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Runaway Diesel Engine Explosions – Causes, Hazards and Prevention

By Jogen Bhalla, Amot Controls



BP Texas City, **BLSR** Operating Ltd., and off-shore diesel engine explosions.

Vacuum trucks are frequently used for tank cleaning, spill recovery and material transfer in the refining and petrochemical industry. With the use of vacuum trucks, a number of potential hazards are introduced that may lead to serious incidents if the right precautions are not taken. The following hazards can occur when working with vacuum trucks:

- · Mixing of materials
- · Loading hot materials
- · Connection of vacuum truck to process equipment
- Ignition in the vacuum tank
- Ignition outside the vacuum tank
- Toxic vapors

As most of the fires/explosions with vacuum truck operations occur outside the vacuum truck, this article

will focus on the most dangerous ignition source - runaway diesel engine.

The intent of this paper is to raise awareness of (a) the potential fire and explosion hazards associated with runaway diesel engines; (b) the time it takes for an overspeed condition to occur after initial vapor release; and (c) safe work practices operators should follow when operating diesel engines in hazardous areas.

OSHA in November 2012 issued a Fact Sheet titled Internal Combustion Engines as the Ignition Sources. This Fact Sheet is available at http://www.osha.gov/Publications/osha3589.pdf.

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2013 WJTA-IMCA Conference and Expo

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Understanding the Hazard

Stationary, mobile and vehicular diesel engines (vacuum trucks) are used in the oil and gas production, refining and petrochemical industry for their day-to-day operations. These industries are particularly vulnerable to diesel engine runaway due to hydrocarbon vapor cloud release.

Vacuum trucks must run the engine to perform the operation and it is not uncommon for these engines to be surrounded by hydrocarbon vapors. As refineries age and the oil and shale gas activity rises, the probability of a sudden hydrocarbon release increases substantially. Over time, refineries require upgrades and expansions. This will require a large number of contractors and diesel engines to perform the work. The use of unprotected engines by employers and contractors will continue to increase the risk of fire, explosions and fatalities.

The majority of the refining support operations are subcontracted to various companies. In these situations, safety may become compromised. Refining processes have enough risks of their own without the added unpredictability of human error.

Runaway Diesel Engine

A runaway can be described as an engine running out of control on an external fuel source where the operator cannot shut down the engine using conventional methods. During this condition, turning off the engine ignition switch, fuel system, shutting off the solenoid or disengaging the engine's load will not stop a diesel engine.

Diesel engine speed is governed by the controlled amount of fuel fed to the engine through its normal fuel system and by its internal speed governor. When additional uncontrolled fuel is present in the environment, in the form of combustible vapors, the engine may ingest this uncontrolled fuel causing the engine to overspeed. If the engine draws in a flammable vapor, the engine is likely to backfire through the intake system. Turning off the normal shutdown system will only turn off the engine's normal fuel source, permitting the engine to run on the external fuel source. In a total runaway engine situation, the result can range from minor engine damage to engine explosion, causing catastrophic damage to the equipment and



Tank farm explosion involving runaway truck. Source: Center for Chemical Process Safety, AIChE-Process Safety Beacon, October 2009.

surrounding facilities and deaths or injuries to personnel. An automatic diesel engine overspeed protection system

installed in the engine's intake system is the most effective method of eliminating this ignition source.

In addition, a diesel engine is not just an ignition source but can potentially act as a "hot box;" a high-energy detonation source for a hydrocarbon release that can cause large scale explosions. A runaway



Figure 2: Typical air intake system - 4 cycle diesel engine.

diesel engine, depending on the richness of the vapor cloud, can explode within seconds. There is no time to take any corrective action and it is dangerous to approach a runaway engine to try to shut it down.



Figure 3: BP Texas City, BLSR Operating Ltd., and offshore diesel engine explosions.

(continued on page 17)



KEY FEATURES

- All external parts are now machined and bolt together increasing overall strength and improving impact resistance from debris and dropping.
- Improved seal design protects gearing and internal components from water intrusion.
- New internal design reduces pressure loss allowing more power at the nozzles.
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WJTA-IMCA Color Coding Scheme for Pressure Hoses Effective January 1, 2013

The color coding scheme for pressure hoses adopted by the WaterJet Technology Association-Industrial & Municipal Cleaning Association (WJTA-IMCA) became effective January 1, 2013.

"The purpose of the color coding scheme is to help ensure on-the-job safety by making various hoses more easily identifiable on sight," says George Savanick, Ph.D., chairman of the WJTA-IMCA Safety Committee for High Pressure.

The color coding scheme appears in the *Recommended Practices for the Use of High Pressure Waterjetting Equipment*, which is published by the WJTA-IMCA. An excerpt is reprinted below:

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

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

The color scheme should be easily identifiable at least two feet from both hose ends.

If working between pressures in the chart, ensure that all hoses are color coded to indicate the next higher maximum rated pressure above the intended working pressure. For example, if the desired working pressure is 12,000 psi, use a hose rated at the next highest pressure (15,000 psi).

"We encourage hose manufacturers, suppliers, and users to observe this color coding scheme in the manufacture and use of high pressure hoses," says Dr. Savanick.

The Recommended Practices for the Use of High Pressure Waterjetting Equipment applies to the operation of all types of high pressure waterjets used in construction, maintenance, repair, cleaning, cutting, hydroexcavation, and hydro-demolition work. The *Recommended Practices* describes different types of equipment and operating systems used in these industrial applications and establish recommendations for the safe and efficient operation of high pressure equipment. This document is used in the training of operators and new employees, and is a reference throughout the US and abroad.

For more information, visit www. wjta.org, email: wjta-imca@wjta.org or call (314)241-1445.

Autoclave Engineers Changes Hands

A utoclave Engineers, the Erie, Pennsylvania based manufacturer of high pressure instrument valves, fittings, tubing and pumps for a large number of energy, waterjet, waterblast, and other industrial markets, was sold to Parker Hannifin and assigned to the Instrumentation Products Division based in Huntsville Alabama. Terms were not disclosed.

Autoclave Engineers was founded in 1946 and was previously owned by the Snap-tite Corporation prior to becoming a member of the Parker Hannifin family of companies. Parker Autoclave Engineers manufactures products for many waterjet and waterblast manufacturers and now is marketed along with the A-LOK[®], CPITM, and MPITM product lines of the Instrumentation Products Division, now providing the world's largest variety of instrumentation valves and fittings for virtually any pressure application.

For more information, visit www. autoclave.com.

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N ominations for the WJTA-IMCA Board of Directors are open. The duties of the directors are truly challenging and rewarding. WJTA-IMCA members are encouraged to get involved in the election process, nominate fellow members for a position on the board, and **VOTE!**

The terms of office of Kay Doheny, Jack Doheny, Inc.; Bill Gaff, Vacuum Truck Rentals, LLC; Mohamed Hashish, Ph.D., Flow International Corporation; Hugh Miller, Ph.D., Colorado School of Mines; Gary Noto; and George Savanick, Ph.D., Consultant; will expire on September 7, 2013. In addition, Pat DeBusk's resignation from the board has resulted in a seventh open position.

NOTE: The Board of Directors, at their September 10, 2012, meeting, appointed Bill McClister to

Nominations/Elections Procedures

In accordance with the bylaws of the WJTA-IMCA, revised in 2002, nominations and elections to the Board of Directors include the following procedures:

- At least two calls for nominations to the Board of Directors will be published in the *Jet News*. The first call for nominations appeared in the December 2012 issue. The second call appears in this issue. Nominations will be accepted through March 31, 2013.
- An official ballot listing the eligible nominees and a brief biographical sketch for each individual will be forwarded by mail on **June 10, 2013**, to all eligible voting members of the WJTA-IMCA. Signed and executed ballots must be forwarded to the Association's office for tallying no later than **July 15, 2013**.
- The names of newly elected board members will be announced on the WJTA-IMCA website and in *Jet News*.

Only WJTA-IMCA members in good standing (2012 membership dues paid) may submit a nomination(s). A nominee who has not paid her/his dues by March 31, 2013, shall be declared ineligible to run for office in the 2013 election.

temporarily fill the vacancy brought about by Pat DeBusk's resignation. Bill McClister will fill the vacancy until September 7, 2013.

Nominations are sought for seven (7) board members. Six (6) board

members will be elected to serve a four-year term of office beginning September 8, 2013. The candidate receiving the seventh highest number of votes will be elected to complete

(continued on page 20)

Nomination Form		
Name of Nominee		
Company	Title	
Address		
City	State	
Country	Postal Code	
Telephone	Fax	
Email		
Name of Nominator	Title	
Address		
City	State	
Country	Postal Code	
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Email		
Return completed Nomination Form and	supporting information to: WJTA-IMCA, 906 Olive Street, Suite 1200, St. Louis, MO 6310	

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WARDJet Partners with AMRC/Boeing

WARDJet Inc., Tallmadge, Ohio, designer and manufacturer of waterjet and CNC platforms, has partnered with the University of Sheffield Advanced Manufacturing Research Centre with Boeing (AMRC) in Sheffield, UK, to create one of the largest combination waterjet and CNC milling platforms in the world for use in ongoing research.

This unique GCM-Series machine, designed and manufactured in Northern Ohio, allows a single part to be processed with 24,000 rpm 5-axis milling and 5-axis waterjet cutting without moving the part. The cutting envelope is split with one section having a standard waterjet tank, leaving the remainder of the cutting envelope open to allow very large parts to be mounted onto the floor. The cutting envelope also allows 5 feet (1.5 meters) of Z travel for both the mill and the waterjet. WARDJet built this machine in response to the rapidly growing composites industry where a large cutting envelope and automated processes are desired.

To introduce the GCM, WARDJet and the AMRC with Boeing hosted an open house event in Sheffield, UK, at the AMRC with Boeing Campus, January 30-31, 2013. Visitors viewed the GCM in action and toured the AMRC facility and its capabilities.

WARDJet President Richard Ward has been appointed to the board of directors for the AMRC with Boeing, along with representatives from other partners, including Sandvik, Boeing, Rolls Royce, Mori Seiki, Carpenter,



BAE Systems, and Messier-Bugatti-Dowty.

WARDJet looks forward to working with the AMRC with Boeing to improve on current technology to help drive manufacturing in multiple industries, including aerospace, automotive and composites.

For more information, visit www. wardjet.com.

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The WJTA-IMCA 2013 Conference and Expo is the largest Conference devoted exclusively to high and ultra high pressure waterjet and abrasive waterjet technology and related equipment and services.

The WJTA-IMCA 2013 Conference and Expo will include:

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



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



Announcement and Call for Papers

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

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

Commercial and academic authors are encouraged to submit titles and abstracts for consideration. To submit an abstract(s), please complete the abstract submission form (an insert page in this issue of *Jet News*), attach a copy of your abstract(s), and mail to: Conference Coordinator, WJTA-IMCA, 906 Olive Street, Suite 1200, Saint Louis, MO 63101-1448, USA, or fax to: (314)241-1449. You can also go to www.wjta.org, fill out the abstract submission form online and email it along with a copy of the abstract to wjta-imca@wjta.org. **The deadline date for submission of abstracts has been extended to March 1, 2013.**

An Abstract Review Committee will review the abstracts. Authors will be advised **March-April**, regarding the decision of the Abstract Review Committee. The **WJTA-IMCA 2013 Conference and Expo** will focus, from a practical and scientific viewpoint, on the most upto-date advances in waterjetting equipment, techniques, and applications. The areas to be addressed include, but are not limited to:

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

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11th Armored Calvary Regiment Increases Operational Readiness with Water Jet Technology

The U.S. Army's legendary 11th Armored Calvary Regiment (ACR) has installed a Jet Edge precision waterjet cutting system at its home base in Fort Irwin, California.

Known for its tough and uncompromising standards, the 11th ACR, "the Blackhorse Regiment," is widely respected as the best opposing force in the world. The famous regiment, which was honored in Tom Clancy's novel "Executive Orders," is responsible for ensuring that the United States continues to have the best trained military in the world by serving as the opposing force in simulated conflicts at the Army's National Training Center (NTC) at Fort Irwin.

The 11th ACR's new Jet Edge Mid Rail Gantry waterjet system is operated by the Service & Recovery Section, a support section within the Regiment's Maintenance Troop, Regimental Support Squadron (RSS). The 20-soldier section is responsible for machining and welding fabricated parts as well as providing recovery support to the Regiment. In addition to its waterjet, the 11th ACR's shop has CNC milling capability, lathes and welding machines.

"We decided to purchase this equipment specifically to assist in expediting our work requests," explains Chief Warrant Officer Two Alphonso L. Ash, Jr., who heads the section. "The decision to incorporate the waterjet into our shop operations was based solely on our daily workload as the waterjet has helped to expedite our work requests; the waterjet also allows our section to fabricate parts that have a long shipping date and/or high cost



A waterjet cut plaque for departing soldiers.

which has increased our operational readiness."

The waterjet is being used primarily to cut metals ranging from aluminum to armored steel with a thickness from

(continued on page 22)





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Candidates Sought for 2013 WJTA-IMCA Awards

You are invited to submit candidates for the special awards presented by the WJTA-IMCA to honor a company, organization, or individual who has made a significant contribution to the industry through accomplishments that directly enhance waterjet technology and/ or industrial cleaning. A list of previous WJTA-IMCA award recipients appears on the right.

Award recipient(s) will be selected by the WJTA-IMCA Awards Committee and honored at a presentation ceremony on Tuesday, September 10, 2013, in conjunction with the 2013 WJTA-IMCA Conference and Expo in Houston, Texas.

Candidate nominations must be received **NO LATER THAN JULY 15, 2013.**

Process for submitting nominees for awards:

- An official form for candidate nominations appears on page 26. Complete one form for each nomination submitted. Make additional copies of the form as needed.
- Attach a narrative **and** biographical sketch to support each nominee.
- Return completed forms and supporting documentation to the WJTA-IMCA by email: wjta-imca@ wjta.org, fax: (314)241-1449, or mail: WJTA-IMCA, 906 Olive Street, Suite 1200, Saint Louis, MO 63101-1448, USA.

981	Pioneer Award Jacob Frank	2001	Pioneer Award George A. Savanick, Ph.D
83	Pioneer Award H.D Stephens		Technology Award Richard Ward
85	Pioneer Award William Cooley, D.Sc.	2003	Pioneer Award Pat DeBusk
87	Pioneer Award Norman Franz, Ph.D.		Service Award Mohamed Hashish, Ph.D.
89	Pioneer Award Richard Paseman		Technology Award Ernest S. Geskin, Ph.D.
91	Pioneer Award	2005	Pioneer Award Hartmut Louis, DrIng.
93	Jonn H. Olsen, Ph.D. Pioneer Award		Safety Award TurtleSkin WaterArmor
	Fun-Den Wang, Ph.D., Safety Award		Service Award NLB Corporation
	David Summers, Ph.D. NLB Corporation		Technology Award Jay Zeng, Ph.D.
	Service Award George A. Savanick, Ph.D.	2007	Pioneer Award Forrest Shook
	Technology Award Mohamed Hashish, Ph.D.		Safety Award Vacuum Equipment Safet
	Autoclave Engineers Hammelmann Corporation		Service Award Tony Fuller
995	George Rankin		Technology Award Mamidala Ramulu, Ph.D.
	Autoclave Engineers	2009	Pioneer Award
	Thomas J. Labus		Safety Award
	Thomas J. Kim, Ph.D.		Philip Stein
97	Pioneer Award David A. Summers, Ph.D.		Bill McClister
	Service Award Andrew F. Conn, Ph.D.		Seiji Shimizu, Ph.D.
	Technology Award Prof. Dr-Ing. Hartmut Louis	2011	Pioneer Award Bill McClister
999	Pioneer Award Mohamed Hashish, Ph.D.		Technology Award Jerry Zink
	Safety Award Bruce Wood		
	Service Award John Wolgamott		
	Technology Award Ryoji Kobayashi, Ph.D.		

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Email addresses and other member contact information published in the WJTA-IMCA Membership Directory are meant to encourage helpful, informative communication between members. The information is not provided to circulate spam or junk mail.

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.

Hypertherm Acquires AccuStream Waterjet Products Company

Hypertherm, a U.S. based manufacturer of advanced cutting systems, has acquired AccuStream, a Minnesota based manufacturer of waterjet cutting products.

The acquisition will advance Hypertherm's strategy of providing customers with the optimum cutting technology—whether plasma, laser, or waterjet—for their particular cutting application, supported by the company's control and software products for increased performance and ease of use. At the same time, AccuStream and its customers will receive access to Hypertherm's substantial engineering resources and global infrastructure.

"AccuStream's core values and focus on building reliable, highly precise cutting products makes the company a perfect fit for Hypertherm," says Hypertherm founder and CEO Dick Couch. "We believe waterjet cutting is an excellent complement to Hypertherm's existing plasma and fiber laser technologies and look forward to working together to advance the capabilities of waterjet technology."

"Hypertherm's worldwide sales and service infrastructure is ideally suited to expanding the availability and support of our waterjet products," says Eric Chalmers, AccuStream's co-founder and president. "I am also excited about joining a company with such a high level of commitment to its team, and focus on developing market-leading technology."



Hypertherm does not plan any major changes to AccuStream's operations. All positions including manufacturing will remain in New Brighton, Minnesota and no workforce reductions or consolidations are planned. In addition, Hypertherm plans to provide AccuStream associates with the full complement of Hypertherm benefits, including profit sharing and full participation in its employee stock ownership plan.

The transaction was structured as a purchase of substantially all of the assets and assumption of certain liabilities of Accustream Inc. Financial terms of the transaction are undisclosed.

Jet Edge Awarded U.S. Patent for Ultra-High Pressure Waterjet Seal Innovation

The United States Patent and Trademark Office has issued Jet Edge, Inc., a patent for a high pressure fluid sealing mechanism designed by Jet Edge R&D Engineer Michael Wheeler.

Jet Edge's proprietary high pressure fluid sealing mechanism (U.S. Patent 8,333,387) improves waterjet seal life by providing robust Metal-on-Metal sealing without the use of conventional plastic seals. This technology uses two convex curved surfaces in single line contact with one another to seal ultra-high pressure (UHP) fluid at static pressures up to 130,000 psi. To view the patent, visit http://1.usa.gov/ VuWMjM.

"Jet Edge's revolutionary Metalon-Metal sealing technology marks a tremendous breakthrough in waterjet technology," says Jet Edge President Jude Lague. "With it, we are able to offer one of the longest seal lives in the industry, which translates into higher productivity and lower maintenance costs for our customers."

Jet Edge initially developed the Metal-on-Metal seal to meet the increased performance demands of its X-Stream (XP) pressure intensifier pumps, which produce dynamic cutting pressures of 75,000 psi. The technology has proven so successful that the waterjet manufacturer has expanded its use into additional product lines, including its ECO-JET direct drive pumps and several of its 60,000 psi intensifier pumps.

With its Metal-on-Metal sealing technology, Jet Edge has been able to eliminate static seals in its XP intensifiers and ECO-JET direct drive pumps, Wheeler notes.

"This has effectively cut the number of seals that can fail or need to be changed in half," Wheeler says. "I've assembled and disassembled these seals countless times and most of the time a quick cleaning of the surfaces with a Scotch-Brite[®] pad and a fresh coat of Blue Lube is all the maintenance that's ever needed. The Metal-on-Metal seals that are part of the cylinders in our R&D ECO-JET have at least 40 million pressure cycles on them."

Wheeler notes that it took a tremendous team effort to develop the technology and achieve the patent.

"I want to thank Jude Lague for funding the research, development, and legal work that lead to this patent, [Jet Edge Engineering Manager] Dave Lafavor for encouraging the research, [former Jet Edge employee] Reynold Sacquitne for his help in testing and troubleshooting the technology, [Jet Edge machinist] Brian Wallace for his



Michael Wheeler is Jet Edge's R&D engineer.

excellent job machining the prototypes that lead to this technology, and [attorney] Paul Grunzweig for helping us find our way through the legal process of writing and obtaining the patent," he says.

For more information, visit www.jetedge.com, e-mail sales@jetedge.com.

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- · Must be able to work well with others.
- Must be able to lift 50 pounds.

Please visit our website at www.nasscoearl.com, click on the "Careers" tab, and search for positions under "Job opportunities" in the "NASSCO-Earl Portsmouth" location for full requirements and other current employment opportunities. We provide our employees with excellent benefits and career growth potential. If interested in joining our team, please apply on-line, visit us at 500 Crawford St., Suite 401, Portsmouth, send a resume by email to jobs@nasscoearl.com, or call 757-558-0782 for further information. WE ARE AN EEO/AA EMPLOYER!

Runaway Diesel Engine Explosions – Causes, Hazards and Prevention, from page 2

Choosing Appropriate Control Methods

The following steps can minimize or eliminate the safety risks associated with runaway diesel engines:

- Never drive into an area where you suspect there might be a flammable vapor cloud.
- Protect vacuum truck and other equipment driven by an internal combustion engine as this can also act as an ignition source. Such equipment might include mobile or portable generators, air compressors, and engine driven pumps.
- Educate personnel that the normal engine shutoff methods will not work as long as flammable vapor continues to enter the intake system.
- The truck itself may become a potential source of ignition and should be protected with an automatic overspeed shutdown system and a cyclonic spark arrester. This system detects the overspeed and activates the shutdown system as the engine speed level reaches an unsafe limit.
- Inspect applicable engines for an automatic overspeed protection device prior to entering the facility.
- Educate employees, contractors and other users on how to properly maintain a diesel engine overspeed protection device.
- Do not drive unprotected diesel engines into the refineries and petrochemical plants or other hazardous areas.

Recommended Control Methods by Diesel Engine Manufacturers and Experts

Most diesel engine manufacturers and dealers offer shutdown devices on their engines as standard and/or optional equipment. Check with your engine manufacturer for specific details. For after-market engines, air intake shutdown system manufacturers can provide magnetic pick-up speed sensors, speed switch and air intake shutdown valves along with a complete installation kit for each engine type. The installation kit can save many design, engineering and installation hours, as well as eliminate errors.

As shown in Figure 4, an automatic overspeed system detects the RPM velocity of an engine and activates the shutdown system as the RPM level reaches an unsafe



Figure 4: Automatic overspeed shutdown system with manual override

limit. This action eliminates the diesel engine as an ignition source and limits the worker's exposure to the hazardous environment.

Automatic systems are available in the following configurations:

• Automatic electric overspeed detection shutdown system with manual override

(continued on page 18)



Runaway Diesel Engine Explosions – Causes, Hazards and Prevention, from page 17

- Automatic electric to pneumatic overspeed shutdown system with manual override
- Automatic hydro-mechanical overspeed shutdown system with manual override

Manual systems are available in:

- Manual electric overspeed shutdown systems
- Manual electric to pneumatic shutdown systems
- Pneumatic manual shutdown systems
- Cable operated shutdown systems

Manual systems as shown in Figure 5 are typically installed on smaller, vehicular or portable engines where an operator is continually present to activate the toggle switch or pull the cable handle to shutoff the air to the engine.

Industry Recommended Practices

API, ISO, Canadian, British and other international standards recommend installing an overspeed protection system for all diesel

system for all diesel engines that are at high risk of ingesting flammables in order to prevent a diesel engine from becoming an ignition source. An overspeed shutdown system and a dry cyclone certified spark arrestors should be



Typical installation of an air intake shut off valve.

provided on all internal combustion engine exhausts operating within 100 feet of the process area.

Hot Work Permit Program

Although many refineries and petrochemical plants control the use of diesel and gas engines into or adjacent to processes with Hot Work Permits, most permits only require continuous standby and gas monitoring when welding or burning is occurring. Vehicle entry generally requires an initial check for flammable gases, and periodic re-checks if the vehicle stays in the area.



Figure 5: Manual Electric to Pneumatic Shutdown System.

These practices make the likelihood of detecting a flammable release and shutting down the vehicle engine in time to avoid being the potential ignition source extremely low.

Assuming, that all the steps required to check the presence of flammable gases and vapors under a Hot Work Permit program are completed, and a Hot Work Permit is issued to complete the work, the scenario can be as follows:

- 1. A vacuum truck is allowed to enter the oil and gas facility.
- 2. A sudden gas leak caused by a ruptured disc or broken line at the facility creates a vapor cloud that moves with the air.
- 3. The gas detector detects the vapor in the atmosphere once the percent exceeds the pre-set lower explosive limit.
- 4. The gas detector reacts and sounds an alarm.
- 5. An operator hears the alarm, stops his job and decides what to do next.
- 6. If the operator or contractor is close to the engine and sees it running, they may try to turn it off when the alarm sounds.
- 7. The operator climbs up the vacuum truck looking for the controls.
- 8. The operator finds the fuel control and turns it off.
- 9. The engine does not stop it is consuming the same gas leak cloud and is running on compression ignition of the mixture.
- 10. The engine overspeeds and puts a flame through the exhaust.

(continued on page 25)

Jetstream Introduces IX100 Series Compact Waterblasting System

Detstream of Houston, LLP has introduced the IX100 Series compact waterblasting system for industrial cleaning contractors. Built on a heavy-duty, compact frame, this rugged and versatile system features the UNx[®] fluid system designed for fast conversion between 550 bar (8,000 psi) and 2750 bar (40,000 psi) operating pressures. Additional features include an external gear drive, comprehensive shutdown systems, a high-perfor-

mance 93 kW Tier 3 engine, high-capacity fuel tank and sealed control panel.





research, design and engineering improvements," says Richard Scruggs, product manager at Jetstream. "As part of our commitment to provide solutions that deliver lower maintenance costs, less downtime, and greater productivity, Jetstream consulted with waterblast operators, industrial cleaning contractors and other industry professionals around the world to develop a range of performance and maintenance features to serve the needs of the industrial cleaning market."

For more than 20 years, Jetstream UNx pumps have enabled cleaning contractors to perform pump maintenance in the field quickly and efficiently, without compromising durability.

Additional fluid ends can be installed within minutes, without the need for special tools, allowing the IX100 Series waterblasting system to cover a full range of operating pressures.

"Professional cleaning contractors demand superior versatility, durability, operating efficiency and ease of maintenance from their waterblasters, and the UNx fluid end system delivers on all accounts," Scruggs says. "The UNx system gives contractors the flexibility to tackle the toughest jobs, the efficiency to keep their operating costs low and the performance to maximize productivity every hour on the job."

Unlike competitive units that feature internal gear drives, the IX100 Series is designed with an external

drive with helical gears for a quieter, more efficient power transfer compared to a belt drive, and easier maintenance compared to an internal gear drive.

To protect the IX100 Series system against low oil pressure, high temperature and other damage, shutdown systems include low-supply water pressure, dirty water filter, engine fault, manual emergency stop and manual override.

One of the most compact waterblasting systems in its size class, the IX100 Series is easier to transport incountry. "The IX100 Series is easier to fit on trucks and trailers, and can be mounted inside enclosures," Scruggs says. "The compact, mobile design allows the system to fit more economically into shipping containers, making it much easier and more efficient to ship from our Houston facility."

To protect against corrosion in harsh industrial environments and conditions, the heavy-duty compact frame of the IX100 Series is hot-dip galvanized. The frame also features a sturdy, eight-inch (203 mm) channel.

(continued on page 23)





Terydon's most recent release, the IPC-3, has been designed to offer another option to abrasive cutting applications. As a system designed for cutting vertical well-pipes in the oil well abandonment process, the IPC-3 effectively cuts through the inner pipe, cement, and outer pipe of abandoned well-pipes in one cut from the *inside* out. The IPC-3 uses the same 55k-rated UHP Technology of the Jack Track Cutting System. After this patent-pending product is lowered to its desired depth in the interior, it is secured in place by actuated centralizer arms, and the full abrasive cut is completed by its patented 360° rotating cutting head. While conforming to I.D.'s of 4"-16", the IPC-3 is not limited to oil well

WJTA-IMCA Conference and Expo

Preliminary Schedule of Events

Monday, September 9, 2013

8:00 a.m.-4:30 p.m. Pre-conference Seminar - Basics and Beyond

Tuesday, September 10, 2013

8:00 a.m.-10:30 a.m. Live Demonstrations
10:30 a.m.-5:00 p.m. Exhibit Hall Open
8:00 a.m.-5:00 p.m. Boot Camp Sessions
10:30 a.m.-5:00 p.m. Emerging Technology, New Applications – Papers
5:00 p.m.-7:00 p.m. Industry Appreciation Reception and Awards Ceremony

Wednesday, September 11, 2013

8:00-10:30 a.m. Live Demonstrations 10:30 a.m.-1:00 p.m. Exhibit Hall Open 10:30 a.m.-1:00 p.m. Emerging Technology, New Applications – Papers

As of 12-1-12

abandonment, but is designed to perform in various pipes, tubes, or ducts, whether vertical or horizontal.

Accompanying the IPC-3 is the hand held controller, which controls on/off, forward/reverse, feed rate, and rotation, as well as including a rotation indicator that visually signals a complete 360° cut. With this design in mind, the IPC-3 creates a working environment where the operator has complete control above the surface, but also eliminates ever putting a shovel to work. To view the IPC-3, visit Terydon at Booth #3108 at the 2013 Pumper Show, February 26-28, 2013, in Indianapolis, Indiana.

Call for Nominations – 2013 WJTA-IMCA Board of Directors, from page 6

Pat DeBusk's unexpired term of office and will serve the remaining two years of the four-year term ending in September 2015.

The WJTA-IMCA bylaws provide that no more than one of the elected board members may be from the same company or organization. Therefore, board members may not be nominated from the same company or organization already represented on the board by individuals whose terms expire in 2015, including **CSM Supply** (Luis Garcia), **The Dow Chemical Company** (Kathy Krupp), **High Pressure Equipment Company** (Larry Loper), **StoneAge, Inc.** (Kerry Petranek Siggins), and **NLB Corporation** (Forrest Shook).

According to the WJTA-IMCA bylaws, any WJTA-IMCA member in good standing (2012 membership dues paid) may submit a nomination(s). A nominee who has not paid her/his dues by **March 31, 2013**, shall be declared ineligible to run for office in the 2013 election. The deadline for making nominations is **March 31, 2013. Your nomination(s) should reach the WJTA-IMCA office no later than March 31, 2013.**

To submit a nomination(s), complete the Nomination Form on page 6 and return, <u>along</u> <u>with a biographical sketch and a statement of your</u> <u>nominee's mission and vision for WJTA-IMCA</u>, to: WJTA-IMCA 906 Olive Street, Suite 1200, Saint Louis, MO 63101-1448.

Remember, nominations must be submitted to the WJTA-IMCA office **NO LATER THAN MARCH 31**, **2013**. <u>Nominations must be accompanied by a bio and</u> <u>mission and vision statement.</u>

Hughes Cleans Up in the Body Shop

and Rover Vehicles, UK-based manufacturers of the Range Rover, Discovery and Land Rover range of prestige vehicles, has selected Hughes Pumps waterjetting equipment for an automatic skid cleaning facility that is designed to be an efficient and cost effective way of removing over sprayed paint on skids used to transport vehicle bodies through the company's paint shop.

Second oldest four-wheel-drive car brand in the world, Land Rover Vehicles, is now a part of Jaguar Land Rover group, a subsidiary of Tata Motors of India. The group's range of prestige vehicles is synonymous with quality, including immaculate paint finishes, which are only possible if the paint shop is contaminate-free.

Previously Land Rover had sent the paint skids off-site where paint deposits were burnt off in ovens. Not only has water jetting proved more environmentally friendly as it uses only clean water, but the new skid cleaning facility has enabled skids to be cleaned on-line without disruption to production. The earlier method required the use of extensive manpower for loading/unloading the skids for transport, which inevitably became damaged over time due to heat distortion and transport damage.

The custom made skid clean facility is 15 m (49 feet) long by 6 m (20 feet) wide and uses three robots fitted

Waterjet Manufacturer Jet Edge Publishes New International Brochure

Jet Edge, Inc. recently released a new international brochure highlighting its precision waterjet cutting and mobile waterjetting products. The brochure is

currently available in English and German, with additional languages coming soon.

The brochure features Jet Edge's precision waterjet cutting systems and waterjet pumps as well as its mobile waterjet cutting systems and ultra-high pressure surface preparation equipment. It also highlights



Jet Edge's 28-year history in the waterjet industry, and includes several proud moments in the company's history when Jet Edge equipment came to the rescue during high-profile crises, including the Gulf of Mexico oil spill, the Kobe earthquakes and the Kuwait oil fires. with high impact Hughes rotary nozzles. The three rotary nozzles are powered by two Hughes HPS3000 pumps with a combined delivery of 200 litres per minute (53 gpm) at 900 bar (13,000 psi), producing a water jet velocity of 400 metres per second (1,440 kph



The custom made skid clean facility is 15 m (49 feet) long by 6 m (20 feet) wide and uses three robots fitted with high impact Hughes rotary nozzles.

/ 900 mph), enough to remove the toughest of deposits, without any possibility of damaging the skid.

Hughes Pumps also supplies manual hand-held cleaning systems for use between 1000 and 3000 bar (14,500 and 43,500 psi) for cleaning paint shop grids, dollies and fixtures in the automotive and coatings industries.

For more information, visit www.hughes-pumps.co.uk or email sales@hughes-pumps.co.uk.



11th Armored Calvary Regiment Increases Operational Readiness with Water Jet

Technology, from page 12

1/8 inch to 3 inches, CW2(P) Ash notes. Previously the soldiers had been cutting these by hand with a plasma torch, oxy-acetylene torches and shear.

"The waterjet is unique because parts can be created using the computer-based software (SigmaNEST®) and cut out after the part has been built," CW2(P) Ash continues. "Also, the part can be handled immediately following the cut without having concern for heat as in the OXY/ Acetylene or plasma torch."

Within the first month of installation, the section had already built numerous parts with its Jet Edge including battery shims, transmission shifting linkages, electrical covers, ornamental fixtures, and spanner wrenches, he notes.

"I have found that this system has been an excellent and valuable asset to our shop as I have recommended this piece of equipment to many of my peers as part of their shop setup," CW2(P) Ash comments.

Jet Edge President Jude Lague expressed Jet Edge's great pride in being selected as the 11th ACR's waterjet systems manufacturer.

"We are truly honored that the 11th ACR chose a Jet Edge waterjet system," Lague says. "It is humbling to have our equipment selected by the U.S. Army's premier regiment. If you look into their history, it's absolutely amazing because they were involved in so many of the world's historic events during the past 100+ years. We are so proud to be part of their future."

Since 1901, the 11th Armored Cavalry Regiment has proudly served the Nation in times of peace and conflict. The 11th ACR's unique mission is vital to the readiness of the U.S. Army.

For more information about the 11th ACR, visit www.irwin.army.mil.

For more information about Jet Edge, visit www.jetedge.com or call 1-800-538-3343.

Photographs courtesy of U. S. Army - 11th Armored Calvary Regiment.

FOR SALE TWO TRACKING SYSTEMS

- For boiler cleaning aluminum sections, hydraulic hoses, electric over hydraulic source, self contained, two hydraulic motors, does not include spray head.
- (2) For scarifying/demolition of concrete no spray head, can track on 4" x 4" box beam.

Package deal only: \$7,500

For information, contact willhamilton01@gmail.com



The 11th Armored Calvary Regiment's new Jet Edge waterjet system is operated by the Service & Recovery Section of the regiment's Maintenance Troop, Regimental Support Squadron (RSS). Pictured from front to rear (left to right): SGT Hardin, SPC Tucker, SPC Barlow, SGT Stanger, CW2(P) Ash, SPC Millbank, SPC Hodge, PFC Adams, SGT Bouknight, SGT Lemberg, SPC Stokes, SPC Roberts, SPC Beauchemin, PFC Sheldon, SGT Rodriguez.



SPC Roberts and PFC Adams are programming and building a part with the SigmaNEST® software.



SPC Roberts, SPC Hodge and PFC Adams are cutting a part that was built using the SigmaN-EST® software.



PVS-15 spanner wrench.

Jetstream Introduces IX100 Series Compact Waterblasting System,

from page 19

For added safety, all moving parts on the IX100 Series system are fully guarded. Dual rupture disc assemblies prevent extreme over-pressurization during operation.

Optional features include an air compressor, extended-run fuel tank, inlet regulator, insulated exhaust system, bench vise, remote e-stop, lube water recirculation pump and system pressure sensor and overpressure shutdown.

For more information on the new IX100 Series waterblasting system, visit www.waterblast.com or call 1-800-231-8192.

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High Pressure Equipment Company Announces Growth Plans, Move to New Facility

High Pressure Equipment Company (HiP), manufacturer of specialty valves for high pressure applications, has announced plans to expand its manufacturing capacity. Having experienced sustained growth in recent years, HiP will relocate to a new, larger plant within the Erie, Pennsylvania area. As a result of increasing customer demand across its product offering, the company expects to add additional jobs in connection with the move, and make other capital investments.

Larry Loper, president of High Pressure Equipment comments, "We're pleased to announce our expansion plans, including our move to a larger facility, investments in new machinery and resulting increase in manufacturing capacity." Loper further adds, "Together with our investment partners at Wasserstein & Co., we believe continuing our relationship with the Erie-area's highly skilled workforce and supplier base positions us to best serve our global customer base and meet our aggressive growth targets."

The company's new 43,000 sq. ft. manufacturing facility is located at 2955 W. 17th Street in Erie, PA. HiP anticipates completing the move into its new plant during the first quarter of 2013.

For more information, phone: (814)838-2028 or email: sales@ highpressure.com.

L.S. Kosowan Announces Formation of Jettacon Solutions

L.S. Kosowan, Copper Cliff, Ontario, Canada, has announced the formation of Jettacon Solutions. Jettacon Solutions Robotic Concrete Mixer Drum Cleaning System removes concrete build-up from concrete mixer drums with high pressure water instead of the traditional manual jackhammer process.

Even with regular washing concrete hardens and builds up on the blades and the internals of all concrete mixer drums. The innovative, time saving, cost-efficient Jettacon Solution process eliminates the dangerous, time-consuming task of manually jack hammering hardened concrete buildup from the inside of the concrete mixer drum.

During a cleaning cycle the Jettacon Solutions robotic arm enters the drum. With the drum slowly rotating, the patented torpedo system utilizes high pressure water technology to remove any buildup of hardened concrete while the torpedo system slowly retracts from within the drum.

The high pressure water pushes the concrete away from the blades and drum skin avoiding the inevitable damage done to the mixer drum by the manual jackhammer process.

The efficiencies of Jettacon Solutions concrete mixer drum cleaning system will increase fleet productivity when accompanied with a pro-active maintenance program based on fleet requirements. The Jettacon trailer-based mobile system typically operates on site, which eliminates costly trips away from the plant. Operators have several years of waterjetting experience and are fully trained on the cleaning system.

For more information, call (705)692-0735.

Matrix Service Company Completes Industrial Cleaning Acquisition

atrix Service Company has announced that its subsidiary, Matrix Service Inc., acquired certain assets and employees from Pelichem Industrial Cleaning Services, LLC ("Pelichem") on December 31, 2012. Pelichem is a privately-owned industrial cleaning services provider based in Reserve, Louisiana, who has served refining and petrochemical customers for over ten years. This acquisition furthers our strategic plans to grow the industrial cleaning business. While the terms of the acquisition were not disclosed, the acquisition purchase price was less than \$10 million and funded with cash on hand.

John Hewitt, CEO of Matrix Service Company, notes that, "Pelichem has been a premier provider of high quality industrial cleaning services for over a decade. We welcome their employees to the Matrix Service family and look forward to continuing to provide their customers with safe, high quality services. This acquisition significantly expands our industrial cleaning business and further extends our geographic reach along the Gulf Coast. We are very excited about this acquisition and believe our combined strengths will provide opportunities for growth."

With this transaction, Matrix Service adds a new operating facility in Reserve, Louisiana along with its existing industrial cleaning facilities in Baton Rouge, Louisiana, Kansas City, Missouri, and Tulsa, Oklahoma.

For more information, visit www. matrixservice.com.

Runaway Diesel Engine Explosions – Causes, Hazards and Prevention, from page 18

- 11. The flame results in explosion of the gas and operator injury or death.
- 12. The explosion spreads to the whole refinery resulting in additional fatalities creating economic and environmental damage.

Typically, the operator or the contractor will not go to the engine (at point 6) and will run the other way and (if lucky) save himself, but the runaway and explosion would still happen.

Lessons Learned

Based on the BP Texas City Refinery and Deepwater Horizon Explosion investigations and hearings, there are numerous diesel engine safety related issues that must be addressed. These include:

- 1. Vacuum truck emergency shutdown devices should have actuation checked no less than once a month to determine that they are in proper working condition.
- 2. A field proven overspeed protection system with proper installation kits for diesel engines in vacuum trucks should be used to prevent a diesel engine from becoming an ignition source.
- 3. Ensure that employees and contractors shut off their diesel engines when not in use.
- 4. Provide adequate training on safe operation of diesel engines.
- 5. Ensure that employees and contractors follow the company guidelines on operating diesel engines in hazardous areas.

In summary, diesel engines come in a variety of design configurations and fuel schemes but handle air the same way for combustion. Every diesel engine has the potential to overspeed when in the presence of hydrocarbon vapors. This fact, along with the previously mentioned contributors, proves that providing effective combustion air control is the only way to prevent diesel engine overspeed.

ABOUT THE AUTHOR: Jogen Bhalla is a vice president at AMOT, with 25+ years of process instrumentation and control experience in the oil and gas, chemical and petrochemical industry. He became involved in controlling ignition sources and runaway diesel engines after the Texas City refinery explosion in 2005 and has presented and published numerous papers on the subject. Email: Jogen.bhalla@ amot.com; (1)512.789.2751.

Maxpro on the Internet

Maxpro Technologies has updated its presence on the internet. This update represents a substantial investment in the website experience and the amount of information available to customers. "Today's business environment demands that information be found quickly and easily on the computer, hand-held device or smart phone, and our newly designed website answers that need," says Paul Bowser, president of Maxpro Technologies.

Customers are able to access the entire Maxpro catalog for high pressure valves, fittings and tubing, view the technical information, and request a quote with a few simple clicks of the mouse. The new layout offers a common sense path to find products quickly, or if looking for a replacement fitting, simply search by the Maximator part number to go directly to the page.

Maxpro's newest product addition, the Coning and Threading Machine, is featured on the website with a video that describes all of its features, clearly demonstrating the easy single ended operation of the unit. For the waterjet industry equipment supplier, this machine plays an important part in decreasing overall production time.

For more information, visit www.maxprotech.com.



2013 WJTA-IMCA Awards Nomination Form

Instructions: Complete sections below and submit a narrative (300-word maximum) and biographical sketch to support your nomination on a separate sheet of paper. Please print or type all information.

I nominate the following **company, organization, or person as a candidate** to receive a 2013 WJTA-IMCA Award (please print or type full individual, company, or organization name):

Distinguished Pioneer Award

The nominee must:

- Have made contributions to the waterjet and/or industrial cleaning industries
- Have made contributions to the achievement of the goals of WJTA-IMCA
- Have high moral character
- Have strong personal and business ethics
- Be dedicated to the future of the waterjet and/or industrial cleaning industries and to the growth of WJTA-IMCA

Service Award

How has the nominated company, organization, or individual contributed in time and talent toward improvement in the industry or in the WJTA-IMCA?

Technology Award

What has the nominated company, organization, or individual done to introduce new and innovative ideas in engineering or manufacturing? This could include, but is not limited to, new products, new manufacturing techniques, patents...any unique activity that advanced the technology of the waterjet and/or industrial cleaning industries.

□ Safety Award

What has the nominated company, organization, or individual done to introduce new and innovative ideas in safety? This could include, but is not limited to new products, new concepts, new safety techniques...any unique activity that increases the overall safety of waterjet and/or industrial cleaning equipment.

CANDIDATE	Company			
Address		City		
State	_ Country	Postal Code		
Phone In US/Canada ()area code	Fax area	: ()code		
Phone Outside US/Canada [] ()_ country code city code	Fax [] ()country code		
CANDIDATE SUBMITTED BY	Compan	У		
Address		City		
State	_ Country	Postal Code		
Phone In US/Canada () area code	Fax area	: ()code		
Phone Outside US/Canada [] ()	Fax [] ()		
Nominations must be received no later than August 1, 2013. For a prompt response, fax completed form to (314)241-1449, or mail to the WJTA-IMCA, 906 Olive Street, Suite 1200, St. Louis, MO 63101-1448, USA				

AccuStream Redesigns AS Series Waterjet Intensifier Pumps

A ccuStream has redesigned its popular AS Series intensifier pumps to maximize output, increase energy efficiency and offer more robust control.

In an effort to contain rising production costs and maintain pricing for its customers, AccuStream simplified the design of the AS Series intensifier pumps while maintaining the hydraulic functionality and core technology that makes these pumps so successful.

Changes include a new true softstarter that reduces the amount of electricity the pump consumes during startup. Because the soft-starter also minimizes spikes in energy consumption during normal operation, users should experience overall lower electricity costs.

AccuStream also improved the hydraulic circuit filtration with a new filter/breather cap that filters dirt and contaminants to three microns – significantly improving reliability. A new brazed-plate heat exchanger reduces the amount of water required for cooling the hydraulics.

AccuStream reduced production costs so significantly they added a new state-of-the-art controller without increasing the price of the pumps. The new intuitive touch-screen controller has a processor that is more than 100 times faster and includes easy maintenance logging and patent-pending



intensifier diagnostics for at-a-glance views by operators.

All AS Series pumps continue to utilize AccuStream's groundbreaking Advanced Intensifier Technology[™] (AIT), which offers longer maintenance intervals and rapid component replacement. For more information, visit www.accustream.com.



Peinemann Equipment B.V. Nieuwe Langeweg 40 3194 DB Hoogvliet Phone: +31(0)10 - 295 50 00 Fax: +31(0)10 - 295 50 49 Peinemann USA 22820 I-H 45 N., Bldg #7, Ste F Spring, TX 77373 Phone: 281-288-7979 Fax: 866-431-5140

mail: info@peinemann.nl



Federal Signal Opens FS Solutions Location in New Brunswick, New Jersey

F ederal Signal Corporation has opened a new FS Solutions rental and service center at 17 Jules Lane in New Brunswick, New Jersey. The new FS Solutions center is part of the company's expansion of FS Solutions locations and service offerings for industrial and utility customers in key areas throughout North America.

As the ninth FS Solutions rental and service center, the New Brunswick location stocks high performance parts and accessories for Federal Signal's Guzzler brand of vacuum trucks, Vactor HXX vacuum excavators, Jetstream brand of waterblasters and other makes and models of waterblasters. The full line of Jetstream waterblasters and tools, as well as StoneAge and Peinemann tooling for specialized waterblast cleaning applications, are also available for rent.

"The new FS Solutions center in New Brunswick expands our footprint into the East Coast and allows us to further increase product, service, training and rental offerings to industrial cleaning contractors and other industry professionals along the eastern seaboard," says Tony Fuller, director of industrial sales for FS Solutions.

The newest FS Solutions location provides the rentals, used equipment, parts, accessories, service and training customers need to perform their jobs more profitably. As an authorized StoneAge repair facility, the new center has the machining expertise and tooling capabilities necessary to keep customers' StoneAge tools in peak condition.

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

The new FS Solutions center is staffed by knowledgeable, highly-trained employees possessing a wealth of industrial cleaning experience. The new center provides genuine OEM parts and factorytrained, certified technicians to offer recommendations and resolutions to any challenges customers may present.

"From coast to coast, FS Solutions' team of sales professionals and service technicians maintains a well-earned reputation for providing our industrial cleaning customers with equipment evaluations, expert recommendations and solutions to the challenges of their particular applications," Fuller says.



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

To contact the FS Solutions center in New Brunswick, New Jersey, call 732/448-7830.

MultiCam[®] Inc. Names John Wilson Digital Finishing Product Manager

Global CNC cutting system manufacturer MultiCam[®] Inc. appointed John Wilson digital finishing product manager. As the in-house expert on this key product line, he is overseeing its advancement through sales and application support, training and ongoing product development.

"John Wilson has an extensive hands-on and management background with a wide range of digital finishing systems and CAD software," says Technology Development Manager Chad Hart. "His in-depth digital finishing/work flow knowledge from Esko will help reinforce MultiCam as an emerging leader in the growing digital finishing market." Wilson gained a wealth of experience as senior applications manager and software product manager dealing with Kongsberg cutting tables at Esko in Lake Geneva, Wisconsin. He served as software product manager and applications specialist at MGE, also in Lake Geneva. Previously, Wilson was computer cut graphics administrator at Color Arts of Racine, Wisconsin. He earned a B.A. at the University of Wisconsin-Parkside in Kenosha with a concentration in graphic design.

For more information, visit http:// www.multicam.com, email sales@ multicam.com or call 972-929-4070.

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Important Information for Authors

- Papers must be original. Papers must not have been published elsewhere or be pending publication.
- **Publication Fee.** A nonrefundable publication fee of \$229 is required. One publication fee is good for 2 (two) papers. Paper(s) will **NOT** be included in the Proceedings if the publication fee is not paid. The presenting author can use this publication fee as their registration fee, equal to a Full Conference registration. Any additional authors can also register as a Full Conference registrant at the discounted price of \$229. (A member Full Conference



registration is equal to \$299.) If an author wants to attend the Pre-Conference workshop (Combo registration), they will need to pay the difference at the applicable member price: \$399 or nonmember price: \$459.

- Papers and presentations must be in English. Papers should be no longer than 15 printed pages. A "Paper Guide" containing directions for submitting papers will be forwarded to you after your abstract is accepted. Papers that do not follow the "Guide" will be returned to the author(s) for correction(s) or charged a fee for revisions made by the WJTA-IMCA office.
- Papers should be free of commercialism.
- Papers should be submitted as a Word file and a PDF file.

Dates to Remember

March 1, 2013	Abstracts Due
March-April	Papers Accepted
June 17, 2013	Papers Due
September 10-11, 2013	Present Paper

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For more information, contact Peter Wright at the WJTA-IMCA office by telephone: 314-241-1445, fax: 314-241-1449, or email: wjta-imca@ wjta.org.



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WJTA-IMCA Celebrating 30 years



Comments Solicited on Improvements to Recommended Practices

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

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

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