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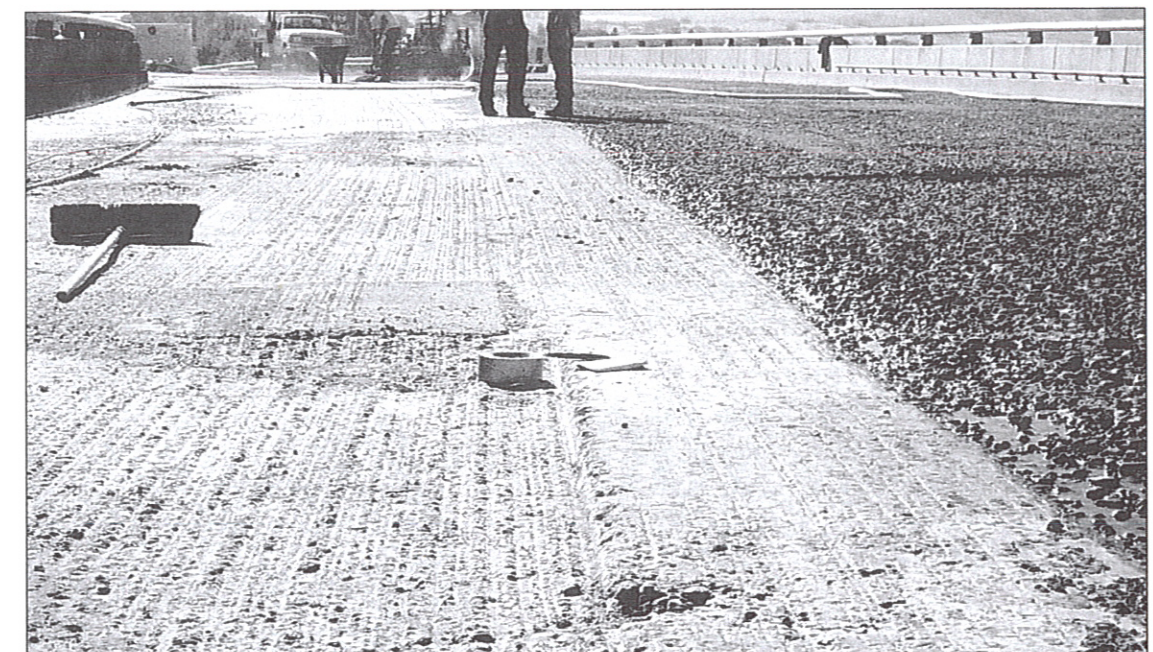
Jet News

APRIL 2001

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WaterJet Technology
Association
for the benefit of its
members*

917 Locust Street, Suite 1100 • St. Louis, MO 63101-1419, USA • Telephone: (314)241-1445, Fax: (314)241-1449

Waterjet Texturing of Concrete And Rock Surfaces



Comparison of waterjetted concrete surface (right) and a rotomilled concrete surface (left). The waterjet surface is rougher and sounder than the rotomilled surface. Photograph courtesy of Dan Bernard, Resto-Tech Ultra Pressure Systems Ltd.

In order to have one material adhere to another it is necessary to create a good bond between the substrate and the overlain material. The quality of this bond depends upon having a clean, rough and sound substrate surface at the interface.

Waterjets have been used for about 20 years to remove deteriorated concrete and to produce a rough surface on the underlying sound concrete to which a new concrete overlay can be bonded. This technique, called hydrodemolition, has become a competitor to jackhammering and rotomilling for the removal of deteriorated concrete in concrete repair projects.



Rotomilled surface on left contains damage while the waterjetted surface on the right is fracture-free and has the roughness of gravel. Photograph courtesy of Dan Bernard, Resto-Tech Ultra Pressure Systems Ltd.

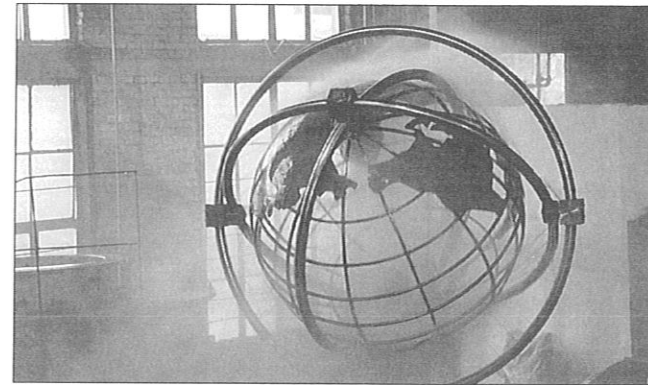
(continued on page 3)

A Chinese Fountain

In celebration of the new century, there will be a stainless steel sculpture fountain named Century Globe installed in the Central People's Square in Hefei City, Anhui Province, P.R. China. This sculpture fountain, designed and made by Hefei Waterjet Technology & Engineering Limited Company, has been approved by the city planning department and the city mayor because of its unique combination of a rotating globe and fountain.

The Century Globe fountain has three parts. The first, the driving part, consists of a high pressure centrifugal pump and up to 150 specially designed nozzles. The pump supplies pressurized water to nozzles and forces jets out from the nozzles to produce the driving reaction torque. The second part

includes the three rotating circles made of stainless steel tubes and three pairs of diametrically opposed short axes. The short axes are the crucial parts in the whole fountain. On the one hand, they support the three rotating rings, on the other hand, they are the passages for the pressurized water flowing from outer circle to middle circle and middle circle to inner circle. The third part is the rotating hollow globe. The continents have a coarse finish produced by abrasive jets. This finish is in vivid contrast to the smooth, shiny rotating circles. The globe is formed by stainless steel tubes



Century Globe

which form arcs of longitude and latitude.

Combined with the colored lamps, the three-dimensional rotating fountain signifies the vitality of the earth. Its unique shape will become a beautiful sight in the square.

Request the Best...

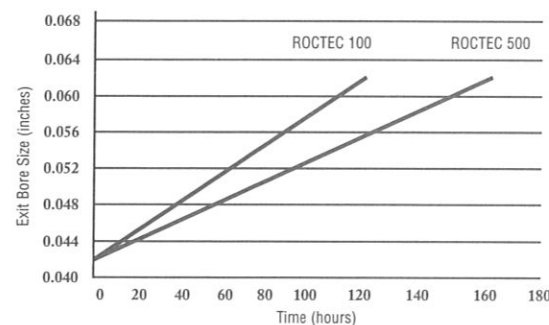
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Abrasive Waterjet Nozzle Performance



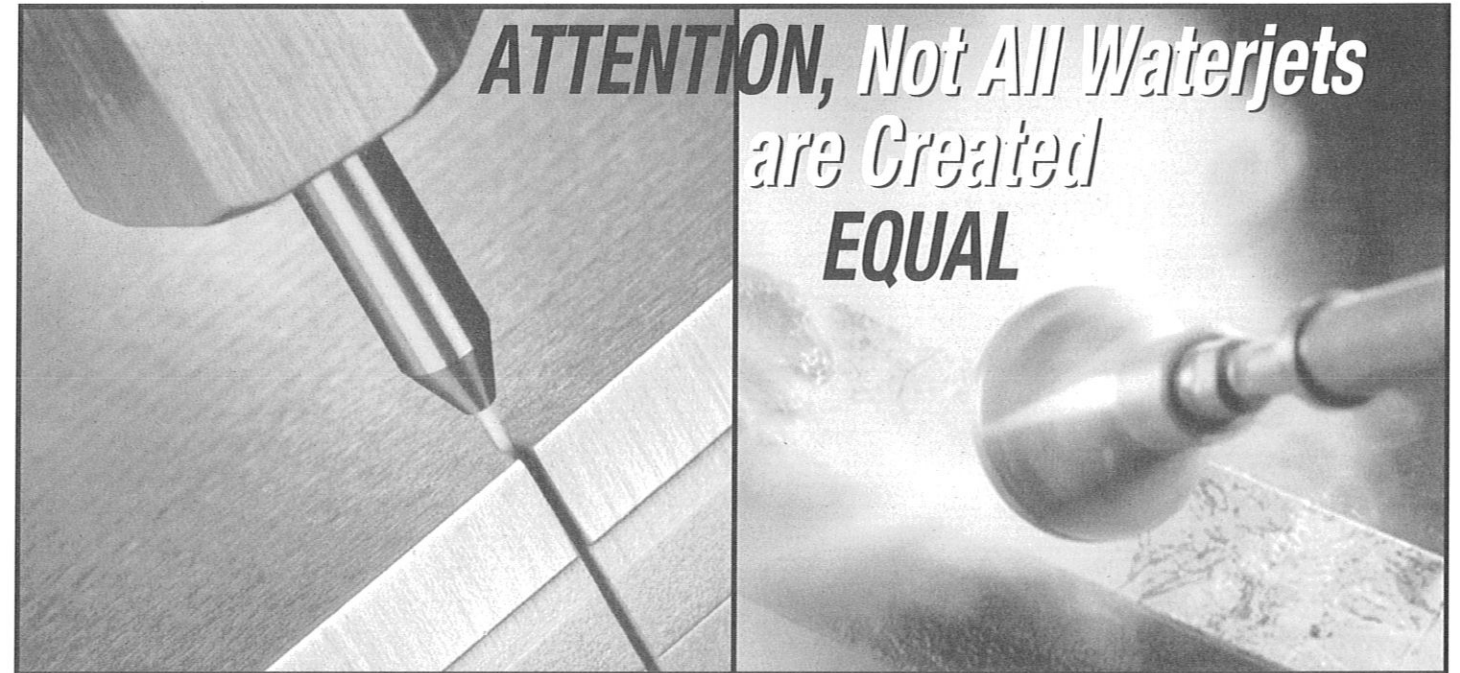
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- WJTA Special - Purchase a Permalign® II cutting head, trade in a competitor's, and receive a \$500 parts credit. Commit to buying only certified Jet Edge Parts and we will warranty the Permalign® II cutting assembly for one year.

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BONUS: 6th and 7th Conference Proceedings included FREE!				
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Waterjet Texturing of Concrete and Rock Surfaces, from page 1

Studies^{1,2,3} have shown that concrete surfaces produced by hydrodemolition have a rough texture that gives good bonding strength between the old concrete substrate and the new concrete overlay. Waterjets produce this rough surface without weakening the substrate whereas jackhammers and rotomills can weaken the substrate by producing microcracks in the old concrete.

There have been a number of attempts to evaluate the surface roughness of cut concrete surfaces but no method has been accepted as standard. There has been a lot of interest in quantifying concrete surface texture and relating it to vehicle skid resistance⁴ or bond strength in concrete repair^{1,3}. Recently a new method has been proposed for quantifying concrete surface roughness applied to the repair of concrete⁵.

Waterjets are also used to create a designed surface texture on rocks for decorative purposes. Waterjet Italiana of Milan, Italy sells the "waterstone" system which uses high pressure waterjets to erode the rock to produce a roughened surface. The degree of roughness impressed on the rock surface depends upon:

- the hardness of the rock;
- the jet pressure;
- the rock to nozzle stand-off distance;
- the speed at which the rock moves through the machine; and
- the traverse speed of the nozzle over the rock surface.


The "waterstone" system has been used primarily with granite and marble. The textures produced on these rocks are characterized by Waterjet Italiana⁶ as "light roughness," "deep roughness" and "chiseling roughness."

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- Columbia Chapter or ACI Seminar of 2/16/01.
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6. www.waterjet.it

—George A. Savanick

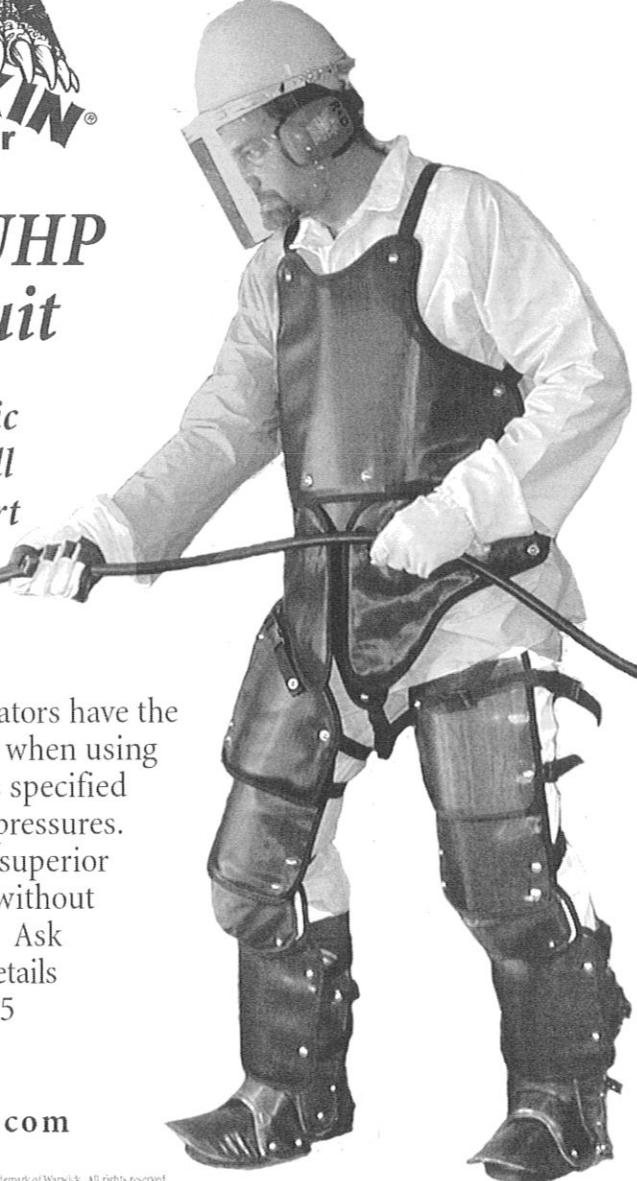


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The picture above shows a subway cleaning railcar using 28 RJV 2D Nozzles and a Partek pump. It is used to clean the subway tunnels in Philadelphia, Pennsylvania. Picture courtesy of Gardner Denver Waterjetting Systems.

Waterjet Techniques Course

RICHEL, Inc., a full service waterjet consulting group, invites you to attend the 3rd annual Cutting Techniques Course, June 3-6, 2001 (this is a three day course with optional fourth day). The course is designed to provide rigorous hands-on training in waterjet cutting (with and without abrasives) as well as a foundation in the basic principles of waterjet technology, operation, and practice including comparison of waterjet with laser, plasma, and oxy-fuel. The presentation is supported with video, computer generated interactive displays, CAD/CAM and controller demonstrations and will provide information on abrasive recycling.

The course will be conducted by Richard Ward, president of RICHEL, Inc., who has written numerous articles on waterjet applications and given presentations and seminars nationally and internationally. Training will be held at the facilities of Jet Edge, St. Michael, Minnesota. To enroll or obtain more information contact RICHEL, Inc., 200 Northeast Ave., Tallmadge, Ohio 44278; Phone: 330-633-7698; Fax: 330-633-7670; E-mail: richel@richel.com; www.richel.com

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New Products, from page 19

quality waterjetting systems and accessories for many uses, including industrial cleaning, surface preparation, tank cleaning, descaling, paint and sludge removal, concrete demolition, concrete and pipe cutting, and more.

New WOMA Rotating Nozzle

WOMA already offering one of the most complete lines of nozzles and carrier heads in the waterjetting industry for pressures up to 3,000 bar (43,500 psi) introduces its new ORBIMASTER 7.



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For more information, contact: WOMA Corporation, P.O. Box 6793, Edison, NJ 08818, Tel: 800-258-5530, Fax: 732-417-0015, E-mail: womacorp@bellatlantic.net, www.womacorp.com.

Save Up To 15% Off Your Airfare For Travel To The WaterJet Technology Association's 2001 American Waterjet Conference

The WaterJet Technology Association has designated **Northwest Airlines, Continental Airlines** and **Trans World Airlines, Inc.** as official carriers for attendees of the WJTA's 2001 American Waterjet Conference. Special travel fares available from these airlines will enable you to save up to 15% off your airfares for travel to the WJTA Conference, August 18-21, 2001, in Minneapolis, Minnesota.

Northwest Airlines/Continental Airlines

Northwest/Continental is offering these special discounts* for WJTA Conference participants:

- A 10% discount off Y8 and H8 fares (fares booked less than seven days from the first day of travel) booked in applicable class of service;
- A 5% discount off any other published fare booked in applicable class of service; **PLUS**
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Discounts are valid between June 1, 2001, to August 31, 2001. To

take advantage of these discounts, call your travel agent professional or Northwest/Continental MeetingWorks at 800-468-7022. Advise them to provide the Reservations Agent with your meeting Reference Number OYWRCL.

Trans World Airlines, Inc.

Trans World Airlines (TWA) is offering these special discounts* for WJTA Conference participants:

- A 12% discount* off any published fares.
- Additional discounts may apply depending on flight origination and length and dates of stay.

Discounts are valid between August 12, 2001, to August 26, 2001. To take advantage of these discounts, call Gloria Morgan, Going Places Travel, (888)221-9042. If you are calling from area codes 314 or 636 (St. Louis), dial Gloria direct at (314)991-3563. Be sure to mention that you are attending the WJTA's 2001 Conference.

*TWA discounts available only through Gloria Morgan, Going Places Travel.

The WaterJet Technology Association's 2001 American Waterjet Conference

August 18-21, 2001
Hyatt Regency Minneapolis on Nicollet Mall
Minneapolis, Minnesota

Preliminary Schedule of Events

Saturday, August 18

- | | |
|-----------------------|--|
| 8:00 a.m. - 4:30 p.m. | Preconference Courses <ul style="list-style-type: none">• An Overview of Waterjet Fundamentals and Applications• Advanced Topics in Surface Preparation |
| 6:30 p.m. - 9:30 p.m. | Welcoming Reception In The Exhibition Hall — Exhibition Opens |

Sunday, August 19

- | | |
|-----------------------|---|
| 8:30 a.m. - 5:00 p.m. | Concurrent Sessions/Paper Presentations |
| 9:30 a.m. - 5:00 p.m. | Exhibition Hall Open (Lunch served Noon-1:30 p.m. in Exhibition Hall) |
| 5:30 p.m. - 6:30 p.m. | WJTA Biennial Business Meeting |

Monday, August 20

- | | |
|------------------------|---|
| 8:30 a.m. - 5:00 p.m. | Concurrent Sessions/Paper Presentations |
| 9:30 a.m. - 2:30 p.m. | Exhibition Hall Open (Lunch served Noon-1:30 p.m. in Exhibition Hall) |
| 6:30 p.m. - 11:00 p.m. | Awards Presentation/Party |

Tuesday, August 21

- | | |
|-----------------------|---|
| 8:00 a.m. - 3:00 p.m. | Technical Tour And Field Demonstrations |
|-----------------------|---|

Wednesday, August 22 (contingent upon demand)

- | | |
|-----------------------|--|
| 8:00 a.m. - 4:30 p.m. | Advanced Topics in Surface Preparation |
|-----------------------|--|

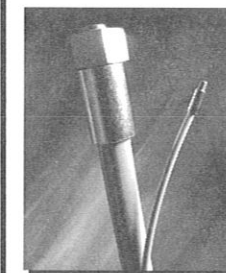
Full-Time Students Invited To Apply For Complimentary Conference Registrations

The WaterJet Technology Association (WJTA) has available three (3) complimentary combo registrations for full time students who are also members of the WJTA at the time of application. The complimentary registrations are for the WJTA 2001 American Waterjet Conference to be held August 18-21, 2001, at the Hyatt Regency Minneapolis on Nicollet Mall in Minneapolis, Minnesota.

Each complimentary registration covers the pre-conference seminars, presentation sessions, party, tour and luncheons. It does not include room or travel. Applications will be taken up to **May 1, 2001**. Preference will be given first to students and then to other visitors traveling the furthest distance. The complimentary registrations will be awarded on or before **June 1, 2001**.

For more information, contact the WJTA office.

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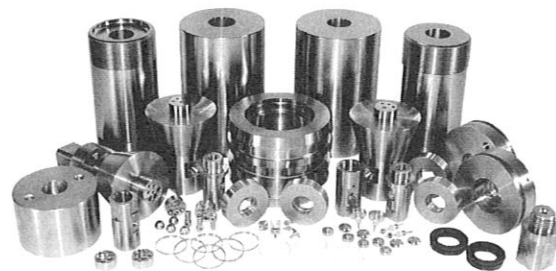
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- 800 MPa Pure Waterjet and Abrasive Waterjet Cutting - What's Next
- A Study on the Mechanism of Water Injecting for Oil Production by Self-Resonating Fluctuation
- Abrasive Cutting Comparisons
- Abrasive Fragmentation, the Workpiece Interaction Effect and Its Economics
- Abrasive Waterjet & Metal Material Interaction Dynamics
- Abrasive Waterjet Cutting a Comparative Study Between Open Catcher Tank and Water Catcher Tank
- Abrasive Waterjet Machining of Aluminum with Local Abrasives
- Advanced High Pressure Waterjet Cleaning Systems for Investment Casting Foundries
- Advanced Waterblast Tools Pay for Themselves
- Cleaning the Grease and Impurity on the Metal Surface by the Electro-Aerosol Jet
- Comparison of Surface Preparation with Different Methods
- Cutting of Hollow Structures with Abrasive Water Suspension Jets Supported by Additives
- Cutting of Reinforced Concrete Using Abrasive Suspension Jet
- Development and Design of Self-Rotating Forced Pulsed Waterjet: Basic Study and Applications
- Development of a Generic Procedure for Modeling of the Waterjet Cleaning
- Development of a Production Line for Packaging with Waterjets
- Development of a Technology for Fabrication of Ice Abrasives
- Development of the PREMAJET Derusting Machine
- Difference and Sameness of Glue Removal for Airport Concrete Runway and Bitumen Runway
- Disintegration of Rocks Exposed by Laser Beam by Waterjet
- Effect of Orifice/Nozzle Combination on AWJ Nozzle Wear
- Effects of Non-Linear Mechanisms on Structure Formations at the Cutting Edge
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- Empirio-Analytical Method as a Good Means of Water Jetting Technology Investigations
- Environmental Evaluation and Management of AWJ Process
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- Experimental Studies of Swirling Jet for Hole Drilling
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- High Pressure Water Jet for Mining Red Sea Egyptian Phosphate
- Hydro-Balanced Packing System for High Pressure Pumps
- Hydrodynamic Generator for Ultrasonic Modulation of the Jet: Basic Study
- Impact Initiation Mechanisms of High Explosive Materials During Waterjet Demilitarization
- Investigation of a New Cutting Head Concept Based on an Annular Driving Jet
- Investigation of the Formation of the Powder Driven Water Slugs
- Laboratory Researches for Water Jet Material Surfaces Cleaning
- Limitations to the Use of Waterjets in Concrete Preparation
- Meeting Industries Needs With Today's New Cultural Shift
- Micro Abrasive Waterjet Cutting
- Modelling and Simulation of Abrasive Water Jet Cut Surface Topography
- Modulated vs. Continuous Jets: Performance Comparison
- Numerical Investigation of Chaotic Motion for Cavitation Bubble in Oscillating Pressure Field
- Numerical Simulation of Abrasive - Air - Water Jet

- Numerical Study of the Turbulent Flow Inside a Pure Waterjet
- Optical Methods for Surface Analyses and Their Utilization for Abrasive Liquid Jet Automation
- Optimizing Waterblast Power
- Performance of Water Jet Cutting System in Dimension Stone
- Removal of Non-Skid Coatings From Aircraft Carrier Decks
- Research of Waterjet Interaction with Submerged Rock Materials
- Researches of High Pressure Rotating Water Sand Blasting
- Testing of Mineral Types of Abrasives for Abrasive Water Jet Cutting
- The Development of Improved High Pressure Valves
- The Hydro-Cannon Nozzle Optimization
- The Macrogeometrical Quality of the Kerf in the Process Parameters Selection Procedures
- The Removal of Hardened Grease Deposits from Steam Dryers in a Paper Mill: First Successful Contract Application of Forced Pulsed Waterjet
- The Study on the Annular-Type Jet Vacuum Pump
- The Study on the Equipment of Self-Excited Oscillation Pulsed Jet to Scour the Hard Clay and Rocky Beds Under Water
- The Use of the Theory of Sonics for Producing High Pressure Pulsatory Water Jets
- To Machine Free Form Profiles in Natural Stone
- Turning a Liability Into an Asset! The Story of an Old Power Plant
- Ultra High Pressure Waterjet Peening - Part I: Surface Characteristics
- Ultra High Pressure Waterjet Peening - Part II: Fatigue Performance
- Using Porous Lubricated Nozzles to Prevent Nozzle Wear in Abrasive Water Suspension Jets (AWSJ)
- Venturi Abrasivejet Cutting with Plain Water and with SUPERWATER®: A Direct Comparison
- Waterjet Cleaning of Redi-Mix Concrete Tanks
- Waterjet Scarification for Improved Shotcrete Adhesion

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New Products

Jet Edge Releases 55,000 PSI Water Blaster

Jet Edge releases the New 260 Horsepower 55,000-psi Ultra High Pressure intensifier pump. The new 55-260DX offers users 4.3 gallons per minute of 55,000 psi water. The Jet Edge unit was developed for removal of the most tenacious coatings such as anti-skid coatings on aircraft carriers as well as others. Preliminary field studies have shown that removal rates have improved by as much as 100% over 40,000-psi rates. Interestingly, users noticed a reduction on operator fatigue due to less reactionary force by using 4.3 gpm at 55K verses 7.2 at 40K-psi. Jet Edge not only offers it as a new system but also as an upgrade to existing 36-250 units. Hand-held

tools and Ultra Deck Blaster have been changed to meet the increase in water pressure.

For additional questions, contact Brian Gleeson, Mobile Sales Manager at briang@jetedge.com or (800)JET EDGE.

New NLB Pump

NLB has introduced the new Model 40201D pump unit, combining the waterjet power of up to 40,000 psi (2,800 bar) with a low flow rate of up to 6 gpm (23 lpm).

The 40201D's power comes from a six-cylinder diesel engine and features a slow running, triplex plunger pump,

which reduces maintenance needs and increases uptime. The unit can be mounted on a steel skid, or on a trailer for easy transportation to jobsites. The 40201D is ideal for surface preparation, cleaning, paint and coating removal, and cutting.

The pump unit is the latest addition to NLB's ULTRA-CLEAN 40® line of pumps and can be used with a wide range of ultra-high pressure accessories, including SPIN JET® floor and grate cleaners and the versatile HydroPrep™ system for surface preparation.

NLB, a leader in high-pressure and ultra-high pressure waterjet technology, manufactures a full line of

(continued on page 20)

Candidates Sought For 2001 WJTA Awards, from page 18

Nominations Form

CANDIDATE: _____ Company: _____

Address: _____

City: _____ State: _____ Country: _____ Postal Code: _____

Phone In US/Canada (____) _____ Fax (____) _____
area code area code

Phone Outside US/Canada ____ _____ Fax ____ _____
country code city code country code city code

CANDIDATE SUBMITTED BY: _____ Company: _____

Address: _____

City: _____ State: _____ Country: _____ Postal Code: _____

Phone In US/Canada (____) _____ Fax (____) _____
area code area code

Phone Outside US/Canada ____ _____ Fax ____ _____
country code city code country code city code

Nominations must be received no later than July 2, 2001.

For a prompt response, fax completed form to (314)241-1449, or mail to the WJTA, 917 Locust Street, Suite 1100, St. Louis, MO 63101-1419, USA.

Candidates Sought For 2001 WJTA Awards

You are invited to submit candidates for these special awards that are presented biennially by the WaterJet Technology Association to honor a company, organization or individual who has made a significant contribution to the industry through accomplishments that directly enhance waterjet technology and the industry as a whole. A list of previous WJTA award recipients appears at the right of this sheet.

Candidates must be received no later than **July 2, 2001**. The award recipient, to be selected by the Awards Committee of the WaterJet Technology Association, will be honored at a presentation ceremony on Monday, August 20, 2001, in conjunction with the 2001 WJTA American Waterjet Conference in Minneapolis, Minnesota.

Following is an official form for candidate nominations. Complete one form for each nomination submitted. Please make additional copies of the form as needed. Nominations providing complete written information specified on the form may be faxed to (314)241-1449 or mailed to the WaterJet Technology Association, 917 Locust Street, Suite 1100, St. Louis, MO 63101-1419, USA.

Previous Award Recipients

1981	Pioneer Award	Jacob Frank (deceased)
1983	Pioneer Award	H.D Stephens (deceased)
1985	Pioneer Award	William Cooley, Fairfax, VA
1987	Pioneer Award	Norman Franz, Ph.D., Vancouver, BC
1989	Pioneer Award	Richard Paseman, Houston, TX
1991	Pioneer Award	John H. Olsen, Ph.D., Auburn, WA
1993	Pioneer Award	Fun-Den Wang, Ph.D., Golden, CO
	Safety Award	David Summers, Ph.D. NLB Corporation
	Service Award	George A. Savanick, Ph.D. Mohan Vijay, Ph.D.
	Technology Award	Mohamed Hashish, Ph.D. Autoclave Engineers Hammelmann Corporation
1995	Pioneer Award	George Rankin, Houston, TX
	Safety Award	Autoclave Engineers
	Service Award	Thomas J. Labus
	Technology Award	Thomas J. Kim, Ph.D.
1997	Pioneer Award	David A. Summers, Ph.D., Rolla, MO
	Service Award	Andrew F. Conn, Ph.D.
	Technology Award	Prof. Dr-Ing. Hartmut Louis
1999	Pioneer Award	Mohamed Hashish, Ph.D., Kent, WA
	Safety Award	Bruce Wood
	Service Award	John Wolgamott
	Technology Award	Ryoji Kobayashi, Ph.D.

2001 WJTA Awards Nomination Form

Instructions: Complete sections below and submit a narrative (300-word maximum) 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 2001 WJTA Award

(CHECK ONE AWARD):

☐ Distinguished Pioneer Award

The nominee must:

- Have made contributions to the waterjet industry;
- Have made contributions to the achievement of the goals of WJTA;
- Have high moral character;
- Have strong personal and business ethics;
- Be dedicated to the future of the waterjet industry and to the growth of WJTA.

☐ Service Award

How has the nominated company, organization or individual contributed in time and talent toward improvement in the WaterJet Technology Association?

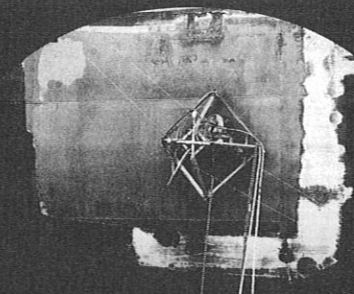
☐ Technology Award

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 industry.

☐ Safety Award

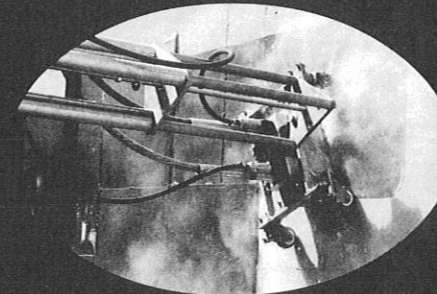
What has the nominated company, organization or individual done to introduce new and innovative ideas in safety? This could include, but is not limited to new products, new concepts, new safety techniques . . . any unique activity which increases the overall safety of waterjet equipment.

(nominations form on page 19)



AQUA SPIDER

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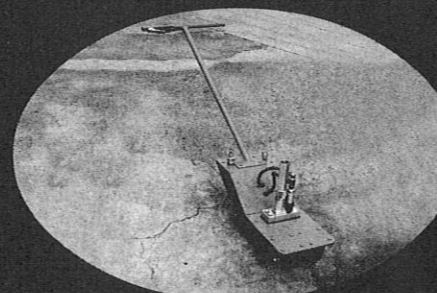
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WJTA Administration

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John Wolgamott
(970)259-2869

President/Jet News Editor

George A. Savanick, Ph.D.
(952)432-7594

Vice-President

Lydia M. Frenzel, Ph.D.
(512)392-2210

Secretary

Andrew F. Conn, Ph.D.
(410)532-3452

Treasurer

Larry Loper
(800)289-7447

1999-2001 Directors

Pat DeBusk
(713)393-5600

Forrest Shook
(248)624-5555

Mohamed Hashish, Ph.D.
(253)850-3500

David Summers, Ph.D.
(573)341-4314

Randy Kruger
(713)307-2140

Mohan Vijay, Ph.D.
(613)993-2731

Brian Roach
(909)350-4054

Emeritus Members

Thomas J. Kim, Ph.D.
(401)874-2186

Thomas J. Labus
(414)275-5572

Fun-Den Wang, Ph.D.
(303)279-9415

Association Managers

Mark S. Birenbaum, Ph.D. • Kenneth C. Carroll
(314)241-1445

Waterjet Erodibility Measurement Device

The waterjet erodibility measurement device is used in measuring relative erodibility of natural materials (soil and rock). The waterjet erodibility device offers a simple means of measuring relative erodibility of natural materials in emergency spillway and dry channel floors. The device is simple, portable and capable of in-situ measurements.

Equipment and requirements needed include a water supply, a pump (or water under pressure), and hoses. The device may be simply fabricated from readily available parts.

Emergency spillways and dry channels may sit idle for long periods of time, many years in some cases, only on rare occasions performing their design function of conducting emergency overflows. However, on these rare occasions, the potential for severe erosive damage is great. It is necessary to be able to rate the relative erodibility of natural materials in the flows of these spillways and channels in order to anticipate erosion problems when flow does occur and if necessary to institute precautionary protective measures.

The waterjet erodibility measurement device was developed at the Fort Worth, Texas, office of the U.S. Department of Agriculture, Soil Conservation Service (SCS), and has been used in erodibility studies at various SCS field sites.

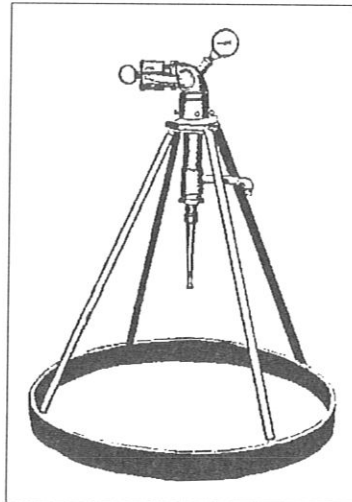
The test device consists of a small fire-hose nozzle mounted in a four-

legged frame so as to discharge vertically downward; water-supply fittings; and a gauge to monitor the water pressure. The nozzle is six inches long and its discharge diameter is one quarter inch. The feet of the legs are fixed to a 24-inch-diameter iron ring for stability.

The test procedure is to jet water vertically on a prepared level soil or rock surface at 20 psi, and to measure depth and volume of the jetted void at 5-minute or longer time intervals for a 30-minute period. Volume of void in milliliters is then plotted against time in minutes. The slope of the void-volume/time curve gives an indication of erodibility (erosion resistance).

This procedure can be used for assigning soils and weathered rocks to several grades of erosion resistance for design purposes. Cementation, stratification, mineralogy, fractures, and natural partings have an observed influence on erosion potential. Test data indicate that the void shape, depth, and volume can be related to soil and rock features. Use of the tool is not intended to simulate spillway flow, only to classify erosion resistance.

Water-Jet Erodibility Measurement Device, Repair-Evaluation-Maintenance-Rehabilitation (REMR) Technical Note GT-SE-1.2 reprinted courtesy of the U.S. Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199.



Nominations Open For WJTA Board Of Directors

"Nominations for the WaterJet Technology Association (WJTA) Board of Directors are now open," announced Dr. Andrew Conn, secretary of the WaterJet Technology Association.

"The WaterJet Technology Association is growing rapidly, and the Association needs dedicated directors to lead the members as the WJTA grows," says Dr. Conn, who is also chairman of the Committee on Nomination. "The duties of the directors are truly challenging and rewarding."

The four-year terms of office of Andrew F. Conn, Ph.D., Mohamed Hashish, Ph.D., George A. Savanick, Ph.D., David A. Summers, Ph.D., and Mohan M. Vijay, Ph.D. will expire on August 19, 2001. Terms of office for Brian Roach and Randy Kruger will also expire on August 19, 2001. Therefore, nominations are sought for seven (7) board members, each to serve a four-year term of office beginning August 19, 2001.

According to the WJTA bylaws, each of the above-named individuals are eligible for re-nomination and re-election to the WJTA Board of Directors.

With regard to all first-time nominees, the WJTA 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 facilities that are already represented on the board by individuals whose terms expire in 2003. These facilities include: Advisory Council (Lydia M. Frenzel, Ph.D.), High Pressure Equipment Company (Larry Loper), HydroChem Industrial Services, Inc. (Pat DeBusk), NLB Corporation (Forrest Shook), and StoneAge (John Wolgamott).

According to the WJTA bylaws, any WJTA member in good standing (2001 membership dues paid) may submit a nomination(s). Nominees must also be WJTA members in good standing. The deadline for making nominations is at least eleven (11) weeks prior to the biennial business meeting scheduled for Sunday, August 19. Your nomination(s) should reach the WJTA office no later than **May 17, 2001**. To submit a nomination(s), complete the form below and return to:

Chairman, Committee On Nomination
WaterJet Technology Association
917 Locust Street, Suite 1100
St. Louis, MO 63101-1419
Phone (314)241-1445
Fax (314)241-1449

Remember, nominations must be received no later than May 17, 2001.

Nominations/Elections Procedures

In accordance with the bylaws of the WaterJet Technology Association, revised in 1993, 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*. This publication represents the second call for nominations. **Nominations will be accepted through May 17, 2001.**
- A list of the eligible nominees and a brief biographical sketch for each individual will be published in the next issue of *Jet News*.
- An official ballot listing the eligible nominees will then be forwarded by mail to all eligible voting members of the Association on July 2, 2001. **Signed and executed, ballots must be mailed to the Association's office for tallying by August 11, 2001.**
- The names of newly elected board members will be announced on Sunday, August 19, 2001, at the WJTA general membership meeting held in conjunction with the 2001 WJTA American Waterjet Conference in Minneapolis, Minnesota.

Only eligible members of the WaterJet Technology Association may submit a nomination and nominees must be eligible members of the WaterJet Technology Association.

WJTA Nomination Form

Name Of Nominee _____ Title _____

Address _____

City _____ State _____

Country _____ Postal Code _____

Telephone _____

In US/Can (_____) _____ Outside US/Can [_____] (_____) _____
(area code) (country code) (city code)

Fax _____

In US/Can (_____) _____ Outside US/Can [_____] (_____) _____
(area code) (country code) (city code)

Attach biographical information with a brief statement of your nominee's mission and vision for WJTA.

Name Of Nominator _____ Title _____

Address _____

City _____ State _____

Country _____ Postal Code _____

Telephone _____

In US/Can (_____) _____ Outside US/Can [_____] (_____) _____
(area code) (country code) (city code)

Fax _____

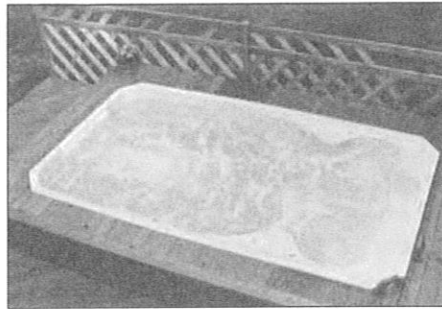
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Swimming Against Waterjets In A Hot Tub

Hydopool Industries of Mississauga, Ontario, Canada, manufactures the Aquatrainer Swim Spa. This is a fiberglass reinforced acrylic mini-pool with a variable resistant current stream and eight hydrotherapy jets. This arrangement allows you to swim, jog in place or simply relax in a hot tub. A strong underwater current is present in the swim area while the therapy seat area remains practically void of turbulence.

The Aquatrainer is available in two sizes: 14 feet long by 93 inches wide or 17 feet long by 93 inches wide. The Aquatrainer can be installed indoors or outdoors, in the ground, above ground or half and half.

The standard Aquatrainer is operated with two five-horsepower pumps which circulate 290 gpm each and one four horsepower pump which discharges 150 gpm.



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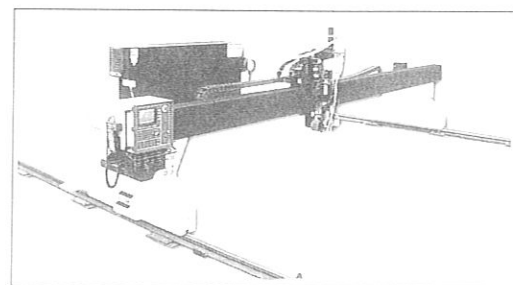
E SAB Cutting Systems displayed at the Westec 2001 show its new patent-pending cutting system featuring thermal and waterjet cutting processes combined on a single carriage. A low-rail model of ESAB's HYDROCUT waterjet cutting system, equipped with one waterjet cutting head, one PT-15 plasma cutting head, a plasma marker and a laser pointer was exhibited. The combination of waterjet and plasma allows the machine to make intricate cuts in a part's internal geometry with waterjet and high-speed perimeter cuts with plasma. This increases productivity and throughput and greatly reduces cutting costs.

ESAB's Hydrocut gantry-style waterjet cutting system incorporates the rugged design and construction features associated with ESAB gantry

technology, including a sturdy box-beam design; welded, stress-relieved components; and precision-machined contact surfaces for reliable operation. A planetary drive system powered by AC brushless motors provides accurate motion and positioning, with accuracy within $\pm .007$ inches and repeatability within $\pm .003$ inches. Cutting speeds range from .01 to 750 ipm.

The Low Rail style accommodates wide and/or long material sizes. Models range from 8 to 20 feet in width and up to 75 feet in length. The floor-mounted rail system provides unobstructed access to the cutting table.

Hydrocut features a waterjet cutting head rated for up to 60,000 psi (4,137



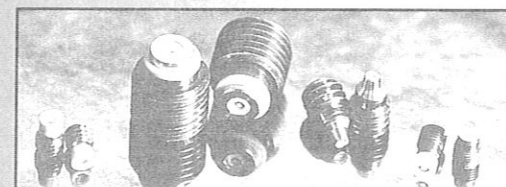
bar), with orifice sizes ranging from .003 to .022 inches (.076 to .56 mm) and nozzle sizes from .020 to .065 inches (.518 to 1.65 mm) interior diameter. This flexibility allows Hydrocut to handle everything from small, intricate cuts to thick cuts requiring higher abrasive and water flow rates. The orifice and long-life nozzle are designed to maintain a consistent tool center point for the cutting stream. ESAB's abrasive

(continued on page 12)

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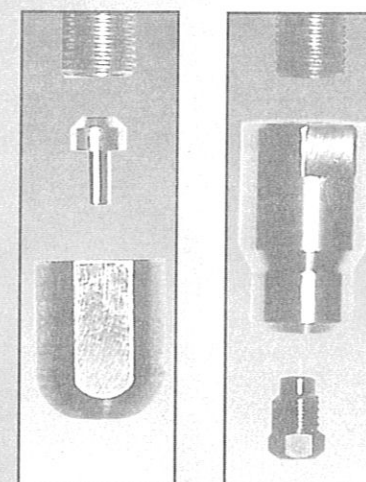
We offer many different types of mountings. Assemblies have the size clearly marked, for easy identification.



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Change your current orifice to our patented, high-cohesive assembly using a simple adaptor.

Change from this...to this!



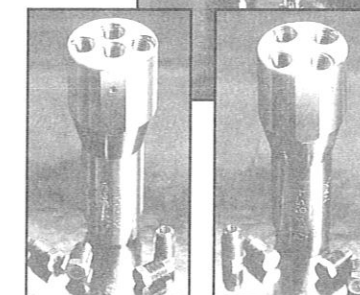
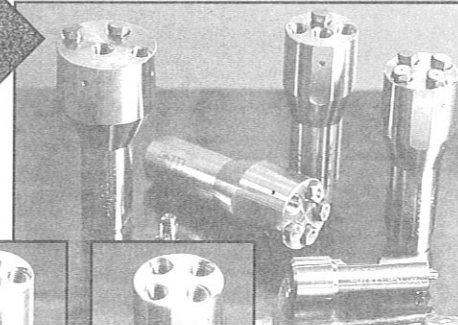
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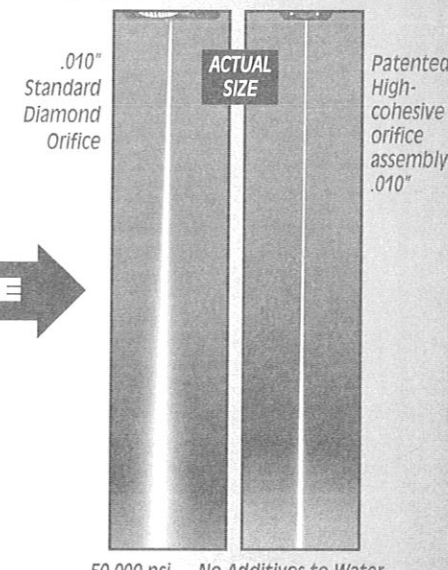
State-of-the-art nozzle bodies designed for even energy distribution.



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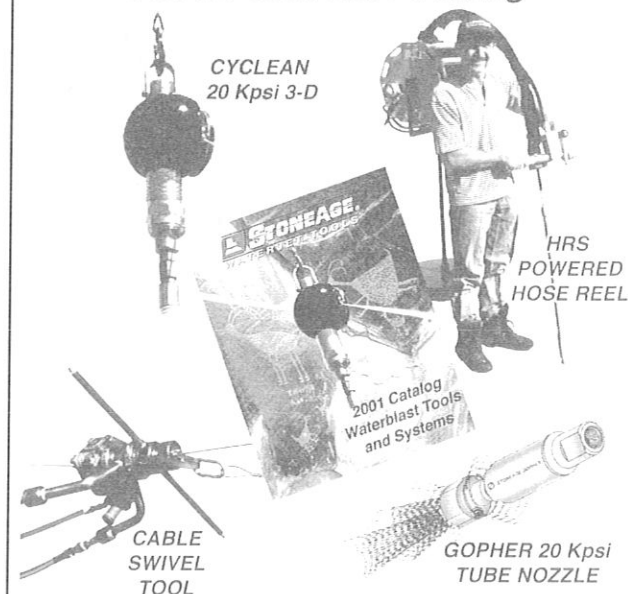
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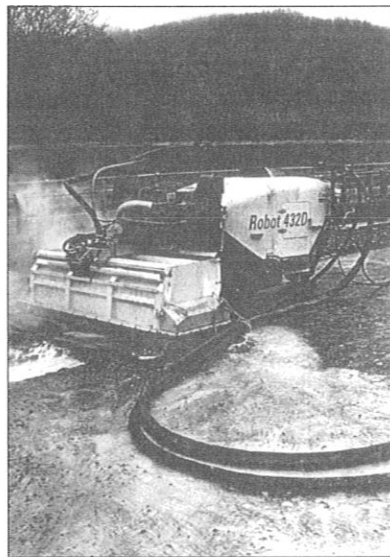
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Hydrodemolition Robot

Conjet AB will use the World of Concrete exhibition in Las Vegas to present the diesel powered Conjet Robot 432 D and extend its comprehensive range of specialist hydrodemolition equipment. The new robot, designed to handle 1500hp pump power, is aimed at large scale removal of damaged concrete from horizontal surfaces, such as bridge decks, elevated highways, parking garages, quays etc.

There is a demand for specialized robot for large-scale demolition projects, which form the biggest portion of the hydrodemolition market and the solution is the Robot 432 D. The robot, optimized for work on horizontal surfaces, is twice as productive and, therefore, more cost effective than standard robots.



The robot with its self-contained hydrostatically driven three-wheeled carrier is exceptionally maneuverable and can almost turn on the spot, making it easy to move around on the jobsite.

The robot supports and directs a special high pressure water jetting nozzle, which is connected to an oscillating cassette running back and

forth along a feed beam producing a standard cutting width of 7ft 2 in (2.2m).

As safety is paramount with Conjet equipment, the shroud, integrated in the feed beam, is extra large for best protection against flying debris and noise. To improve safety, all the robots operational parameters are set on a control panel away from the hazardous cutting area. The Robot 432 D is remotely controlled for easy adjustment of working positions as well as for safe moving on the worksite. Other valuable features are the feed beam side movement and tipping.

The integral environmentally friendly diesel engine, oversized for trouble free operation and long life, meets all known emissions legislation worldwide.

The Robot 432 D can work with 750hp high-pressure pumps, for example two of:

- Conjet Power Pack 545-550kW rated at 1000bar/262litres/min (14500psi/69US gal/min).
- Conjet Power Pack 540-550kW rated at 1150bar/252litres/min (16680psi/67US gal/min).
- Conjet Power Pack 535-550kW rated at 1400bar/194litres/min (20300psi/51US gal/min).



For further information please contact: Lars-Göran Nilsson at Conjet AB, P.O. Box 507, S-136 25 Haninge, Sweden, Tel: +46-8-741-3940, Fax: +46-8-741-3960, E-mail: conjet@conjet.se, Internet: <http://www.conjet.com>; or Stephen Toms at National Hydro Inc., 5643 Warner Rd, Fowlerville, MI, 48836, Tel: +1-517-223-0915, Fax: +1-517-223-9525, E-mail: toms@ismi.net.

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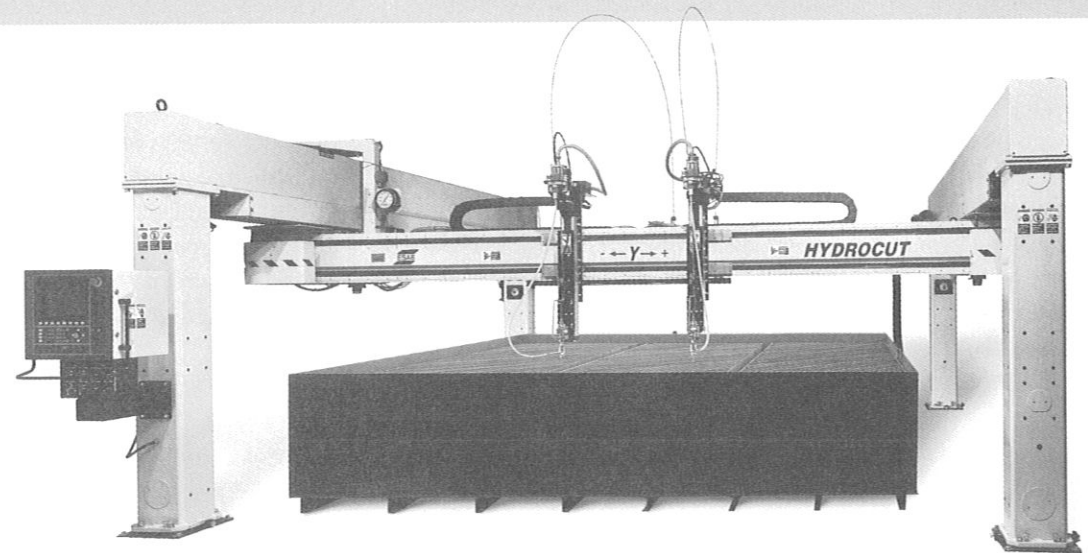
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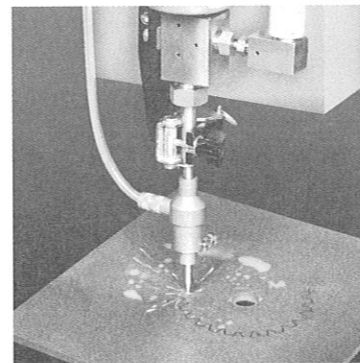
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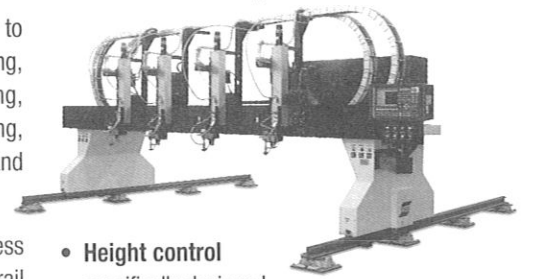


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- Greater flexibility and easy access with a choice of low-rail, mid-rail pedestal or high-rail gantry designs.
- Reduced maintenance due to a new lip seal design with air purge that better protects the ball screws on the high rail. This permits unlimited spacing of independent carriages.
- Flexible process and motion control with ESAB's easy-to-use Vision CNC control and software.



- **Height control** specifically designed for waterjet cutting automates the process on all materials.
- Precise motion control and accurate cutting due to ESAB's rugged box-beam gantry design and AC brushless drive motors.

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Thermal and Waterjet Cutting On A Single Carriage, from page 10

cutting nozzle provides maximum cutting speeds with reduced operating costs and extremely simple maintenance. The pre-aligned cartridge body, orifice and focusing tube produce a sharp and coherent water-abrasive stream that cuts faster than other nozzles while consuming less abrasive. The pre-aligned components require no tools for installation, are easily installed in seconds and maintain proper centering when replaced.

ESAB's waterjet system features an ultra-high pressure intensity pump with continuous output pressure up to 55,000 psi. ESAB pumps provide flow rates as high as 2.0 gpm to accommodate cutting orifices as large as .022 inches (.56 mm). The axial piston, variable displacement pumps are available in 30-200 horsepower. All incorporate pressure compensation features to deliver a smooth, non-pulsating flow over the complete UHP range. Pumps are constructed on a rugged, all-steel welded framework and sound insulated for quiet operation. High efficiency, totally enclosed, fan cooled (TEFC) electric motors ensure peak efficiency and long service life.

The versatility of the system is greatly enhanced with the addition of plasma cutting and marking capabilities. ESAB pioneered the development of plasma cutting technology in 1955 and continues to lead the field in its refinement and advancement. ESAB plasma systems provide superior cut quality and durability, and the addition of plasma on the same carriage with the waterjet allows external cuts to be made at increased speed, thereby reducing the part cost. Numerous Plasma System Configurations are available. The PT 15XLS featured at the show allows cutting from 100 amps up to 1000

amps for use on ferrous and non-ferrous metals.

ESAB's Etch-Arch plasma marker incorporates exclusive software technology that allows the control to provide variable current to ramp up or ramp down on starts, stops and curves. This creates a smooth, even mark for greater legibility on alphanumeric marking, layout lines, punch and surface marking and deep marking.

To compensate for uneven plate surfaces, the waterjet and plasma stations are equipped with height control sensors.

Full process and motion control are provided by ESAB's Vision PC CNC control. ESAB software for waterjet cutting includes features such as pump pressure setting, abrasive feed setting, multiple acceleration setting, programmed kerf offset, a real-time cut path display, graphics-to-text editor, on-screen zoom, nesting, plate remnant storage and multi-tasking capabilities.

For more information on ESAB waterjet cutting systems, plasma cutting systems, or the unique thermal/non-thermal combination system, visit ESAB's website: www.esab.com or call 843-664-4394.



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Safety Committee Solicits Comments On Recommended Practices

The Safety Committee hereby solicits comments regarding improvements to the publication *Recommended Practices for the Use of Manually Operated High Pressure Waterjetting Equipment*. The *Recommended Practices* is reviewed periodically at the biennial conferences of the WaterJet Technology Association. The next review will be at the 2001 Conference, August 18-21, 2001, in Minneapolis, Minnesota. We invite your comments and recommendations for consideration.

Please address your suggestions to: Safety Committee, c/o WJTA, 917 Locust Street, Suite 1100, St. Louis, MO 63101-1419.

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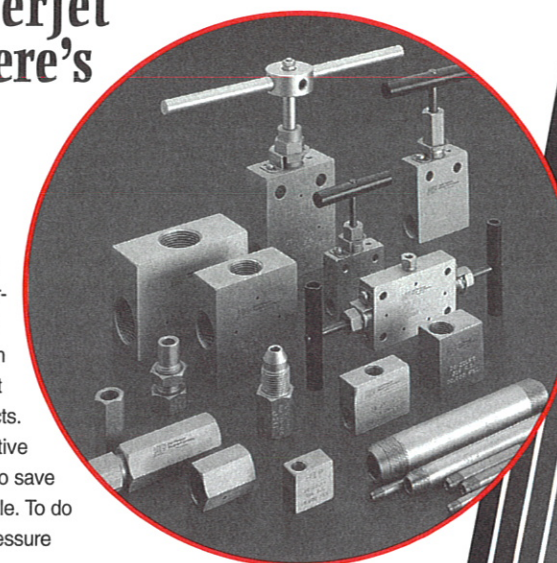
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