overlaid on the average effect of pressure curves to provide a feel for the relative effect of increasing flow compared to increasing pressure.

4. CONCLUSIONS

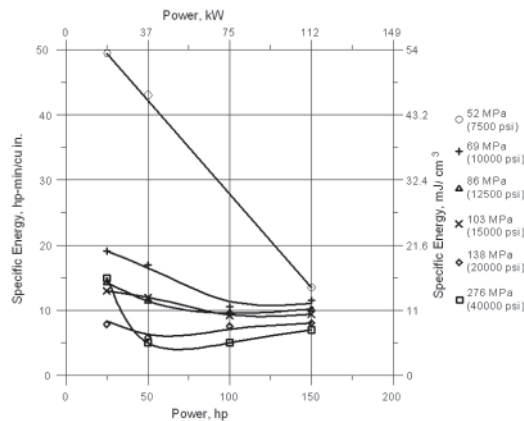
The purpose of these tests was to determine the effect of increasing power through increasing pressure compared to increasing flow, in two materials with widely varying properties. While the effect of increasing pressure for both of these materials was nearly identical, the effect of increasing flow was nearly opposite. It was determined for both materials that increasing power through increasing flow when operating at the optimum pressure will result in nearly constant efficiency, and improvements in efficiency can be expected in softer materials through increasing flow rate as well as increasing pressure.



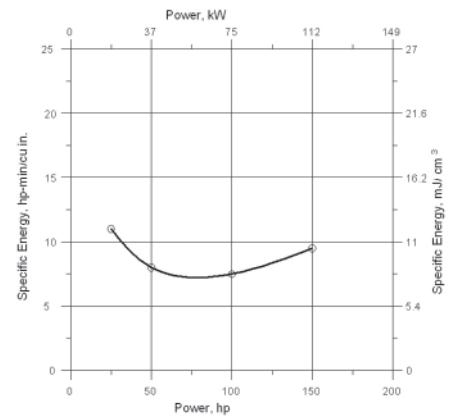
Effect of Increasing Power at the Pressures Tested in Concrete - Figure 4.



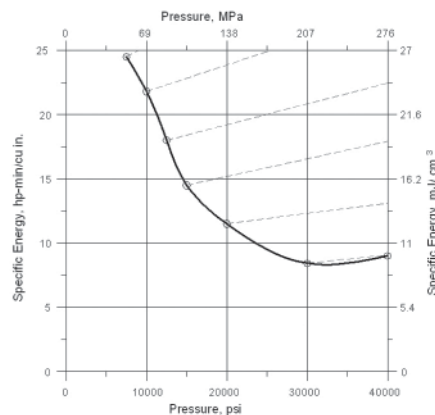
Average Effect of Increasing Power in Concrete - Figure 5.



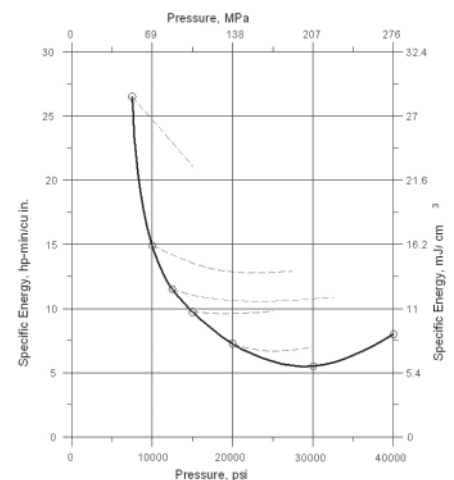
Effect of Increasing Power at the Pressures Tested in Rubber - Figure 6.



Average Effect of Increasing Power in Rubber - Figure 7.



Slope of Curves for Increasing Flow Efficiency Overlaid on Pressure Curve for Concrete - Figure 8.



Slope of Curves for Increasing Flow Efficiency Overlaid on Pressure Curve for Rubber - Figure 9.

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Jamaica
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(continued on page 18)

Warwick Mills Introduces TurtleSkin MFA WaterArmor

Warwick Mills announced the release of the next generation TurtleSkin® Metal Flex Armor (MFA) WaterArmor PPE suit for ultra high pressure waterjetting. Designed to safeguard waterjet operators from injuries caused by an accidental UHP water jet swipe, TurtleSkin MFA WaterArmor provides protection at high pressure levels of 40,000 psi flowing at 5.5 gpm with a swipe speed of 1.5 feet/second. Engineers from Warwick Mills recently demonstrated the protective suit at the WJTA Conference and Expo in Houston, Texas.

As the industry leader in UHP waterjet protection, TurtleSkin WaterArmor has more than 75 documented saves from accidental injury. The new MFA technology, originally designed for law enforcement use in stab protection, provides a substantial increase in UHP protection levels without any additional weight or bulk. Composed of lightweight, hinged panels, MFA WaterArmor reduces fatigue and increases operator mobility and productivity. The component suit system is comprised of gaiters, chaps, gauntlets and a torso panel. The system is designed for easy repair of damaged parts on-site, thus eliminating the need to purchase new components and minimizing down time.

During testing for CE certification* in July 2009, TurtleSkin MFA WaterArmor allowed zero penetration at 40,000psi, 5.5 gpm with a swipe speed of 1.5 feet/second.

Warwick is an engineering leader in the materials science industry and specializes in the research and development of new flexible composites for advanced safety solutions to the most challenging applications and environments, including chemical and biological protection, ballistic, puncture and

stab protection as well as aerospace materials. Warwick is ISO 9001-2000 certified.

For more information, visit www.WarwickMills.com.

*CE certification identifies that a product has met the European Union (EU) requirements for safety, health, or environment.



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100HP Waterjet Intensifier Pump Features Reliable Tie-Rod Design

Jet Edge, Inc., has introduced the iP60-100 100hp 60,000 psi (4,100 bar) waterjet intensifier pump. The iP60-100 waterjet pump produces 2.0 gpm (7.6 lpm) of ultra-high pressure water for precision waterjet cutting, water blasting, cleaning and surface preparation applications. It supports orifices up to .021" (.53 mm).

The Jet Edge iP60-100 intensifier pump features dual intensifiers for increased operating performance. A single-intensifier economy version also is available.

Like all Jet Edge waterjet pumps, the iP60-100 features Jet Edge's reliable tie-rod design. This design has no threaded cylinder, no threaded end caps, and no threaded hydraulic cylinder, making it less

prone to cracking than threaded designs. Matched-metal components prevent galling of hydraulic system components.

Jet Edge waterjet pumps feature hydraulic accumulators, which reduce wear on the hydraulic pump. Hydraulic fluid also is cooled and filtered. Jet Edge waterjet pumps feature a rugged hydraulic center section which incorporates high-duty-cycle rated piston seal and wear rings; free-floating self-aligning plungers increase seal life. Jet Edge's hydraulic systems have a 4,000-hour warranty.

Jet Edge waterjet pumps also feature attenuators which smooth pressure fluctuations and deliver a constant and steady stream of ultra-high pressure



water to the cutting tool, ensuring optimal cut quality. Jet Edge offers a wide range of electric and diesel waterjet intensifier pumps from 30-280hp; 36,000, 60,000 and 90,000 psi models are available.

For more information, visit www.jetedge.com or call (800)538-3343.

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New High Pressure Cleaning Machines For Heat Exchangers

Peinemann Equipment B.V. introduced and demonstrated two new high pressure cleaning machines for heat exchangers at the WJTA Conference and Expo, August 18-20, 2009.

The new Inside Bundle Cleaner (IBC)-5 is a high production rigid lance machine designed to clean a large quantity of bundles during turn-arounds. The operator's cabin resides at the top of the machine giving the operator the best view of the tube sheet for maximum speed. The IBC-5 cleans five tubes per stroke with an average speed of 500-750 tubes per hour. The operator's cabin is comfortable and keeps the operator isolated from the high pressure activities. The IBC-5 is a reliable, efficient, and powerful

machine for cleaning all types of heat exchangers.

The new 3 Trans Line Exchanger (TLE) is a state-of-the-art three-lance cleaning machine that is compact enough to clean "in place bundles" while eliminating the need for excessive scaffolding. The 3 TLE can be used with rigid or flex lances and can be positioned to clean vertical or horizontal exchangers. The typical cleaning rate is 250-350 tubes per hour. The 3 TLE is lightweight, portable, and offers consistent feed speed and the ability to clean in both directions.

For more information, visit www.peinemannequipment.com or email: customerservice.usa@peinemann.nl.



Comments Solicited On Improvements To Recommended Practices

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

The *Recommended Practices for the Use of Manually Operated High Pressure Waterjetting Equipment* is currently under review and being revised.

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

Waterjet Abrasive Removal System Removes 10 Pounds Of Abrasive Per Minute

Chukar Waterjet, Inc., a leading supplier of waterjet parts for waterjet cutting and cleaning equipment, is pleased to introduce the Waterjet Cyclone waterjet abrasive removal system.

Chukar's Waterjet Cyclone abrasive removal system is a cyclonic garnet extraction machine that removes up to 10 pounds of garnet abrasive per minute from any waterjet cutting system. The system features a one-yard hopper that requires only 25 square feet of floor space. It can be custom-sized for any waterjet tank.

The Waterjet Cyclone is easy to set up and operate, can be operated while unattended, and requires no machine downtime to remove abrasive. The only moving parts that come in contact with the abrasive slurry are two check valves at the bottom of the pump. There are no expensive parts that have to be replaced due to abrasive wear.

For more information, visit www.chukarwaterjet.com or call (888)497-8749.



Metal Service Center Jacquet Installs 21'x13' Jet Edge Waterjet System, from page 11

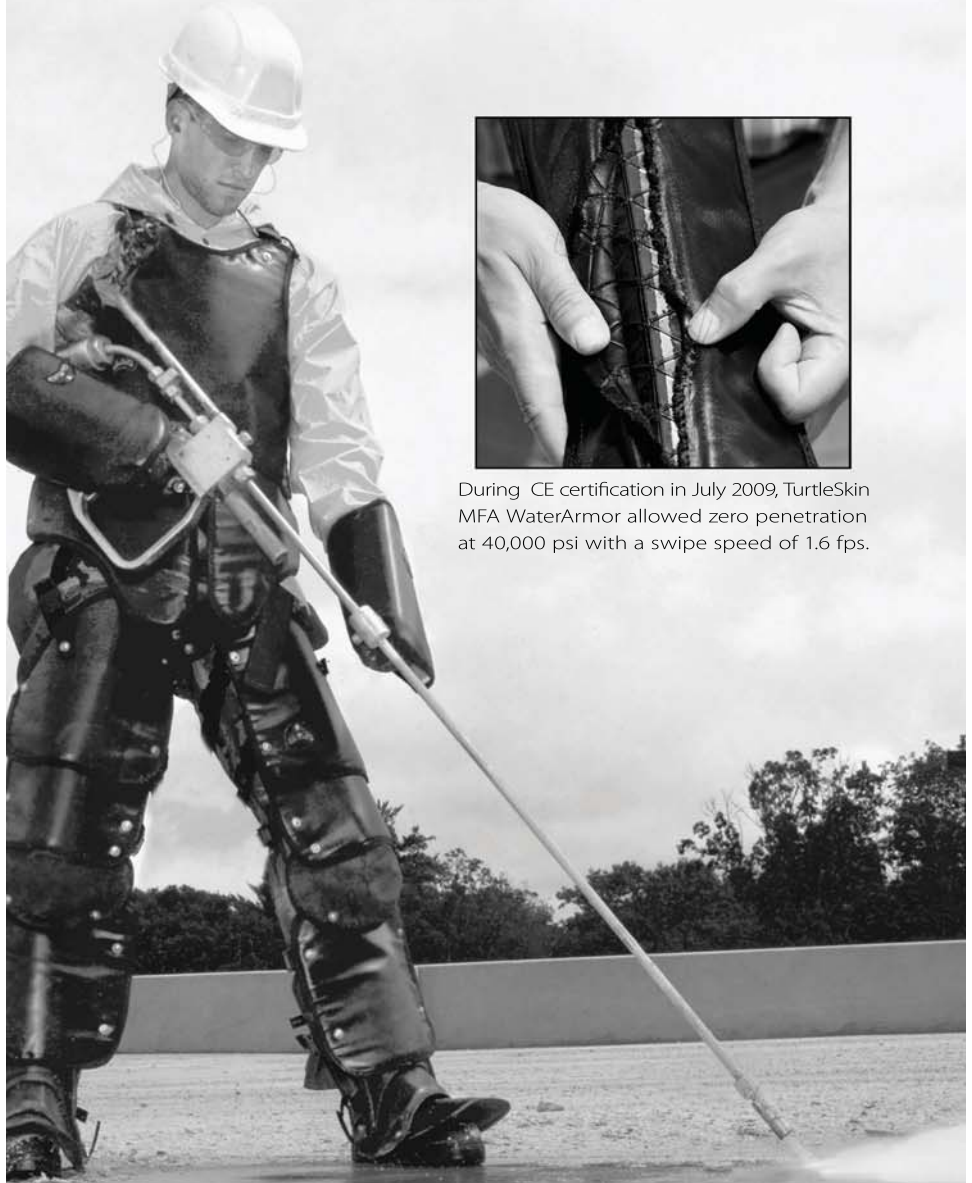
"They all spoke very highly of the reliability of the pump, technical service and Jet Edge's on-time parts delivery. That was a big part of us picking Jet Edge. I also was very impressed with Jet Edge's sales process and technical expertise. Jet Edge's regional sales manager Scott Wirtanen had very strong technical knowledge of the machine and understood our application. He helped us pick the right machine and equipment for our application."

Engle decided to buy his latest Jet Edge waterjet machine based on his satisfaction with Jet Edge's equipment, service and training.

"We have run our other systems 16 hours a day or more for over two and a half years," he says. "Anytime we have had issues, Jet Edge has been very good at offering technical solutions to help us out. Jet Edge's lifetime training program also has been very successful for us. We have sent people to training at Jet Edge and we've had training here. It has been very valuable as we have added locations and new operators."

For more information about Jacquet, visit www.myjacquet.com or call 484-945-1075 (Jacquet Mid Atlantic), 262-898-1381 (Jacquet Midwest), 949-221-9551 (Jacquet West), or 281-397-9920 (Jacquet Houston). For more information about Jet Edge, visit www.jetedge.com, call (800)538-3343 or e-mail sales@jetedge.com.

NEW TurtleSkin MFA WaterArmor UHP WaterJet Protection



During CE certification in July 2009, TurtleSkin MFA WaterArmor allowed zero penetration at 40,000 psi with a swipe speed of 1.6 fps.

What's the difference?

New Technology. Increased Protection. New TurtleSkin MFA WaterArmor is engineered from a new lightweight composite material that has a higher level of resistance from exposure to UHP water jet swipes.

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Waterjet Surface Preparation Machine Strips Paint, Coatings, Dirt, Grease From Steel Decks, Concrete Floors

The Ultra Deckblaster waterjet surface preparation machine by Jet Edge, Inc., uses ultra-high pressure waterjets to quickly blast away old paint, coatings, grease and dirt from steel decks and concrete floors without using hazardous chemicals.

Resembling a lawnmower, the self-propelled Ultra Deckblaster operates at pressures up to 55,000 psi (3,800 bar). Typical applications include removal of polyurethane paint or nonskid coatings from factory floors, ship decks, paint booths and parking ramps. The Ultra Deckblaster also removes accumulated spillage such as grease, oil and overspray.

The Ultra Deckblaster portable waterjet system utilizes UHP water supplied by a Jet Edge waterjet



intensifier pump. Hydraulic pressure activates the motor to spin the spray bar assembly and open a high-flow water valve supplying fluid to the manifolds. The water travels through a high-pressure on/off valve and high-speed swivel before entering the rotating spray bar. Multiple waterjet orifices direct UHP water over an 18" (46 cm) wide cleaning path as

the machine advances. The spray bar accepts a variety of standard jet manifolds.

Operators have total control of the rotation speed, drive speed, forward/off/reverse, water and rotation on/off of the spray bar. Easily accessible knobs control forward/reverse and bar rotation speeds. A manually actuated valve does not allow operation of any function unless the safety lever is depressed. The hydraulic-powered wheel drive (self-propelled drive) offers additional operator control and comfort and can be easily disengaged for free-rolling applications. The spray bar height is adjustable.

For more information, visit www.jetedge.com, call (800)538-3343 or e-mail sales@jetedge.com.

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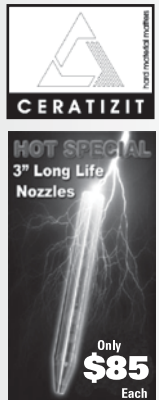


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TurtleSkin WaterArmor by Warwick

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Amuloid: Cost-Effective Without Compromised Performance

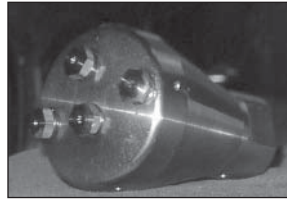
A time efficient, ultra productive, and most importantly, cost-effective. In an industry plagued by the financial woes of a struggling economy, cost-effective versatile tooling becomes more crucial for success.

Terydon Inc. manufactures a high cohesive waterjet to maximize capabilities while decreasing long-term cost. The amuloid uses a convenient three-part setup, resulting in a quick and easy interchange or replacement of damaged jewels on the job. Never throw away an entire assembly because of a worn or fractured jewel – simply exchange the old component for a new one. Each part may be replaced without adverse

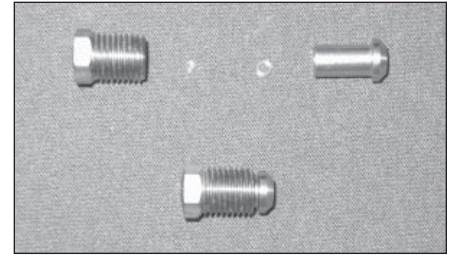
effect to the others. Because of time-efficient replaceable components, the amuloid is extremely cost-effective as end users are only

required to spend a small amount for the replacement part (s), instead of purchasing a whole unit.

Assemblies are compatible with most manifolds, spray bars, or nozzle bodies requiring a 3/8-24 RH thread. Patented unique jet placement and geometry increase productivity up to



Compatible assemblies seat in most manifolds, spray bars, and nozzle bodies with 3/8-24 RH thread.



Interchangeable assembly components are easily re-setable and replaceable.

two times that of currently marketed 3/8-24 type assemblies. The amuloid's ability to perform in a cost-effective manner without compromising quality gives it the superior cutting edge to other high cohesive jets on the market.

For more information, visit www.terydon.com or call (330)879-2448.

StoneAge® Dealers Meeting

StoneAge hosted a Dealer Days event at its Durango, Colorado, facility for 38 of StoneAge's dealers from 14 countries, including Argentina, Australia, Brazil, Canada, China, Dubai, Korea, Netherlands, New Zealand, South Korea, Spain, Taiwan, Thailand, United Kingdom, and the United States August 23-24, 2009. StoneAge's goal of the event was to strengthen dealer relationships, introduce new products, and provide training on new and existing tools. This is the first Dealer Days event for StoneAge, and it met with very positive feedback from both attendees and employees.

Attendees were welcomed on August 23 with a plant tour and round table discussions on industry trends, how to improve communication between dealers,

and how to provide better training. A hosted reception and dinner was held at the Historic Strater Hotel in downtown Durango.

On August 24, dealers were treated to live demonstrations of StoneAge's latest and next generation of waterblast cleaning tools and other product releases covering pipe, tube, and surface applications. They also attended training classes on how to use, maintain, and sell StoneAge products.

Dealers attending the event included: APS, AquaPower, Asia

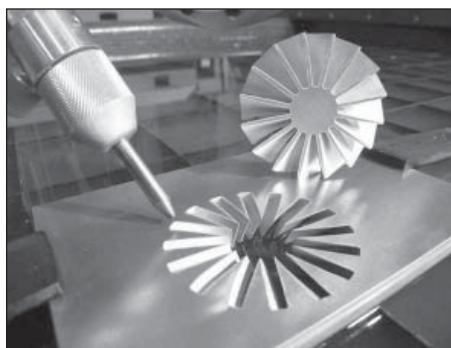
Waterjet, BC Taechang Ind. Corp., Blasters, Inc., Gardner Denver Water Jetting Systems, Hammelmann Corporation, Hsiang Yu, Hydrodyne, IMS, Jetstream Europe, Kerrick Industries, Kiwon Entec Co., Ltd., Lemasa, LaPlace Equipment, Motorrens, O'Connell Jetting Systems, Powerflow Middle East, Rowsun, Salotech, and Tecnica Armaq.

StoneAge, a leader in engineering technology, design, manufacture and customer support in the waterblast industry, is currently celebrating its 30th anniversary.



New 5-Axis Cutting Head

WARDJet has announced the availability of the new Psy-Winder 5-axis abrasive waterjet cutting head. Improvements include a height and crash sensor option, a moving mechanical cutting head, which keeps the tool tip position fixed, greater range of travel (capacity of 12" to 24" vertical travel on Z axis) and cutting angle from 0° vertical to 90° degrees horizontal.



WARDJet's innovative Psy-Winder cutting head for complex 5-axis parts.

Five-axis cutting is the perfect solution for cutting bevels and weld preps in material. Software makes it fast and easy to program bevels on parts or to allow for taper compensation to virtually eliminate the taper commonly found on parts cut by a waterjet. Post processors are available for both 2D and 3D CAM software.

Up to 9 Psy-Winder 5-axis cutting heads can be installed on one cross beam with a single X-Classic controller (which can be retrofitted to all past WARDJet systems and to most other waterjet systems). Depending on the waterjet system, speeds can be up to 2000 in./min. Video and photos of the Psy-Winder cutting complex 5-axis parts can be viewed on www.wardjet.com.

For more information, call (330)677-9100, ext. 6, fax: (330)677-9121, or email: sales@wardjet.com.

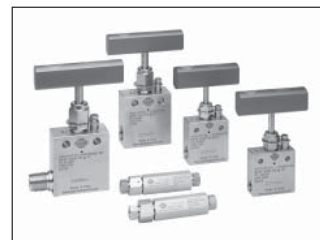
SPIR STAR Is Exclusive Distributor For SAMI Instruments High Pressure Valves

SPIR STAR, an industry leader in high pressure hose and fittings with working pressures up to 60,000 p.s.i., is now the exclusive distributor for SAMI Instruments High Pressure Valves. SPIR STAR is

pleased to represent the field-tested and trusted quality product line that Sami

Instruments

is recognized for. The new product line consists of NPT, medium and high pressure needle valves, ball valves and check valves with working pressures up to 60,000 p.s.i.



For more information, visit www.spirstar.com or call (800) 890-7827.

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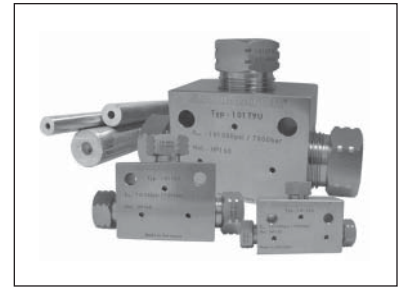
100,000 PSI Tubing And Fittings

New 100,000 psi tubing and fittings are now available from Maxpro Technologies. The sizes are: 1/4" OD x .083" ID; 3/8" OD x .125" ID; and 9/16" OD x .187" ID.

This next generation of ultra high pressure components offers the waterjet industry a reliable and cost effective alternative while providing the highest levels of quality available in the industry today. This product offers a higher yield strength than 304/316 stainless steel, giving it superior fatigue properties for high cyclic applications.

Material of construction for the tubing, elbows, tees, adapters, crosses, etc. is high strength nitrogen alloyed austenitic stainless steel (ASTM F 1586-95) that provides excellent corrosion resistance. The Collars and Glands are made of 17-4 PH stainless steel.

Maxpro Technologies is the North American distributor of Maximator high pressure valves and fittings as well as power products including liquid pumps, gas boosters and air amplifiers. Maxpro also designs and manufactures various pressure systems utilizing these



Maximator products as the main power source.

For more information, visit www.maxprotech.com, or contact MAXPRO Technologies, 7728 Klier Drive South, Fairview, PA 16415, phone: (814)474-9191, fax: (814)474-9391.

2009 American WJTA Conference and Expo, from page 6

"Pulsation Of Abrasive Water-Jet" a paper by **Seiji Shimizu, Ph.D., Tatsurou Ishikawa, Akinori Saito** and **Guoyi Peng, Ph.D.**, Nihon University, Fukushima, Japan, was selected from over 30 papers to receive the Best Paper Award.

The 2009 Conference was a great success, with increased participation at all levels. Visit www.wjta.org to view the 2009 American WJTA Conference and Expo photo album.

Industrial and Municipal Cleaning Association

At a meeting of the WJTA Board of Directors held in conjunction with the 2009 Conference, the board approved changing the name of the newly formed WJTA division to the Industrial & Municipal Cleaning Association (IMCA). The IMCA is a special interest group within the association for WJTA members who have an active interest in industrial and municipal cleaning. The purpose of the IMCA is to provide a more focused forum for WJTA members who are involved in industrial cleaning to communicate with each other, share

ideas and knowledge, and foster closer collaborations.

2010 WJTA-IMCA Expo

WJTA and IMCA will host the inaugural **WJTA – IMCA Expo, August 17-19, 2010, at the George R. Brown (GRB) Convention Center in Houston, Texas.** The WJTA – IMCA Expo will feature an expanded exhibit hall and boot camp sessions for individuals and companies in the waterjet and industrial

cleaning and vacuuming industries, including applications in precision waterjet cutting, industrial cleaning, waterblasting, hydrodemolition, surface preparation, and other applications in the manufacturing, mining, construction, and process industries. Exhibit displays will include equipment, products and services relating to precision waterjet cutting, industrial cleaning, waterblasting, hydrodemolition, surface preparation, and industrial vacuum equipment and trucks.



Flow Introduces HyPlex Hybrid Pump, Mach Series Waterjet Product Lines

Flow International Corporation has introduced the HyPlex Hybrid Pump, designed to cut faster than any other direct drive pump on the market.

Rated at 60,000 psi, the HyPlex Hybrid is the highest-pressure direct drive pump in the industry. Featuring patented PAC-V technology, the pump provides automatic pressure control, a first for direct drive pumps. It uses cone aperture technology to automatically maintain a true pressure signal, regardless of the orifice size or pressure setting, allowing users to easily switch between orifice sizes without having to change anything on the pump to accommodate the increased or decreased water flow.

An exclusive new seal design makes Flow's HyPlex Hybrid pump the longest lasting direct drive pump on the market today, so users can reduce maintenance costs and increase their productivity.

Flow has also introduced its innovative **Mach Series** line of waterjet cutting machines.

Building on more than 35 years of industry leadership, Flow's new Mach Series line of waterjets features the next generation in UHP technology. Combining the latest software upgrades, ultrahigh pressures rated up to 94,000 psi, new long-life intensifier and direct drive pumps, three-dimensional cutting advancements, and many other upgrades, all Mach Series machines are designed to deliver maximum versatility to manufacturers of all sizes and budgets.

Flow's new Mach Series consists of three distinct product lines: the Mach 4, Mach 3, and Mach 2,

all of which offer complete systems solutions to address a full array of customer needs while delivering the widest range of capabilities, technologies and price in the industry.

Flow's Mach 4 Series is a line of Flow's most productive, advanced machines for flat material and 3D material cutting. The Mach 4 Series waterjet machines allow manufacturers to cut faster, reduce costs and increase production. Standard features include:

- HyperJet 94i™ 94,000 psi intensifier pump; the highest operating pressure of any waterjet system in the world.



- Dynamic XD for bevel and 3D cutting of complex flat and non-flat parts.
- FlowXpert™ is Flow's latest advanced yet very easy to operate waterjet cutting software, which utilizes Flow's SmartStream™ technology to optimize cutting speeds based on a variety of user-defined parameters such as desired edge finish, material thickness, and material type. FlowXpert also includes FlowConnex™ revolutionary remote waterjet monitoring system that allows the owner/

(continued on page 29)



Federal Signal Announces New Training Program, Appoints Gary Toothe As Manager

Federal Signal Environmental Solutions Group has appointed Gary Toothe as training program manager for the company's newly developed training initiative. In this role, Toothe will lead the creation, implementation and dissemination of all training initiatives for the industrial, construction and utility market segments serviced through FS Solutions, a resource for used equipment sales and service, parts and rentals.

He will also facilitate training on operation, safety, supervision, management and sales to industrial cleaning contractors through their nearest FS Solutions Center. Training on these topics will be available via DVD and online.

"Bringing Gary's knowledge and skill to this new training initiative will have a significant impact on the success of industrial cleaning contractors across North America," says Tony Fuller, director of sales, Federal Signal Environmental Solutions Group. "Being able to train our customers on the correct use of equipment, as well as the sales and management skills they need, spells success for everyone involved."

"The importance of training to people who make their living operating vacuum trucks and waterblasters simply can't be measured," Toothe says. "Safety and best practices have always been an integral part of the FS Solutions mission, and I'm proud to be a part of this organization."

Toothe brings 25 years of experience in the industrial cleaning market segment to Federal Signal's Environmental Solutions Group. Known in the industry for his training



Gary Toothe

efforts, Toothe was this year's recipient of the WJTA Safety Award

for his contribution to the waterblast and industrial vacuum industry. A certified environmental, safety and health trainer and a certified instructional technologist, Toothe is also a member of the National Safety Council; the American Society for Training and Development; the National Environmental, Safety and Health Training Association; and Project Safe Georgia.

For more information, visit www.federalsignal.com.

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2009-2011

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Flow Introduces HyPlex Hybrid Pump, Mach Series Waterjet Product Lines, from page 27

operator to monitor the Flow waterjet over the internet, and track system performance.

The Mach 3 line features the proven technology that has earned Flow the reputation as the leading worldwide waterjet systems provider. Featuring the world's most reliable UHP pump, intelligent process monitoring, and an array of options, the Mach 3 features a convenient compact design to help preserve valuable floor space. Other features of the Mach 3 include:

- HyPlex Hybrid™ 60,000 psi pump, the highest operating pressure of any direct-drive pump in the world.
- Dynamic Waterjet™ cutting system – Flow's industry leading and original high-production/taper control system with +/- 10 degrees of wrist motion for use on flat material cutting.
- FlowPro™ intelligent control system, with powerful new features to maximize the performance on flat material cutting.

Flow's Mach 2 line is comprised of economical machines for those new to waterjet or on a limited budget seeking a reliable and easy-to-use system. The Mach 2 Series combines reliability with value to provide manufacturers with the waterjet system that will set them up for success. This full-featured waterjet series comes standard with all of the traditional waterjet features at a highly affordable price. With robust mechanical design, integrated machine systems, intuitive user control, multiple size and configurations, the Mach 2 series is extremely easy to use and features:

- JetPlex™ 55,000 psi direct drive pump.
- Paser™ ECL cutting system – The world's simplest and still the best abrasivejet cutting system.
- FlowMaster™ intelligent control system – the world's most popular waterjet programming and control software because it is easy to use and yet has advanced programming tools.

“With our latest Mach Series technology releases, Flow now has waterjet systems that match our customers' applications and budgets,” says Chip Burnham, vice president of marketing. “Flow as continually offered the highest pressure, most productive pumps, software, and machine tools in the industry, which has cemented our role as the leader in offering ultrahigh-pressure waterjet technology.”

For more information, visit www.flowcorp.com.



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KOIKEJET Precision Ultra-high Pressure Waterjet Cutting System

Koike Aronson/Ransome, Inc., manufacturer of cutting and positioning equipment for the metalworking industry, has introduced the new KOIKEJET cutting system for fabricators, steel service centers and shipyards. The new table combines Koike Aronson's experience and customer support with the latest waterjet technologies.



The KOIKEJET features laser alignment, initial height sensing, and adjustable water level control to improve cutting efficiency. The precision ground ball screw drive ensures accurate cutting motion, and the KMT intensifier pumps deliver state-of-the-art performance.

The KOIKEJET is available in a cutting width of 6 ft. and lengths of 6, 10, and 12 ft. Its precision cutting eliminates secondary operations on metals from gauge thickness up to 8 inches.

See the KOIKEJET at the Fabtech & AWS Welding Show, booth #34021.

For more information, visit www.koike.com or contact Waterjet Specialist Chris Goodson at goodsonc@koike.com.

SPIR STAR Releases New 25/6 UltraFlow® Hose

SPIR STAR has announced the release of its new 25/6 UltraFlow® hose. With a chemical resistant Polyamide inner core and outer cover, reinforced with six layers of high-tensile steel wire, this 1-inch ID hose can handle working pressures up to 20,000 psi and is available with Female M swivel or 1-inch MP tube nipple end fittings.

The new 25/6 UltraFlow® was developed for high flow waterblasting and will handle flow rates up to 150 gallons per minute, thus giving operators a distinct advantage when it comes to improved flow rates and minimal pressure loss. For more information, visit www.spistar.com or call (800) 890-7287.



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It's also the easiest unit to convert (just 20-30 minutes), and has a low-rpm pump that reduces wear, downtime and operating costs. And if you already have an NLB 225, you can add UHP with a simple kit!

NLB has more convertible units, more accessories, and more customer support, available at five regional branches. Let us boost your productivity — call **1-877-NLB-7988** or visit www.nlbcorp.com.

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e-mail: nlbmtg@nlbusa.com

John Wolgamott Receives 2009 WJTA Pioneer Award, from page 4

equipment used today. Manual waterblasting is still being done, but the direction and goal is to get the waterjet tool out of the operator's hands. This provides a much safer, less strenuous, and more productive cleaning process. Mechanization allows the use of greater blasting power and provides better control for more uniform results.

This month marks 30 years since Jerry and I started business in his garage, and I'm very proud of the company that has evolved from it. We have been able to grow and develop a well trained and experienced workforce with real team spirit. StoneAge is located in a beautiful Colorado mountain town and is 100% employee owned. Many employees who come to us stay for their career and we have several now that have been with us for 15, 20 and even 25 years. Today StoneAge is represented by over 160 dealers and is the leading manufacturer of waterblast tools worldwide.

It was never a dream of mine to start or run a business. But, like many things in life, simple events and decisions can lead you in unplanned directions. Overall I have enjoyed the challenge of building a company and it has been very rewarding. For me personally, being able to create and sustain good jobs is one of the most worthwhile endeavors I've ever been involved in.

For many years the US manufacturing industry has been shrinking in terms of employment, but it is still very important economically. I believe our, or any country's, future prosperity is dependent on having a healthy ability to manufacture and produce

items of value. I'm proud that StoneAge can contribute to inventing and producing items of value.

The WaterJet Technology Association (WJTA) has performed an important and critical role in helping the waterjet industry grow and mature. It does this in several ways, by developing safety practices handbooks and videos, putting on technical conferences and trade-shows, and publishing newsletters. All these efforts help communicate, educate, and network the practitioners, to nurture further improvements

in technology and standards of practice in our industry.

I have truly enjoyed being a part of the WJTA and the waterblast industry. Our industry is small enough to know most of the players, yet large enough to offer plenty of opportunities for growth. I believe the industry has a very strong future because waterjets are extremely useful, versatile and environmentally friendly. New applications and new markets are being discovered every day. Even an old Pioneer can look forward to the future!

- John Wolgamott

2009 American WJTA Conference and Expo Awards Ceremony

August 18-20, 2009 • Houston, Texas



Pioneer Award: (l. to r.) Dr. George Savanick, John Wolgamott (recipient), and Pat DeBusk.



Technology Award: (l. to r.) Dr. George Savanick, Dr. Seiji Shimizu (recipient), and Dr. Mohamed Hashish.



Safety Award: (l. to r.) Dr. George Savanick, Gary Toothe (recipient), and Bill Gaff.



Safety Award: (l. to r.) Dr. George Savanick, Philip Stein (recipient), and Bill Gaff.



Service Award: (l. to r.) Dr. George Savanick, Pat DeBusk (recipient), and Gary Noto.



Best Paper: (l. to r.) Dr. Seiji Shimizu and Dr. Guoyi Peng. Not pictured: T. Ishikawa and Akinori Saito.

Exhibitors At The 2009 American WJTA Conference And Expo

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(continued on page 33)



Exhibitors At The 2009 American WJTA Conference And Expo

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 GapVax, Inc.
 Gardner Denver Water Jetting Systems
 General Pump, Inc.
 Giant Industries, Inc.
 Guzzler Manufacturing
 Hammelmann Corporation
 Heintzmann Corporation
 High Pressure Equipment Company

HoldTight Solutions Inc.
 IGEMS Software AB
 Idrojet S.r.l.
 International Waterjet Parts
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WaterJet Technology Association's Order Form for Publications/Products

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