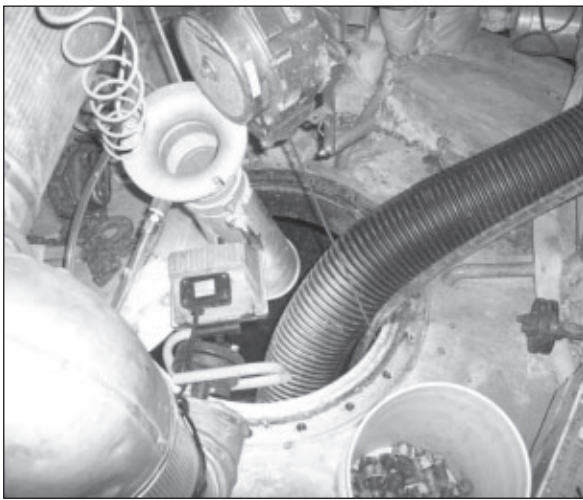


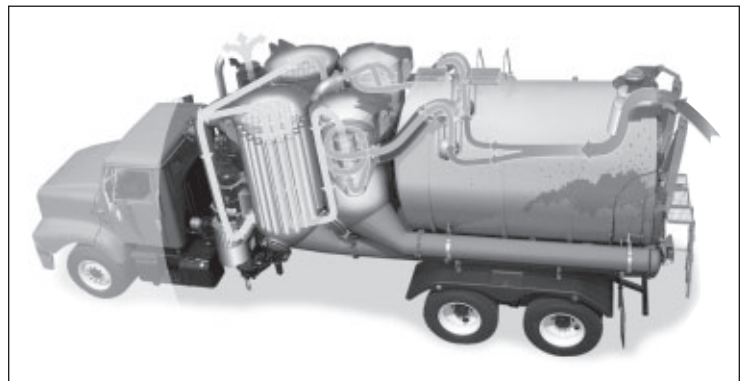


## Recommended Practices For Industrial Vacuuming?

*Most Contractors Combine High-Volume Air Moving with Waterjetting;  
Synergy Between Both May Lead to Enhanced Training Opportunities*



**Photo at left: A process vessel at a PET plastic manufacturer requires cleaning to remove product from the interior surfaces and heating coils within the vessel. Industrial vacuuming is the only feasible way to remove the waste material and water during the cleaning. In this photograph, waterblast supply hose, six-inch vacuum hose, a safety retrieval line, lighting and ventilation all enter the vessel from the only opening at the top of the vessel.** *Photograph courtesy of Gary Toothe, CET, Thompson Industrial Services, Sumter, South Carolina.*



**High volume air movers are designed to clean up and recover numerous materials, from solids and dry bulk powders, like fly ash, to liquids, slurries and thick, heavy sludge. While designed to be easy to operate and maintain, a trained operator can optimize the unit's performance.** *Photographs courtesy of Guzzler Manufacturing, Inc., a subsidiary of Federal Signal Corporation.*

See article on page 2.

## Safety Committee Solicits Comments On Improvements To Recommended Practices

The WJTA Safety Committee hereby solicits comments regarding improvements to the publication, *Recommended Practices for the Use of Manually Operated High Pressure Waterjetting Equipment*. While *Recommended Practices* is reviewed periodically at the biennial conferences of the WaterJet Technology Association, your comments and suggestions for improving the publication are invited and welcome anytime.

Please address your comments and suggestions to: Safety Committee, c/o WJTA, 906 Olive Street, Suite 1200, St. Louis, MO 63101-1434, fax: (314)241-1449, e-mail: [wjta@wjta.org](mailto:wjta@wjta.org), web site: [www.wjta.org](http://www.wjta.org).

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## Recommended Practices For Industrial Vacuuming?

While waterjet contractor employee training and safety is well-served by recommended practices administered by the WaterJet Technology Association (WJTA), no similar standards exist for the industrial vacuuming that usually accompanies waterjet work.

The result is that contractors who utilize industrial vacuuming must develop their own training and safety protocols, or simply train their staff as best they can and let the chips fall where they may.

Either way isn't an optimum solution, say industry veterans.

"Most industrial contractors serve clients with both product lines," said Gary Toothe, C.E.T., training manager of Thompson Industrial Services, Inc., Sumter, S.C., and a member of the WaterJet Technology Association Safety Committee. "They have high-pressure water cleaning as well as high-air-volume industrial vacuuming, and on a lot of jobs, one supports the other. In my 21 years of experience in contracting, very few companies have one product line without the other."

That is, Toothe said, high-pressure water jetting contractors will have high-volume vacuum equipment to support waste removal, or industrial vacuum contractors will have high-pressure water cleaners to break up material prior to vacuuming. Therefore, there is a close synergy between both families of equipment.

Yet no standardized training or safety recommended practices exist that could be utilized by industrial vacuuming contractors, as exist for water jetting. At this time WJTA offers recommended practices for

waterjet safety, as a manual, video and CD-ROM.

### Close synergy between jetting, vacuum

The synergy is so close that some combination sewer units are forms of high-pressure water jetting and industrial vacuuming in one unit, Toothe said. "People who are doing pipeline cleaning, for example, will have need for a set of standards for both," he said.

"In the majority of job sites, the waterjet and vacuum equipment is working side-by-side," said Ken Carroll, WJTA association manager. "If a particular contractor doesn't have his own equipment, he will lease the equipment or hire an outside contractor to do the work. We are finding that there are more and more service contractors that have vacuum trucks as part of their equipment line."

While these contractors may lack recommended practices for high-volume vacuum equipment, he said, WJTA may be in a position to fill that gap. "We are trying to find out what WJTA can do for them," Carroll said. "We want to determine if they feel there is a gap that the association may be able to fill. And that's up to them to say."

Some manufacturers, such as Guzzler Manufacturing, Inc., a subsidiary of Federal Signal Corporation, conduct safety training sessions for customers.

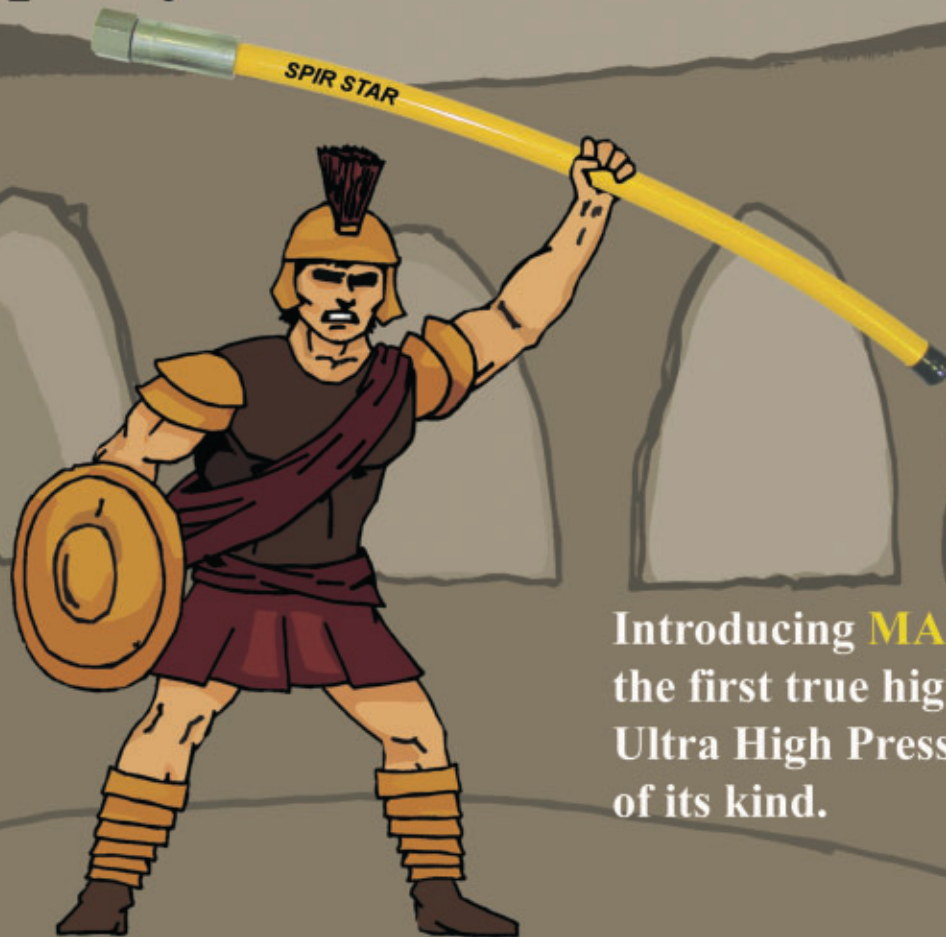
"We see a need for more education among end users," said Tony Fuller,

(continued on page 5)



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## **Jay Leno’s Big Dog Garage Installs KMT Waterjet System**

**J**ay Leno, recognizing the value of the waterjet process for quickly cutting a wide range of materials, has installed waterjet cutting equipment which uses pressure equipment from KMT Waterjet. The KMT Waterjet “extreme pressure system”, delivering water pressurized to 60,000 pounds per square inch, was chosen based on company responsiveness, machine reliability and on being an America-made product.

The equipment will be used to cut a wide variety of products for Mr. Leno’s massive car collection, which includes many one-of-a-kind vehicles. “Parts for these rare vehicles need to be custom made. Waterjet is a great way to quickly cut parts, gaskets, glass or metal brackets because it requires little setup and can cut so many types of materials.”

To meet Mr. Leno’s needs, KMT Waterjet installed a 50hp Streamline Plus intensifier. The intensifier delivers 60,000 pounds of pressure per square inch for fast, reliable cutting. The high pressure system was fitted with the Autoline cutting head, rated as the most efficient head available by the University of Missouri-Rolla. The head is designed to be easy to use and to have the lowest operating cost possible.

It was extremely important to Mr. Leno that the machine be American-made. “Nearly all of the equipment in



**Jay Leno (r), host of the late night television program, “The Tonight Show,” and Duane Johnson (l), KMT’s president, are shown with Mr. Leno’s new SL-V 50 Plus pump.**

my shop is American-made. America has lost a lot of manufacturing capacity, but we are still strong by being innovative and creative. This is an example of American ingenuity and resourcefulness. The waterjet technology is amazing.”

According to John Dedic, marketing manager for KMT Waterjet, Mr. Leno was “extremely interested in the technology of the machine. For example, he asked why it was important to have the pump stroke slowly and why we designed it to have a threaded cylinder design. He wanted to hear about the longer seal life and ease of maintenance. He clearly has a passion for advanced technology, precision and performance, which is exactly what KMT is all about. It was a great experience meeting with him.”

KMT Waterjet delivers extreme pressure systems which have greater reliability and ease of use for cutting with water. These systems include the pumps, lines, cutting heads and abrasive-handling equipment.

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

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## Recommended Practices For Industrial Vacuuming, from page 2

director, Industrial Sales & Marketing, Federal Signal. "Waterblasting and vacuuming go hand-in-hand in the world of industrial cleaning. When waterjetting is used to clean, a vacuum is needed to remove the waste residue. But right now there is nothing to inform industrial vacuum contractors of safety recommended practices or OSHA requirements, third party evaluation of equipment, or any other information exchange."

Some clients — such as petroleum refining via the American Petroleum Institute — do dictate certain requirements to contractors, he said. "But if you go into cement, or steel, or pulp and paper industries, the requirements can be very vague," Fuller said. "It might be as simple as 'do the job, and don't get hurt'."

### Contractor-created guidelines

"Regarding a document or guide as to what's acceptable, or in defining certain practices as good or bad — which is what WJTA did for waterblasting — nobody has done that for industrial vacuuming," Toothe said.

Toothe should know: A *Certified Environmental Safety and Health Trainer* by the National Environmental Safety & Health Training Association, he developed a comprehensive training program for Thompson Industrial that is among the best in the business.

Trainees are put through a day of OSHA training, followed by a series of two-day classes, including Tech Skills I and II, Operator Skills, Crew Leader Skills, and Superintendent Skills. Refresher courses and skilled job class training enable field technicians to rise to operator status, and later crew leadership roles involving supervision and customer contact.

Site-specific training is also required. Every customer has its own unique

work site requirements, and employees are familiarized with a customer's potential layout and materials hazards. "We have a computerized database in the dispatch office and hard copies in my office of all the work we've ever performed," Toothe said.

Safe work rules are extended to the job site. The firm does a hazard analysis before each job, looking for electrical lines and hazards to passers-by. Employees know that conditions change throughout the day, and must

(continued on page 8)

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# Boyd Coddington Installs TECHNI Waterjet System Using KMT Pressure System

**B**oyd Coddington, famed hot rod builder and star of American Hot Rod, has chosen to install a TECHNI Waterjet™ Techjet® 3000 table using a KMT Waterjet 50 horsepower extreme pressure system. The equipment was chosen based on the exceptional cutting performance of the product and the responsiveness of both companies. KMT Waterjet is based in Baxter Springs, KS and TECHNI Waterjet is based in Joplin, MO.

The TECHNI Waterjet™ system is 5' x 10' and will be used to cut a large variety of materials for the high performance Boyd Coddington Hot Rods. The equipment is capable of cutting custom gaskets, metals, glass and fabrics – nearly any type of material. Boyd's Garage can take advantage of the waterjet cutting technology to cut man hours from the old fashioned manual methods of fabricating custom pieces. The Techjet® 3000 gives them a fast and easy way to fabricate parts for each of their customized Hot Rod cars.

The system will use water pressurized to extreme levels – 60,000psi – by a KMT Waterjet 50hp Plus intensifier. The high pressure system is designed to be reliable, simple to operate and need minimal maintenance. The machines have the most advanced design allowing for very slow stroking of the plungers, extending seal life. The cutting head is also provided by KMT Waterjet and is the most efficient cutting head available anywhere, according to research done by University of Missouri-Rolla.

This installation truly adds extreme performance and capabilities to a hot rod shop already known for exciting, high-performance products. KMT Waterjet delivers extreme pressure systems which have greater reliability and ease of use for cutting with water. These systems include the pumps, lines, cutting heads and abrasive-handling equipment.

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Boyd Coddington and his wife, Jo, with their new SL-V 50 Plus pump.

working, tube forming, and waterjet cutting. The KMT holding company, Karolin Machine Tool AB, is quoted on the O list of the Stockholm Stock Exchange.

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## Recommended Practices For Industrial Vacuuming, from page 5

constantly look at the environment and observe the changes that can take place.

### Considerable savings possible

It goes without saying that a contractor utilizing industrial vacuuming could achieve considerable savings, while attaining a high level of competency, if he or she were able to access prepared safety or training best-practice standards. By adopting generic, common terminology and personnel classifications, standards could be made available to the industry. But at this time, they simply are not available.

Training would include safety, but also could include troubleshooting, field maintenance, and effective cleaning techniques.

“Right now, OSHA doesn’t have any regulations to cover high-pressure water cleaning or high-volume industrial vacuuming,” Toothe said. “The only safety regulations are customer-developed, manufacturer-developed, or in our case, contractor-developed. We developed our waterblast policy based on the WJTA, but our industrial vacuum policy was created by us with some input from the truck manufacturers. The problem is, most of the manufacturer material are disclaimers: ‘don’t do this, don’t do that’. They are aimed more at protecting themselves from product liability, than instructing users proactively how they can use the product safely and efficiently.”

“For most of the contractors we deal with, if they have waterjet equipment, they will have vacuum

equipment,” Fuller said.

“Recommended best practices are very closely geared toward safety, and vacuum truck contractors without standardized, recommended best practices could benefit from guidelines such as making sure no power lines are overhead, having the proper job set-up, keeping hoses as straight as possible, always using a safety cage to protect hands, the use of relief valves, grounding the truck and static discharge, and operation of the truck at the optimum RPMs for the material and distance they are conveying.”

### A role for WJTA?

Toothe feels that the WJTA is the right vehicle for developing safety and

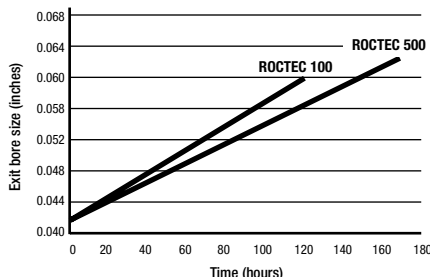
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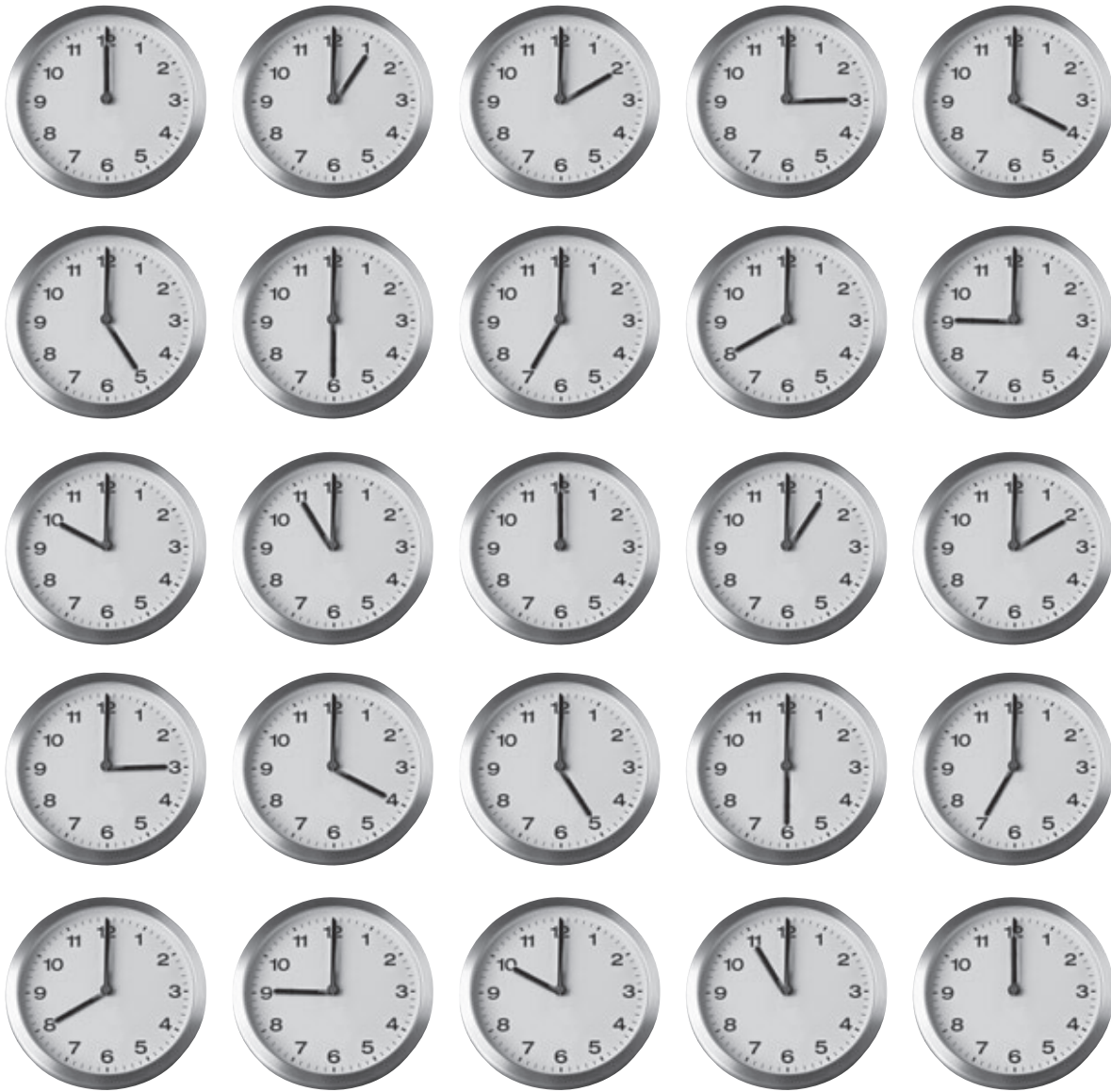
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## Flow International Selected As SanDisk's Primary Waterjet Supplier

**F**low International Corporation (Nasdaq: FLOW), a leading developer and manufacturer of ultrahigh-pressure (UHP) waterjet technology, has been awarded a multimillion contract to supply multiple waterjet cutting systems to SanDisk Corporation for use in the manufacture of some of its flash memory cards that are being singulated and cut to shape utilizing Flow's ultrahigh precision waterjet shapecutting system.

This latest order of waterjet systems joins an already installed base of Flow waterjet systems in use producing some of SanDisk memory products. With the addition of these new systems, SanDisk will have the

world's single largest fleet of Flow waterjet cutting machines.

Flow's waterjet systems have been successfully producing some of SanDisk flash memory cards in real world production environments for over one year. As a result, Flow International was also named SanDisk's primary supplier of waterjet cutting and singulation systems for the calendar year of 2006, subject to certain terms and conditions agreed upon between the parties.

"Flow is the only waterjet supplier with production proven waterjet cutting systems in manufacturing facilities producing flash memory cards and other semi-conductors.

There are several reasons for the selection of Flow as SanDisk's primary waterjet supplier. Among those are Flow's commitment to continued improvements and R&D, the service and support provided by the Asian division of Flow International and robustness and productivity of Flow's equipment for the electronics market," said Stephen R. Light, CEO of Flow International Corporation. "The award of this contract demonstrates that SanDisk and other electronics companies recognize the many benefits of waterjet technology by displacing older, less flexible processes."

(continued on page 15)

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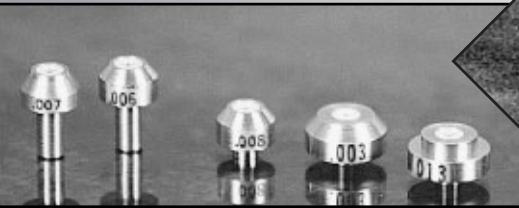
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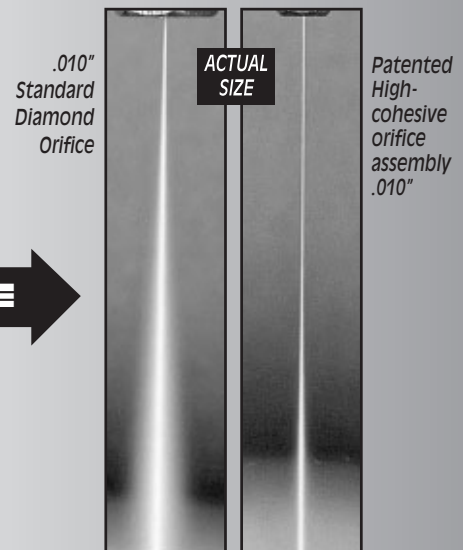


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## Recommended Practices For Industrial Vacuuming, from page 8

training recommendations for users of high-volume vacuum equipment.

“The WJTA wrote the recommended practices for waterjetting, and I think they are the proper forum to write the recommendations for industrial vacuuming,” Toothe said. “There seems to be some interest towards this in the portion of WJTA that is contract-oriented. I feel the WJTA would be a good means to create a set of recommended practices for industrial vacuuming.”

The synergy of equipment use and mutual clientele might lead waterjet and vacuuming contractors to the same source for recommended best practices, Federal Signal’s Fuller said. “They serve the same master,” he

said. “Since both sectors are so closely tied, it makes sense that both would be well-served by the kind of best-practice information exchange that WJTA can provide.”

Service contractors may have safety programs that are structured to their individual needs and equipment, WJTA’s Carroll said. “Some have simple safety programs, some have middle-of-the-road programs, and some have advanced ones,” he said. “For the most part there very definitely is a commitment to safety, but it differs according to the needs of the contractor. Some vacuum contractors may already have safety practices that may be incorporated into recommended practices that might be developed by WJTA in the coming

years. If that’s the case, other contractors will have benefited from the exchange of ideas that a national association can facilitate.”

Association-sponsored vehicles for this educational interchange would include WJTA’s *Jet News* newsletter, programs at conferences, and other written material, Carroll said. “As the organization evolves, and as needs come up, the WJTA will respond to the needs of its members,” he said.

Furthermore, providing industrial vacuum best-practice training also might bring more contractors to the WJTA, Toothe said. “Contractors need to be part of the WJTA,” he said. “The *Waterblast Boot Camp* at

(continued on page 13)



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## Recommended Practices For Industrial Vacuuming, from page 12

the last conference was specifically targeted toward contractor users of high-pressure water cleaning equipment. And if you're going to draw contractors, in excess of 90 percent of contractors with a waterblaster are going to have, or rent, some form of industrial vacuum to support their high-pressure water cleaning. It makes sense to me that if waterblast is your target audience, WJTA should go ahead and cover the other half of it too, because nobody else is currently."

In industrial vacuums, Toothe differentiates pure vacuum trucks, with rotary vane pumps that create a vacuum in the vessel — such as are used by septic cleaners — from industrial high-volume air movers using positive displacement blowers.

"The latter are moving very high volumes of air at very high inches of

mercury," Toothe said. "A lot of people call them 'air movers' rather than 'vacuums', and I think the WJTA needs to reach out to the industrial air mover segment of the market, 1500 cfm or greater. With the sewer and porta-potty people, the dangers are not caused by the strength of the equipment, but from the hazards of falling into the septic tank, for example. The WJTA needs to develop recommended practices for industrial air movers, not for the septic trucks, the same way it has recommended practices for industrial water blasters, but not pressure washers."

Toothe said the Safety Committee, as it solicits input for

updating current waterblast practices, might ask the same stakeholders what their interest level might be in having an international standard for the air moving industry.

"If there's sufficient interest, then I think the Safety Committee might consider working on a draft document to have available for delegates at the next conference in 2007 in Houston," Toothe said.

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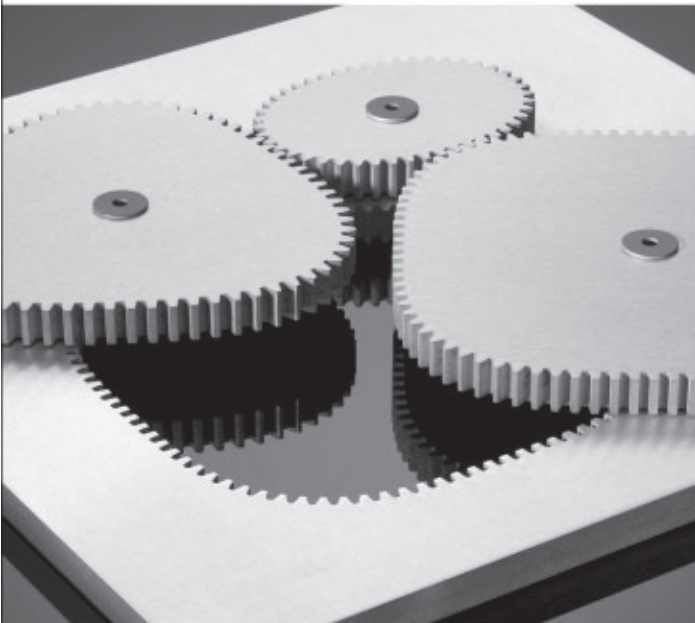
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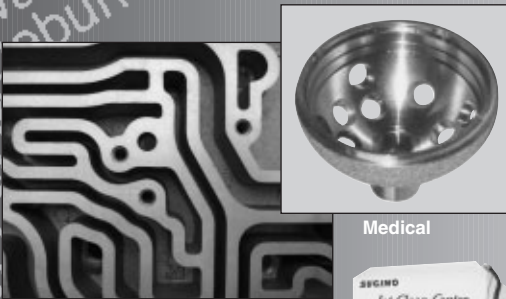
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Fax: (412)262-6188

### Rajiv Rajgopal

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St. Michael, MN 55376-8427  
Phone: (763)497-8749  
Fax: (763)497-8701

### Tim Wise

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Portsmouth, VA 23707  
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### Randy Locke

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### Rich Parenteau

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### Gary W. Root

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### Michael J. Vaillancourt

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### Bo Ward

Power Zone Equipment, Inc.  
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## Corporate Individual

### Andy Current

Vactor Manufacturing, Inc.  
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Streator, IL 61364  
Phone: (815)673-6050  
Fax: (801)729-3866

## Individual

### Alex J. Davis

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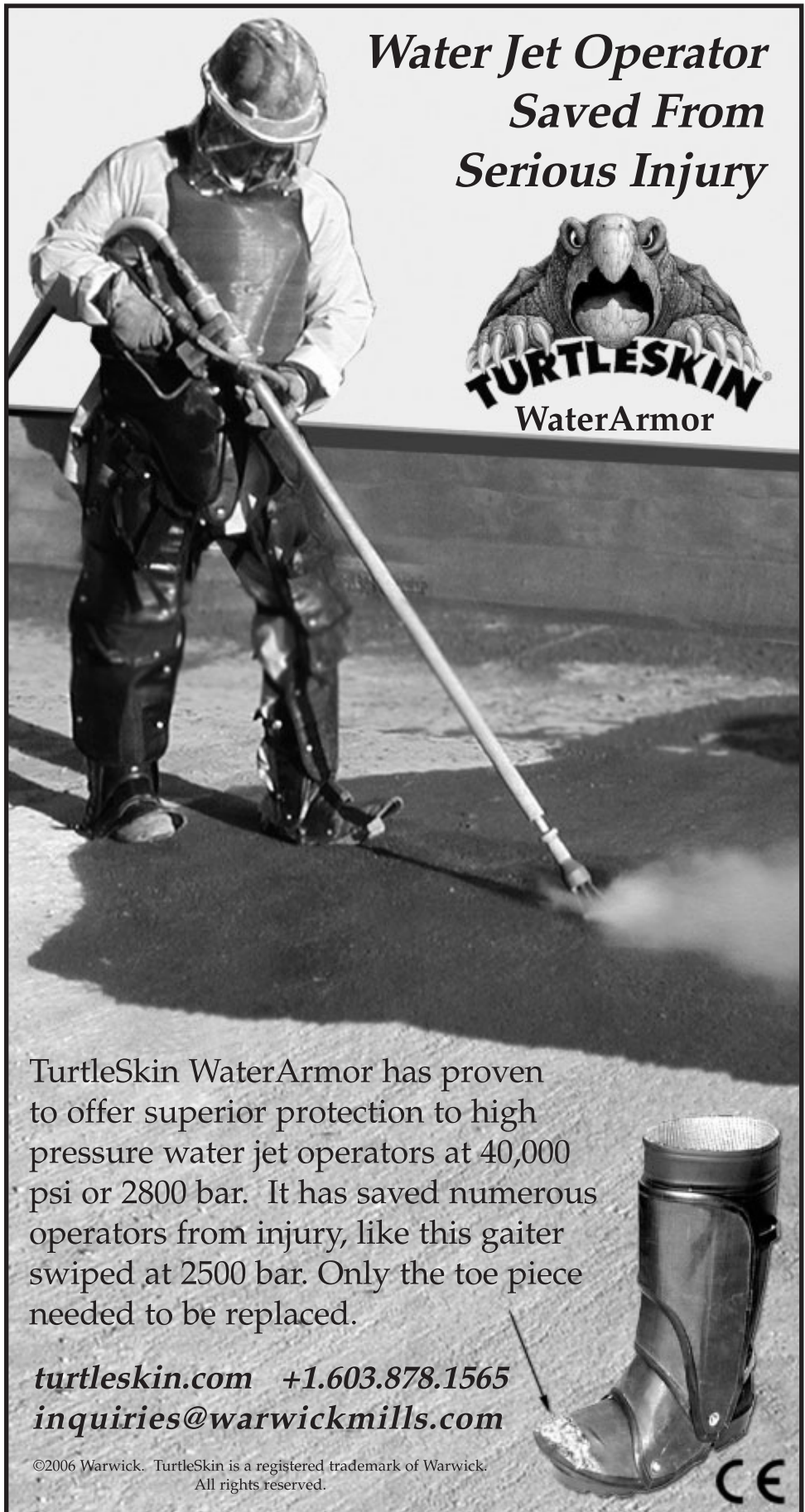
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