

Performance Under Pressure

Count on our proven valves, fittings & tubing for your waterjet cutting & blasting system

Safely delivering water at elevated pressures for cutting and cleaning applications demands reliable operation from your valves, fittings and tubing. It demands Performance Under Pressure. For over 50 years, HiP has been focused on producing a complete line of the highest quality valves specifically designed for just such waterjet applications.

We're committed to providing our customers with the consistent quality and responsive service that helped us earn ISO9001 certification. We stock an extensive inventory of valves and accessories, allowing us to offer same day shipping of many products. For special orders, including custom manifolds, we have short lead times and experienced engineering assistance.

Before you spec high pressure valves, fittings or tubing, check out the company that Performs Under Pressure... HiP.

HiP...Our Name is High Pressure

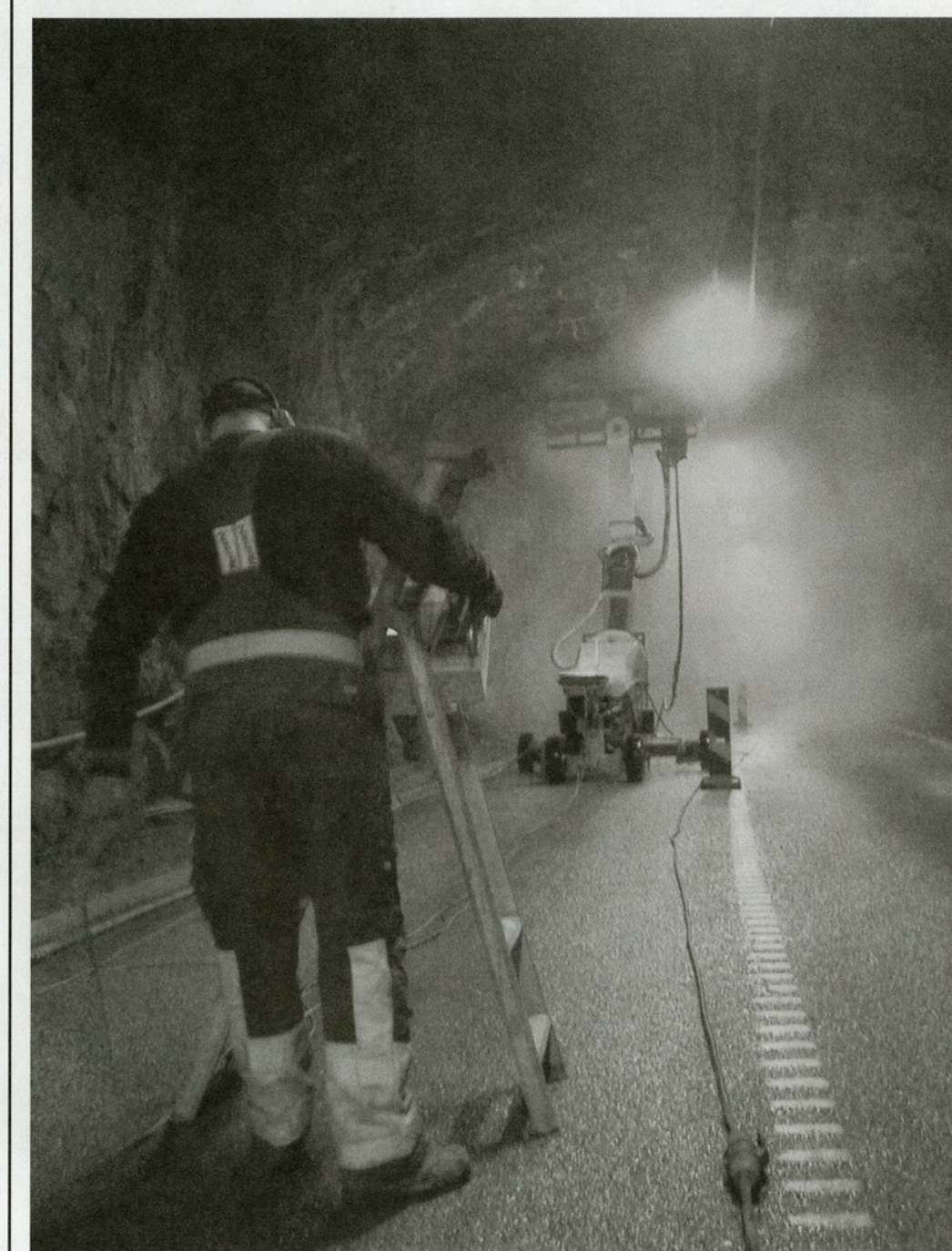
To find out more, come see us online at www.highpressure.com or call 1-800-289-7447

ISO 9001

High Pressure Equipment Company



Hydrodemolition Best Solution For Sub-sea Tunnel Repair



On the inside

Conference Sponsors	pg. 2
Abstracts of Papers to be Presented at the Conference	pg. 4
SPiR STAR Ltd. Announces the Promotion of Jerry Carter	pg. 6
Meet the Candidates for the WJTA Board	pg. 7
Accustream Expands Pump Manufacturing Capability	pg. 11
Preliminary Schedule of Events	pg. 12
Papers to be Presented at the Conference	pg. 13
Pre-Conference Workshop	pg. 15
Onsite Live Demonstrations	pg. 17
Conference Exhibitors	pg. 19
Awards Nomination Form	pg. 20
Seven Ways To Attend	pg. 22
Registration Form	pg. 23

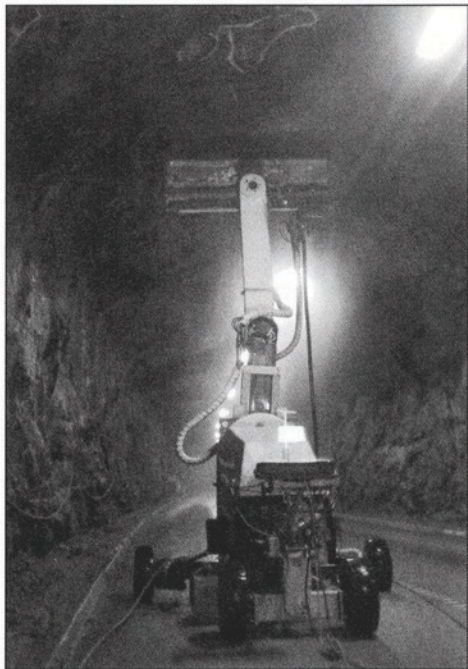
See article on page 2

Hydrodemolition Best Solution For Sub-sea Tunnel Repair

Hydrodemolition was chosen as the preferred technique to assist in the repair of a sub-sea road tunnel in Sweden joining the island of Muskö to the mainland in the southern Stockholm Archipelago. One of the very latest Conjet Robot 363 MPA high pressure water jetting hydrodemolition machines is playing a key role in the repairs by removing the damaged area of shotcrete lining in the tunnel crown that has been chemically attacked and weakened by water leaking in from above.

The approximate 3,000 m long curved rock tunnel under Stora Skramasö, with its mainland portal at Yxlö, was completed by drill and blast in 1963. The 40 m² tunnel, which at its deepest point is about 65 m below normal ground level, was strengthened with rock bolts and shotcrete lining predominantly in the crown. In areas of poor quality rock the shotcrete was reinforced with steel mesh. The tunnel was originally intended for military use, but was subsequently transferred for public traffic and operational responsibility passed to the Stockholm branch of the Swedish National Road Authority, Vägverket.

Inspection of the tunnel by Vägverket revealed the shotcrete lining was being attacked and weakened by leaking water. Adhesion was bad and was at risk of collapse and needed replacing. Trials were carried out of removal methods and the hydrodemolition technique of using very high pressure jets of water to cut away the damaged areas of shotcrete was chosen because the process does not cause any damage to the healthy shotcrete left behind. Hydrodemolition also produces a very rough and uneven surface, which provides a strong bond at the interface for the new shotcrete to key onto.



The contract to restore 480 m of the tunnel's shotcrete lining, equivalent to an area of 4,800 m², was awarded to Waterjet Entreprenad AB, Sweden's largest and one of Europe's biggest specialist hydrodemolition contractors. To minimize disturbance to traffic the restoration was carried out during the

night. Waterjet used its wheel mounted Conjet Robot 363 MPA running on the road surface with its multi-purpose arm reaching up into the tunnel crown. The 363 MPA Robot was connected to a 550 kW Conjet Powerpack delivering fresh clean water at a pressure of 1050 bar and flow of 234 litres/min to remove a 30mm deep layer of the damaged and weakened shotcrete. The Robot's hydrodemolition process provided a jagged surface for the new shotcrete lining to key on to and according to Vägverket was a technical and economic success.

For further information please contact: Lars-Göran Nilsson, Conjet AB, P.O. Box 507, S-136 25 Haninge, Sweden, telephone: [46](8)5565-2240, fax: [46](8)5565-2260, email: conjet@conjet.se, web site: <http://www.conjet.com> or Stephen Toms, National Hydro Inc., 5643 Warner Road, Fowlerville, MI 48836, USA, telephone: (517)223-0915, fax: (517)223-9525, email: stevetoms@sbcglobal.net.

WJTA Conference Sponsors

(sponsor list as of June 6, 2005)

EBBCO, Inc.
Gardner Denver Water Jetting Systems
High Pressure Equipment Co.
IWP - International Waterjet Parts, Inc.
Jetstream of Houston, LLP
Parker Polyflex
Terydon, Inc.
Universal Minerals
VLN Advanced Technologies Inc.
WGI Heavy Minerals, Inc.

2005 WJTA Conference Registration Form

Name _____ Member# _____
Company _____ Title _____
Address _____ Mailing Address: ☐ Home ☐ Work
City _____ State _____ Country _____ Postal Code _____
Telephone # [] () _____ Fax # [] () _____
E-mail Address: _____
Information for name tag _____
Print name as you wish it to appear on your name tag

Payment Method: ☐ Enclosed is my check, payable to **WaterJet Technology Association** (U.S. DOLLARS ONLY).
☐ Please charge my ☐ MasterCard ☐ VISA ☐ American Express ☐ Discover
Credit Card# _____ Expiration Date _____

Print name as it appears on card *Cardholder's signature*

THREE EASY WAYS TO REGISTER

By Phone: Just call (314)241-1445 and have your credit card information ready. (MC/VISA/Am. Exp./Discover ONLY).

By Fax: Fill out the registration form with your credit card information and call our 24-hour fax number at: (314)241-1449.

By Mail: Fill out the registration form and mail with applicable payment to: **WJTA, 906 Olive Street, Suite 1200, St. Louis, MO 63101-1434.**

Join the WaterJet Technology Association now and receive a substantial discount off Conference registration fees.

WJTA MEMBER		NONMEMBER	
By 8/1/05	After 8/1/05	By 8/1/05	After 8/1/05

☐ **OPTIONAL TRIP to NASA's Johnson Center** \$ 30 \$ 30 \$ 30 \$ 30 = \$ _____

Seven Ways To Register

☐ **Full Conference ONLY** \$ 495 \$ 555 \$ 555 \$ 615 = \$ _____

☐ **Combo** (Full Conference PLUS Pre-Conference Workshop) \$ 665 \$ 725 \$ 725 \$ 785 = \$ _____

Daily

☐ Sunday - Pre-Conference Workshop (includes lunch) \$ 280 \$ 340 \$ 340 \$ 400 = \$ _____

☐ Monday (includes Luncheon in Exhibit Hall) \$ 265 \$ 295 \$ 295 \$ 325 = \$ _____

☐ Tuesday (includes Luncheon in Exhibit Hall) \$ 265 \$ 295 \$ 295 \$ 325 = \$ _____

Exhibit Hall/Live Demo Pass

☐ Monday (does NOT include Luncheon in Exhibit Hall) \$ 25 \$ 25 \$ 25 \$ 25 = \$ _____

☐ Tuesday (does NOT include Luncheon in Exhibit Hall) \$ 25 \$ 25 \$ 25 \$ 25 = \$ _____

☐ **Student** (WJTA members ONLY) \$ 20 \$ 20 N/A N/A = \$ _____

MULTIPLE CORPORATE REGISTRATIONS (Applies to third and subsequent registrants from same company)

☐ **Full Conference ONLY** \$ 445 \$ 505 \$ 505 \$ 565 = \$ _____

☐ **Combo** (Full Conference PLUS Preconference Seminar) \$ 615 \$ 675 \$ 675 \$ 735 = \$ _____

WJTA MEMBERSHIP (US, Mexico, Canada) ☐ \$60 Individual ☐ \$20 Student ☐ \$400 Corporate = \$ _____

WJTA MEMBERSHIP - International (all other countries) ☐ \$80 Individual ☐ \$40 Student ☐ \$460 Corporate = \$ _____

☐ **Conference Proceedings** _____ Copies x \$89.00 = \$ _____
2005 WJTA Conference registrants may purchase extra copies of the Conference Proceedings on CD-ROM for only \$89. Regularly priced at \$109, you will **SAVE \$20**. Offer valid through 8/31/05.

SPECIAL OFFER!

→ **EXTRA TICKETS** — The Full and Combo registrations include one ticket per registration for the Exhibit Hall Luncheons (Monday and Tuesday), Welcoming Reception in Exhibit Hall (Sunday evening) and Awards Presentation/Party (Monday evening). Each Daily registration includes a luncheon ticket for the day registered: Sunday, Monday and/or Tuesday. Sunday daily includes Welcoming Reception in Exhibit Hall. Additional tickets may be purchased as follows:

☐ **Welcoming Reception in Exhibit Hall - Sunday** \$ 60 \$ 60 \$ 60 \$ 60 = \$ _____

☐ **Luncheon in Exhibit Hall - Monday or Tuesday or both (\$70)** \$ 35 \$ 35 \$ 35 \$ 35 = \$ _____

☐ **WJTA Awards Presentation/Party - Monday** \$ 75 \$ 75 \$ 75 \$ 75 = \$ _____

TOTAL ENCLOSED \$ _____

Seven Easy Ways To Attend The 2005 Waterjet Conference

1. FULL CONFERENCE

Includes admission to all research and applications sessions (except Pre-Conference Workshop on Sunday, August 21), onsite live demonstrations, pass to Welcoming Reception in Exhibit Hall (Sunday, August 21), exhibits, luncheon on Monday, August 22, and Tuesday, August 23, coffee breaks, and WJTA Party on Monday, August 22. **Each full registration also receives one copy of the Conference Proceedings on CD-ROM.**

2. COMBO

Includes everything listed under Full Conference **PLUS** a Pre-Conference Workshop on Sunday, August 21.

3. SAVE \$ ON MULTIPLE EMPLOYEE FULL/COMBO REGISTRATIONS

Companies that purchase three or more full or combo registrations receive a special discount for each additional employee registered after the first two. To take advantage of the special discount, register the first two (2) employees from your company at the regular FULL/COMBO rates and receive the discounted rate for the third and subsequent employee registrations.

4. DAILY ATTENDANCE

Includes admission to all research and applications sessions, onsite live demonstrations, exhibit hall, coffee breaks, and luncheon on that day. Register for one day and receive a "50% off" coupon for the 2005 Conference Proceedings on CD-ROM. Register for two days and the Proceedings are included. **NOTE:** Admission to the WJTA

Party on Monday is **NOT** included in the daily registration fee, and tickets for this event must be purchased separately.

5. PRE-CONFERENCE WORKSHOP

Waterjet Technology - Basics and Beyond

Includes handout materials for workshop, coffee breaks, luncheon, and August 21 Welcoming Reception in Exhibit Hall.

6. EXHIBIT HALL and/or LIVE DEMO PASS

A \$25 exhibit hall and/or live demonstration pass for one day includes admission to the WJTA Exhibit Hall where you'll see waterjet equipment, supplies, and services, onsite live demonstrations between the hours of 8:00 a.m.-10:00 a.m., and designated contractor programs. Passes do **NOT** include luncheon in the exhibit hall. Tickets for lunch can be purchased separately.

You must purchase a ticket to attend the Welcoming Reception in the Exhibit Hall on Sunday, August 21, if you are not registered as a Full or Combo, or you are not registered for the Pre-Conference Workshop.

7. STUDENTS

The registration fee for WJTA student members is \$20. Student registration includes admittance to technical programs, onsite live demonstrations, and the exhibit hall on Monday and Tuesday, but does **NOT** include copies of the Proceedings, Welcoming Reception in Exhibit Hall on Sunday, August 21, or admittance to any food/social functions. **NO** discount is available for students that are not members of the WJTA. WJTA student members must be enrolled **full-time** in a university graduate or undergraduate program.

WJTA members and early-bird registrants SAVE up to \$120!

WJTA members receive a special discount off the regular registration fees. You will also receive a discount if your registration is postmarked or received in the WJTA office by **August 1, 2005.** Total Savings: Up to \$120!

OPTIONAL TRIP - NASA'S JOHNSON SPACE CENTER

An optional trip to NASA's Johnson Space Center is scheduled for Saturday, August 20, from 9:30 a.m.-4:30 p.m. Buses will begin boarding a half-hour prior to departure times listed. Trip includes bus transportation, entrance to the space center and 1-1/2 hour tram tour. Lunch is not included and will be on your own.



2005 WJTA AMERICAN WATERJET CONFERENCE PROCEEDINGS

The Conference Proceedings for 2005 will be on CD-ROM only. The two-volume books that were available in past years will not be produced.

Hotel Reservations

It's not too early to make hotel reservations for the 2005 WJTA American Waterjet Conference to be held August 21-23, 2005, at the Marriott Houston Westchase Hotel, Houston, Texas, USA. For room reservations call the Marriott toll free at (800)228-9290 or direct at (713)978-7400. Be sure to identify yourself as a participant in the WJTA Conference.

WaterJet Technology Association
Telephone: (314)241-1445
Fax: (314)241-1449
Web Site: www.wjta.org

CANCELLATION POLICY

Fees will be refunded in full for cancellations received at least four weeks prior to the Conference. Cancellations received more than 10 days and less than four weeks prior to the Conference will be subject to a \$50 charge. No refund will be made for cancellations received less than 10 days prior to the Conference. However, substitutions may be made at anytime. Refunds will not be processed until after the Conference.

PARTS. UNITS.

AND ALL THE EXPERT

ADVICE YOU NEED TO

DO THE JOB RIGHT.

While every application has its unique challenges, the secret to boosting productivity is using the correct part or water pressure. So, how do you know what's right? Easy. Just give our experts a call, and you'll have the right solution in no time. Make no mistake; our experts aren't just order-takers. They're waterblasting consultants, with plenty of field experience. They're armed with on-the-job insights and product ins and outs that'll make a huge impact on your bottom line. If you're not sure what to use, they are. Simply call a Jetstream Solutions Provider at 1-800-231-8192 or visit us at www.waterblast.com.

Jetstream *

©2003 Federal Signal Corporation. Federal Signal Corporation is listed on the NYSE by the symbol FSS.



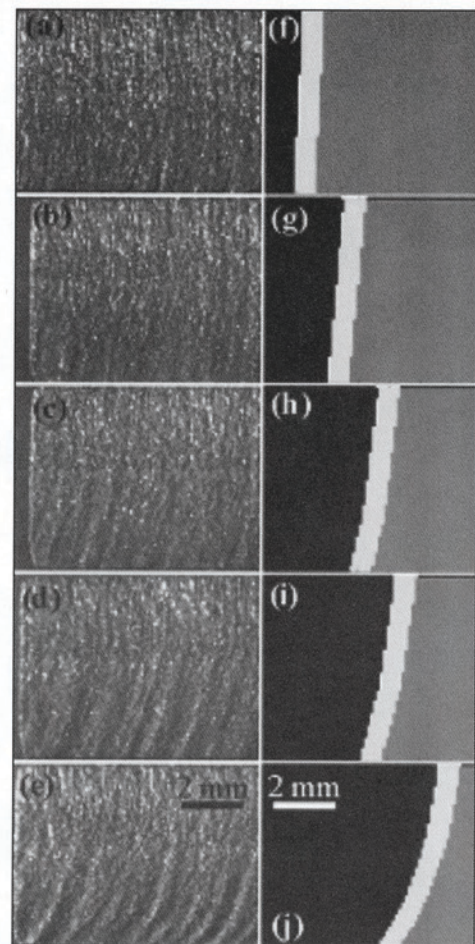
Abstracts Of Papers To Be Presented At The American Waterjet Conference

August 21-23, 2005 • Marriott Westchase Hotel • Houston, Texas

A Two-Dimensional Cellular Automata Model Of Abrasive Water Jet Cutting

H. Orbanic and M. Junkar
Laboratory for Alternative
Technologies, University of Ljubljana
Ljubljana, Slovenia

In this paper a new approach to modelling abrasive water jet (AWJ) cutting is presented. A cellular automata (CA) model was developed, which calculates the shape of the cutting front, which can be used as an estimation of the surface quality. The CA calculates



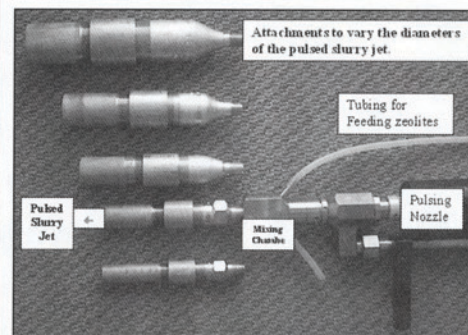
The comparison between striations and the simulation for material thickness of 6 mm. (a)-(e) Photographs of the cut surface with striations at different cutting velocities ($v_t = 4, 6, 8, 10$ and 12 mms^{-1}). (f)-(j) The simulated cutting fronts at different cutting velocities (Orbanic and Junkar, 2004).

the form of the cutting front by using the developed rules for material removal and propagation of an AWJ. The model also generates a well-known step on the cutting front. The modelling with CA provides a visual narrative of the moving cutting front, which is impossible to observe in the cutting of opaque materials.

Abrasive-Entrained Forced Pulsed Waterjet Technique: Basic Study

M.M. Vijay, B. Ren, W. Yan, A. Tieu
and B. Daniels
VLN Advanced Technologies Inc.
Ottawa, Canada

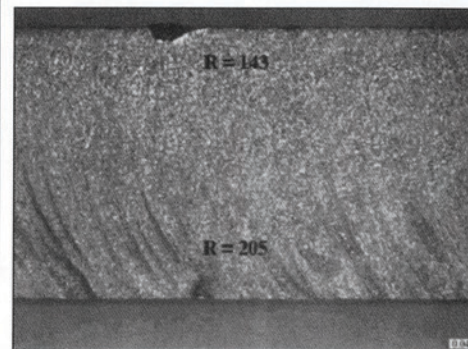
This paper describes the design of pulsed abrasive waterjet equipment, visualization of pulsed and non-pulsed abrasive-entrained waterjets, and the removal rate attained in stripping marine non-skid coatings.



A general view of the pulsed waterjet gun and various attachments for producing abrasive-entrained pulsed slurry jet (APSJ).

Accurate Hole Drilling Using An Abrasive Water Jet In Titanium

S. Zhang, P. Nambiath, G. Galecki,
D.A. Summers
University of Missouri-Rolla
Rolla, Missouri, U.S.A.
D. Bowden
The Boeing Company
St. Louis, Missouri, U.S.A.



Surface roughness measurements at 7.0 inch/min, R_a values measured near the top and bottom of the sample, cut from the right.

A series of experiments are described using the titanium alloy Ti6Al4V in order to define parameters for cutting and milling. The ability to precisely cut holes and to mill pockets with precision were investigated. The operational requirements to achieve defined standards of surface roughness and hole tolerance are discussed.

(continued on page 5)

- WANTED -

40K FLOW/ADMACH Machines and Spare Parts
MARK II-A Jet Lances and Jet Lance Parts

Email Parts List and Pricing to: mleblancwaltham@aol.com

WJTA Welcomes New Members

Corporate

Dubai Drydocks
Manuel Brito
Graham Comport
Fernando Batista
P.O. Box 8988
Dubai
United Arab Emirates
Telephone: [971](4)4044756
Fax: [971](4)3450116

Befesa TLI
Jaume Mir Martinez
Avda. Apel.les Mestres, No 105
El Prat de Llobregat
Barcelona 08820
Spain
Telephone: [34](93)3789710
Fax: [34](93)3789711

Apolinar Abscal Montes
Avda. Ingenieros Marcos Seguin
nave 2. Pol. Ind. Las Salinas de
Levante
Puerto de Santa Maria
Cadiz 11500
Spain
Telephone: [34](95)6543776
Fax: [34](95)6543681

Beatriz Lopez Gomez
Poligono Ibarzaharra
Pabellon 9-10
Trapagaran
Vizcaya 48950
Spain
Telephone: [34](94)4967300
Fax: [34](94)4950015

Corporate Alternate

Robin Smith
TurtleSkin WaterArmor by
Warwick
301 Turnpike Road
New Ipswich, NH 03071
Telephone: (603)878-1565
Fax: (603)878-4306

Bryan Ursic
A.M. Gatti, Inc.
524 Tindall Avenue
Trenton, NJ 08610
Telephone: (800)882-0105
Fax: (609)695-4339

Corporate Individual

Stephen R. Light
Flow International
23500 64th Avenue South
Kent, WA 98032
Telephone: (253)813-3369
Fax: (253)813-3311

Individual

Laurent Bourgeois
Cerazit S.ar.l.
P.O. Box 51
Mamer 8201
Luxembourg
Telephone: [352]3120851
Fax: [352]311911

Guilherme Brant
Pruner
Rua Vernon 120
Nova Lima-MG 34000-000
Brazil
Telephone: [55](31)35812876
Fax: [55](31)35472381

Greg Clark
Tool Tech, Inc.
4901 Urbana
Road
Springfield, OH
45502
Telephone:
(937)399-4333
Fax:
(937)399-0279

Lee J. Ellis
Wisconsin
WaterJet
6667 North
Teutonia
Avenue
Milwaukee, WI
53209
Telephone:
(414)351-3121
Fax:
(414)351-2754

Jules Kremer
Cerazit S.ar.l.
P.O. Box 51
Mamer 8201
Luxembourg
Phone:
[352]3120851
Fax:
[352]311911

Student

Pradeep Nambiath
University of Missouri-Rolla
1006 Kingshighway
Rolla, MO 65409
Telephone: (573)341-4365
Fax: (573)341-4368

Shijin Zhang
University of Missouri-Rolla
1006 Kingshighway
Rolla, MO 65409
Telephone: (573)341-4365
Fax: (573)341-4368

Matthew Maa
QualJet LLC
12819 SE 38th Street, #240
Bellevue, WA 98006
Telephone: (866)782-5538
Fax: (425)378-7776

Dugald MacBrayne
Kerrick Industries Ltd
P.O. Box 12-093 Penrose
Auckland
New Zealand
Telephone: [64](9)579-2674
Fax: [64](9)5792671

Wayne McGaulley
Corpro Companies Inc.
Suite 750
1100 New Jersey Avenue, SE
Washington, DC 20003
Telephone: (202)554-4030

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

©2005 *Jet News*. All rights reserved. Reproduction in any form forbidden without express permission.

The Choice in Waterjet



AS Series
High Pressure
Intensifier Pumps

State Of The Art Technology
High Pressure Intensifiers
High Pressure Components
Water & Abrasive Cutting Heads
Abrasive Transfer & Metering Systems

Unmatched Customer Satisfaction
Knowledgeable Customer Service Staff
Trained Technical Service Members
Comprehensive Warranty

Lowest Acquisition & Operating Cost

TOLL FREE: 866-566-7099
www.accustream.com

AccuSTREAM

2005 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 2005 WJTA Award (please print or type full individual, company or organization name):

company, organization, or person

☐ **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.

☐ **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.

☐ **Service Award**

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

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, 2005.

For a prompt response, fax completed form to (314)241-1449, or mail to the WJTA, 906 Olive Street, Suite 1200, St. Louis, MO 63101-1434, USA.

Abstracts Of Papers To Be Presented At The American Waterjet Conference

August 21-23, 2005 • Marriott Westchase Hotel • Houston, Texas, from page 4

Analysis Of The Abrasive Waterjet Drilling Process Models

M. Ramulu, I. Conner and
P. Posinasetti
University of Washington
Seattle, Washington, USA

M. Hashish
Flow International
Kent, Washington, USA

This research is a study and a critical evaluation of all of the published models of the abrasive waterjet drilling process. To aid in this research, extensive amounts of experimental data collected through the experimental studies carried out in

University of Washington over the past decade or so have been utilized. This experimental data has been utilized as the common platform for evaluating all the models.

Analysis Of The Cutting Front In Abrasive Waterjet Cutting

Axel Henning and
Engelbert Westkämper
Fraunhofer Institute for Manufacturing
Engineering and Automation
Stuttgart, Germany

(Abstract withdrawn.)

(continued on page 8)



A Saturn V Rocket
streaks toward space.

Visit NASA's Johnson Space Center during the 2005 WJTA American Waterjet Conference in Houston, Texas. To register for this optional trip scheduled for Saturday, August 20, see the registration form on page 23.

WWW.IWPWATERJET.COM

5% DISCOUNT ON ALL WEB ORDERS

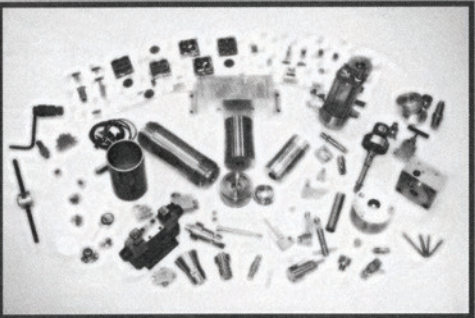
VISIT OUR WEB SITE WITH OVER 300 PRODUCTS, USED EQUIPMENT, INSTALLATION PROCEDURES, EXPLODED VIEWS AND SERVICES

- OVER 300 PRODUCTS
- LONG LIFE NOZZLES \$85.00
- 24 HR A-DAY SERVICE
- CUSTOM MACHINING FOR HIGH PRESSURE COMPONENTS (GOT AN IDEA! LET US HELP)
- RAPID PROTOTYPING

MONTHLY SPECIALS
LISTED ON WEB SITE PLUS
THE 5% DISCOUNT

INTERNATIONAL WATERJET PARTS INC.
1299 A STREET SE
EPHRATA WASHINGTON 98823

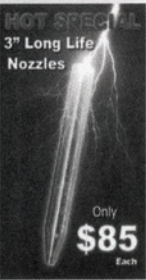
Phone: 509-754-3284
Toll Free: 866-302-3284
Fax: 509-754-3292
Toll Free: 866-883-3292
Email: iwp@iwpwaterjet.com



We test all of our products in the real world. Utilizing our customers assures impartial test results. Not doing this is like letting the President count his own votes after election.

Our Nozzles will compare to the best our competition has to offer.

Don't settle for less when you can have the best!!!!



ENTER TO WIN THE NEW DP3000 CUTTING HEAD
A VALUE OF \$425.00
DRAWINGS WILL BE HELD
AT THE END OF EACH MONTH.
VISIT THE WEB SITE AND FILL OUT THE ENTRY FORM.



SPIR STAR Ltd. Announces The Promotion of Jerry Carter

SPIR STAR Ltd. is pleased to announce the promotion of Jerry Carter to Senior Sales Coordinator. Jerry joined the SPIR STAR team in 1997 and started out as a Hose Assembly Technician and quickly became Shop Foreman. He was promoted to inside sales in January 2002.

As the Senior Sales Coordinator, his primary duty is to uphold the company motto of "Outstanding Quality and Outstanding Service." Jerry will oversee all SPIR STAR Authorized Assembly Centers and assist with the development of new hose products.

WJTA Administration

Chairman of the Board
John Wolgamott
(970)259-2869

President/Jet News Editor
George A. Savanick, Ph.D.
(952)432-7594

Treasurer
Larry Loper
(800)289-7447

Vice-President
Craig Anderson
(281)925-4501

2003-2005 Directors

Pat DeBusk
(713)729-3862

G.J. DeSantis
(269)965-6311

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

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

Randy Kruger
(713)307-2140

Forrest Shook
(248)624-5555

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

Emeritus Members

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

Thomas J. Kim, Ph.D.
(401)874-5991

Thomas J. Labus
(262)245-9702

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

Association Managers

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

Water Jet Protection Safe at 40,000 psi



TurtleSkin WaterArmor shin panel accidentally swiped at 36,000 psi.

This shin panel not only saved an operator from serious injury, it was then easily replaced, eliminating the need to purchase an entire new suit.



TurtleSkin WaterArmor suits have saved many operators from injuries on the job. The rugged patented material is flexible yet has been tested to prevent injuries at flows as high as 11 gpm at 20,000 psi or 5.5 gpm at 40,000 psi.

turtleskin.com **+1.603.878.1565**
inquiries@warwickmills.com

WJTA Conference Exhibitors

August 21-23, 2005 • Marriott Westchase Hotel • Houston, Texas
(exhibitor list as of June 6, 2005)

Accustream Inc.
Ameri-Force Labor Services
Aqua-Dyne, L.P.
Autoclave Engineers
Barton Mines Company, LLC
Blast of Life, Inc.
Boatman Industries Inc.
Boride Products
Burny
Business & Industry Connection (BIC) Magazine
BuTech Pressure Systems
Cleaner Times Magazine
EBBCO Inc.
Enz USA Inc.
Flow International Corporation
Freemyer Industrial Pressure, L.P.
GHX, Inc.

G.T./Waterblast Technologies
Gardner Denver Water Jetting Systems
General Pump
Great Lakes - Eglinton
H2O Jet, Inc.
Hagen International/Cadcraft
Hammelmann Corp.
Heintzmann Corporation
High Pressure Equipment
HoldTight Solutions, Inc.
Hydrajet Technology
Hydro-Engineering, Inc.
Idrojet S.r.l.
JETECH, Inc.
Jetstream of Houston, LLP
Kiwon Entec Co., Ltd.
LaPlace Equipment Co., Inc.

Microlap Technologies, Inc.
NLB Corp.
Parker Polyflex
Powertrack International Inc.
QualJet/OH Precision
Reliable Pump
SPIR STAR
Sprague Products
StoneAge, Inc.
Terydon Inc.
Turtleskin WaterArmor
UltraChem LLC/Sharp Performance Products
Universal Minerals
University of Missouri-Rolla
VLN Advanced Technologies Inc.
WGI Heavy Minerals Inc.
Wilco Supply L.P.
WOMA Corporation

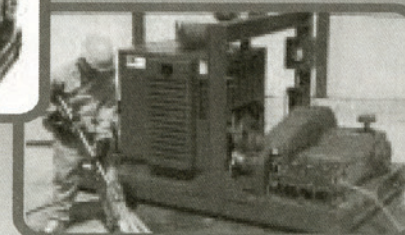
FAST BLAST SYSTEMS for all of your water blasting needs!



Industrial Cleaning

FEATURES

- 40,000 psi
- 200 gpm
- 1000 hp
- Vacuum attachments



Surface Preparation



Vacuum Systems

TOOLS

- Rotary Gun - 4 or 8 Nozzles
- Aqua-Spider - Wall/hull cleaner
- Mini-Scrubber - Hand held cleaner
- RHD - Rotating pipe cleaner



For surface preparation and industrial cleaning applications, contact AQUA-DYNE regarding the most innovative Water Energy products.

(713) 864-6929 • www.aqua-dyne.com • info@aqua-dyne.com

WaterJet Technology Association's Order Form for Publications/Products

Name _____ Member# _____

Company _____

Address _____

City _____ State _____

Country _____ Postal Code _____

Phone # [] () _____ Fax # [] () _____

Email _____

(to receive shipping confirmation)

Billing Address (if different from above):

Address _____

City _____ State _____

Country _____ Postal Code _____

Payment Method

☐ Check or Money Order payable to **WJTA**
(U.S. DOLLARS ONLY)

☐ PO # _____ (Enclose PO)

☐ Please charge my ☐ MC ☐ VISA
☐ American Express ☐ Discover

Credit Card # _____

Exp. Date _____ / _____

Print name as it appears on card

Cardholder's signature

THREE EASY
WAYS TO ORDER

By Phone: Just call
(314)241-1445 and have
your credit card information
ready. (MC/VISA/Am. Exp.
ONLY).

By Fax: Fill out the order
form with your credit card
information and call our 24-
hour fax number at:
(314)241-1449.

By Mail: Fill out the order
form and mail with
applicable payment to:
**WJTA, 906 Olive Street,
Ste. 1200, St. Louis, MO
63101-1434.**

			WJTA Member Price	Non Member Price	Shipping & Handling	
_____ Proceedings CD-ROM of The 2003 WJTA American Waterjet Conference (2003)	@	\$	35.00	\$	55.00	\$ 8.00 = \$ _____
_____ Proceedings Book & CD-ROM of The 2001 WJTA American Waterjet Conference (2001)	@	\$	10.00	\$	30.00	\$ 8.00 = \$ _____
_____ Proceedings Book & CD-ROM of The 10th American Waterjet Conference (1999)	@	\$	10.00	\$	30.00	\$ 8.00 = \$ _____
_____ Proceedings Of The 9th American Waterjet Conference (1997)	@	\$	10.00	\$	25.00	\$ 8.00 = \$ _____
_____ Proceedings Of The 8th American Waterjet Conference (1995)	@	\$	0.00	\$	0.00	\$ 8.00 = \$ _____
_____ Proceedings Of The 7th American Waterjet Conference (1993)	@	\$	0.00	\$	0.00	\$ 8.00 = \$ _____
_____ An Overview of Waterjet Fundamentals And Applications, Fifth Edition (2001)	@	\$	55.00	\$	70.00	\$ 8.00 = \$ _____
_____ An Overview of Waterjet Fundamentals And Applications 8/17/03 PowerPoint presentations in printed format	@	\$	30.00	\$	35.00	\$ 8.00 = \$ _____
Minimum charge of \$8 per order. \$8 for 1-3 sets; \$16 for 4-7 sets; for 8 or more sets, contact the WJTA office.						
Recommended Practices, English Edition						
1 - 10 copies _____ # of copies	x	\$	5.00 ea.	\$	10.00 ea.	= \$ _____
11 - 99 copies _____ # of copies	x	\$	4.00 ea.	\$	8.00 ea.	= \$ _____
100 - or more copies _____ # of copies	x	\$	3.00 ea.	\$	6.00 ea.	= \$ _____
Recommended Practices, Spanish Edition						
1 - 10 copies _____ # of copies	x	\$	7.00 ea.	\$	12.00 ea.	= \$ _____
11 - 99 copies _____ # of copies	x	\$	6.00 ea.	\$	10.00 ea.	= \$ _____
100 - or more copies _____ # of copies	x	\$	5.00 ea.	\$	8.00 ea.	= \$ _____
Shipping and Handling						
1 - 10 copies \$0.50 per book, 11 - 99 copies \$0.40 per book, 100 - or more copies .. \$0.25 per book				# of copies x \$ _____		= \$ _____
Recommended Practices Safety Video, Available In VHS Video or CD-ROM.						
Specify: <input type="checkbox"/> VHS Video or <input type="checkbox"/> CDROM						
1 - 4 copies _____ # of copies	x	\$	49.95 ea.	\$	99.95 ea.	\$ 6.00* = \$ _____
5 - 10 copies _____ # of copies	x	\$	39.95 ea.	\$	89.95 ea.	= \$ _____
11 - or more copies _____ # of copies	x	\$	29.95 ea.	\$	79.95 ea.	= \$ _____
Shipping and Handling = \$ _____						
*Contact the WJTA office for the shipping and handling charge of <u>more than one</u> Safety Video.						
WJTA Decal _____ # of decals - 3" x 5" x \$ 1.00 ea. N/A = \$ _____						
Baseball Cap _____ # of caps x \$ 7.95 each \$ 7.95 each \$ 6.00 ea. = \$ _____						
WJTA Navy Blue Polo Shirt _____ # of shirts x \$ 30.00 each \$ 35.00 each \$ 7.00 ea. = \$ _____						
Size _____ (S, M, L, XL, 2X)						
Safety Cards 1-10 safety cards _____ # of cards x .30 each .50 each = \$ _____						
Specify: <input type="checkbox"/> English 11-99 safety cards _____ # of cards x .25 each .45 each = \$ _____						
<input type="checkbox"/> Spanish 100-249 safety cards _____ # of cards x .20 each .40 each = \$ _____						
250+ safety cards _____ # of cards x .17 each .35 each = \$ _____						
Shipping and Handling						
Safety Cards: 1-50 cards FREE (For the purchase of <u>more than 50</u> safety cards, call the WJTA office for the shipping and handling charge.) = \$ _____						
For shipping and handling charges outside the USA, contact the WJTA Office.						
TOTAL ENCLOSED \$ _____						

Meet the Candidates for the WJTA Board of Directors

An Official ballot listing each of the eligible nominees was forwarded by mail to all eligible voting members of the WaterJet Technology Association. The WaterJet Technology Association office must receive your ballot **NO LATER THAN JULY 1, 2005**. Election results will be announced in the *Jet News* and on the WJTA web site.

BILL MCCLISTER is the director of support services for Onyx Industrial Services, Inc., where he has been employed for 25 years. A large portion of his career has been spent developing advanced tooling and accessories to support the waterjet cleaning activity of his company. In addition, he played a major role in introducing UHP waterjet cleaning and abrasive waterjet cutting technologies to industrial applications. In 1987, Mr. McClister directed the waterjetting activity involved in the highly publicized rescue of Jessica McClure, the "Baby in the Well." Mr. McClister directed safety operations for the live waterjet demonstrations held at the August 2003 WJTA Conference, including set-up and operation of 11 demonstrations.

DAVID A. SUMMERS, PhD, is a Curators Professor of Mining Engineering, Director of the Rock Mechanics and Explosives Research Center, and Director of the High Pressure Waterjet Laboratory at the University of Missouri-Rolla. He helped found the WJTA in 1983 and has served as WJTA president, vice president and chairman of the board. He is presently a member of the board of directors and a WJTA delegate to the International Waterjet Society. Dr. Summers is very active in promoting safety in the use of waterjets. He led the WJTA effort that produced the safety manual *Recommended Practices for the Use of Manually Operated High Pressure Waterjetting Equipment*. This manual has become accepted as a statement of standard safety practices for manually operated waterjetting equipment in the United States. Dr. Summers is an acknowledged expert in the application of waterjetting technology to the solution of practical problems especially in mining, the deactivation of munitions, humanitarian demining, and the handling of radioactive waste. His book, *Waterjetting Technology*, is an often-cited comprehensive survey of waterjet technology.

MOHAMED HASHISH, PhD, is a founding member of the WJTA and recipient of its technology, service, and pioneer awards. As a senior vice president of technology at Flow International Corporation, he is responsible for Flow's research and development activities. He started working in the field of waterjet cutting in 1973 as a graduate student. Dr. Hashish invented the abrasive waterjet process in 1980 and continued to pioneer new applications for waterjet technology for both field and factory applications, such as deep kerfing, underwater cutting, precision drilling, milling, turning, polishing, and cryogenic jets. Dr. Hashish is also an expert in the areas of high-pressure design and tribology. He developed new concepts in ultrahigh-pressure seals for 100,000 psi pumps, high-speed rotary joints, hand tools, and

quick-change nozzles. He holds 20 patents in the areas of jet cutting and high-pressure technology, and has published more than 250 papers in many journals and conference proceedings. He edited several conference proceedings for WJTA and ASME.

TIM BONVILLIAN is vice president of HSE&T at HydroChem Industrial Services, Inc., Deer Park, Texas. Mr. Bonvillian began his career with HydroChem in 1975 while attending Southeastern Louisiana University in Hammond, Louisiana, studying health and physical education. Mr. Bonvillian held several field positions and became a location manager in 1988. He also served as region and division manager as well as vice president. Mr. Bonvillian began directing the company's safety process in 1996 and continued through 1998. After a one-year stint in operations, Mr. Bonvillian returned to safety, which has been his primary responsibility since that time.

GEORGE A. SAVANICK, PhD, has been involved in waterjet technology since 1971. He has been an independent consultant in waterjet technology and hydraulic mining since 1996. Dr. Savanick performed and directed research in the use of waterjets and managed a hydraulic mining laboratory at the US Bureau of Mines, Twin Cities Research Center, Minneapolis, Minnesota, from 1971 to 1996. Dr. Savanick is a founding member of the WaterJet Technology Association, and he is currently WJTA president and chairman of the WJTA Safety Committee. In the role of Safety Committee chairman, he has overseen and been critically involved in the development of the *Recommended Practices*. This involvement has continued with his work in his overview of the WJTA videotape on the same subject. Dr. Savanick is the editor of the WJTA publication *Jet News*, which he built up to its current substantial form, seeking and writing articles and creating a publication that is beneficial for the membership.

HUGH MILLER, PhD, is an assistant professor in the Mining & Geological Engineering Department at the University of Arizona. He also serves as the director of the San Xavier Mining Laboratory and the UA Hydroexcavation Laboratory. Before joining UA in 1999, Hugh worked 13 years for several engineering technology and resource companies, including International Engineering Technology, Inc., where he served as director of operations for their waterjet technology group. Hugh has been involved in the research and development of waterjet technology and hydroexcavation systems since 1989. Most of this

work has focused on applications oriented towards mining, construction, industrial cleaning, and coating/corrosion removal. Dr. Miller received his undergraduate and graduate degrees from the Colorado School of Mines.

CARL OLSEN is a senior software developer for OMAX Corporation, where for the past 10 years he has been involved in writing CAD/CAM and machine tool control software specifically for controlling waterjets and abrasive waterjets. He is also actively involved in promoting the technology through his web site, The Waterjet Web Reference (www.waterjets.org).

CRAIG L. ANDERSON is a business unit manager for Parker Hannifin Corporation EPIC Business Unit (Polyflex- Multitube®), Stafford, Texas, and Ravenna, Ohio, a position he has held since 1996. His current responsibilities include oversight of product engineering and research, market development, and operations management of high pressure hose and fittings, as well as specialty engineered umbilicals, hose and tubing bundles, on a global basis. Mr. Anderson also held the positions of product manager and senior sales engineer at Parker Hannifin. Mr. Anderson attended Bowling Green State University, Bowling Green, Ohio, where he earned a Bachelor of Science degree in Construction Engineering and Management. He is a member of ASME, the Offshore Energy Society, and the Fort Bend Chamber of Commerce. Currently he is vice president of the WaterJet Technology Association Board of Directors and chairman of the 2005 American Waterjet Conference. In addition he serves on the following WJTA committees: Policies and Procedures, Awards, and Safety.

PETE MITCHELL is the vice president of sales for the Waterjet Division of Universal Minerals, Inc., a WJTA corporate member since 1992. Mr. Mitchell also served as general manager for AST Waterjet, Inc., a precision waterjet cutting job shop.

FABIO LA FERLA, PhD, is a 1992 graduate in industrial chemistry from the University of Catania, and he received his PhD in industrial chemical plants from the University of Weszprem, Hungary, in 1993. Dr. La Ferla became technical manager of Idrojet S.A.S. Italy dedicating his efforts to ensuring the quality of Idrojet and Peinemann Equipment Products (produced at that time by Idrojet S.A.S.). In 1997, Dr. La Ferla moved from Idrojet's technical department to the position of manager of international sales. During Dr. La Ferla's tenure, Idrojet has received numerous citations from industrial corporations that have used and relied upon Idrojet equipment. Dr. La Ferla has contributed to solving tough industrial problems, expanding contractor opportunities by focusing on customer demand and continuing the development of innovative solutions for the waterjet technology industry.

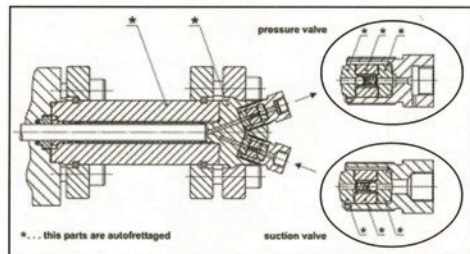
Abstracts Of Papers To Be Presented At The American Waterjet Conference

August 21-23, 2005 • Marriott Westchase Hotel • Houston, Texas, from page 5

Autofrettage - Basic Information And Practical Application On Components For Waterjet Cutting

F. Trieb, J. Schedelmaier, M. Poelzl
Bohler Hochdrucktechnik GmbH
Kapfenberg, Austria

Especially for components in waterjet cutting units like cylinder, check valve and cutting valve parts, the Autofrettage is mandatory. The determination of the optimum Autofrettage pressure is illustrated by diagrams. For Autofrettage treatment pressure ratings between 600 MPa and 1,000 MPa are applied. The advantages of Autofrettage procedure are illustrated on stress versus wall thickness diagrams and verified by fatigue testing under cyclic pressure load conditions.



Autofretted parts on high pressure intensifier

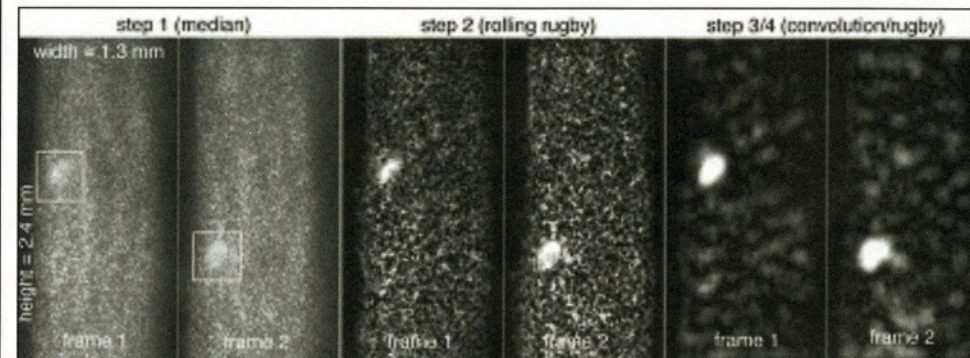
Determination Of Abrasive Particle Velocity Using Laser-Induced Fluorescence And Particle Tracking Methods In Abrasive Water Jets

P. Roth, H. Looser, K.C. Heiniger,
S. Bühler
University of Applied Sciences Aargau
FHA
CH-5210 Windisch, Switzerland

This paper presents a new technique to determine the velocity of abrasive

particles under real AWJ cutting conditions. The technique is a modification of the well known particle tracking velocimetry. It is based on two key issues: Use of abrasive particles coated with a thin layer of fluorescent dye and the application of a sophisticated, nonlinear image

processing algorithm. Standard image processing algorithms fail because some of the dye detaches from the abrasive particles and this results in an extensive background noise which makes it prohibitive to detect the particle by linear algorithms.

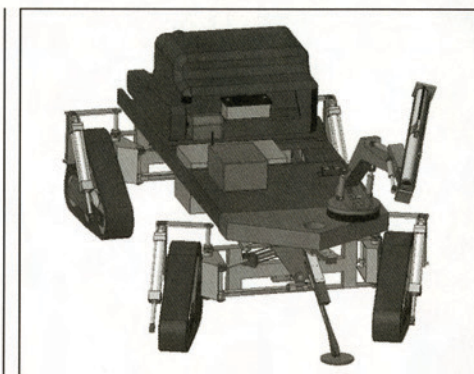


Typical intermediate and final results from our image processing program

Development Of Anti-Personal Landmines Detecting And De-Mining Vehicle

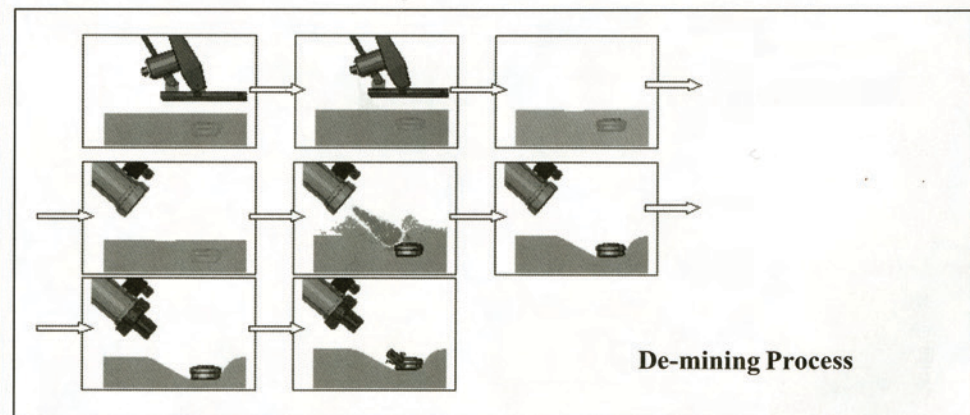
Katsuhiko Shimizu, Ken Ichiryu,
Hiroshi Katakura
Tokyo University of Technology
Hachioji City, Tokyo, Japan

This paper describes a robot that seeks and destroys anti-personal landmines. The robot is a four-wheel vehicle that uses a metal detector for the detection of landmines, and an impulse gun to remove landmines and destroy them.



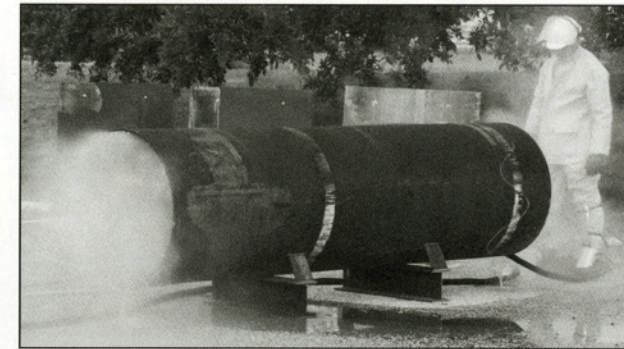
Detecting/De-mining vehicle

(continued on page 10)



WJTA Conference Onsite Live Demonstrations

(participant list as of June 6, 2005)



Aqua-Dyne, L.P.
Gardner Denver
Water Jetting Systems
JETECH, Inc.
Jetstream of Houston, LLP
NLB Corp.

StoneAge, Inc.
Turtleskin WaterArmor
Universal Minerals
VLN Advanced
Technologies, Inc.

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 63101-14134, fax: (314)241-1449, e-mail: wjta@wjta.org, web site: www.wjta.org.

When
you're serious
about precision

MICROLAP
TECHNOLOGIES, INC.

A U.S. Manufacturer
Rolla, ND 58367

Orifices

- Mechanically Drilled
- "Micro-Rolled" Edge
- I.D. Sizes: From .002"
- O.D. Sizes: From .025"
- Thickness: From .005"
- Standard Sizes Available (.078" O.D. x .035" Thick)
- Short Lead Time
- Competitively Priced

1-800-382-2496
www.microlap.com

Fax 701-477-6579 • info@microlap.com
New Ownership / New Management / New Vision

Precision Components

- Ferrules • Sleeves • Orifices
- Nozzles • Bearings • Balls
- Rods • Pins • Windows
- Lenses • Blades • Spacers
- Insulators • Guides

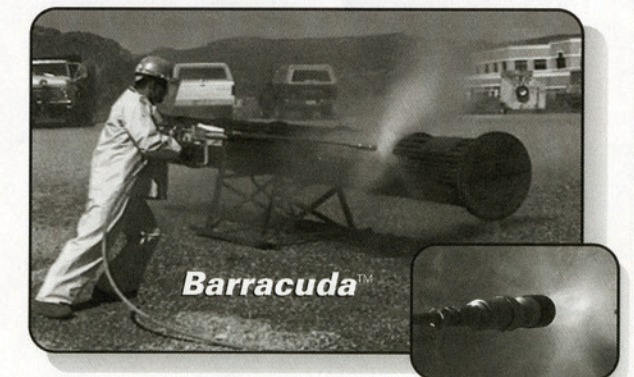
Precision Materials

- Synthetic Ruby & Sapphire
- Ceramic • Carbide
- Other Hard Materials

Precision Services

- R & D • Prototyping • Inspecting
- Cutting • Grinding • Cleaning
- Drilling • Lapping & Polishing
- Custom & Specialty Manufacturing

Barracuda™ 40k psi Self-Rotating Nozzle



- Ultra High Pressure - up to 40K psi
- Flows from 3-13 gpm
- Self Rotating - No Air Power Needed
- Powerful Sapphire Nozzle Tips
- Incredible One-Man Productivity

STONEAGE
WATERJET TOOLS

Phone: 970-259-2869 FAX: 970-259-2868
stoneagetools.com or sewernozzles.com



Papers To Be Presented At The WJTA 2005 American Waterjet Conference

August 21-23, 2005, Marriott Westchase Hotel, Houston, Texas, from page 13

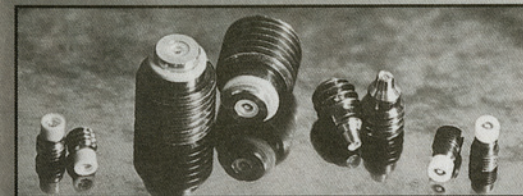
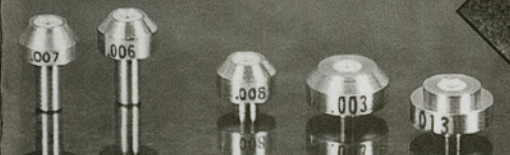
- Cavitating Jet in Air Using Multiple Nozzles, H. Soyama and M. Mikami
- Concrete Surface Preparation, Todd Shawver
- Controlled HVOF Hard Coatings Removal Method, Kimmo Ruusuvaari, Kari Lahdenperä, Maria Oksa, Erja Turunen, Juha Kauppila and Marcel van Wonderen
- Cutting Capability Equation of Abrasive Suspension Jet, Shan Jiang, Yan Yia, Cris Mihai and Kim Tan
- Desulfurization of Coal Based on High Pressure Water Jet Comminution, Weili Gong, Longlian Cui and Liqian An
- Determination of Abrasive Particle Velocity Using Laser-Induced Fluorescence and Particle Tracking Methods in Abrasive Water Jets, P. Roth, H. Looser, K.C. Heiniger and S. Bühler
- Development of Anti-Personal Landmines Detecting and De-mining Vehicle, Katsuhiko Shimizu, Ken Ishiryu and Hiroshi Katakura
- Economics of Abrasive -Waterjet Cutting at 600 MPA Pressure, Mohamed Hashish
- Estimation of Abrasive Mass Flow Rate by Measuring Feed Line Vacuum During Jet On-Off Cycling, M. Ramulu and I. Conner
- Experimental Analysis of the Spatial and Temporal Fluctuations in a Cavitating Water Jet, Charles Fairfield and Scott Campbell
- Experiments with Fluids in Magnetohydrodynamic Channel, Libor M. Hlavác and Irena M. Hlaváčová
- Flexible and Mobile Abrasive Waterjet Cutting System for Dismantling Applications, Hartmut Louis, Dirk Peter, Frank Pude and Ralf Versemann
- Genetically Evolved Artificial Neural Networks Built with Sparse Data for Predicting Depth of Cut in Abrasive Water Jet Cutting, D.S. Srinivasu, N. Ramesh Babu, Y.G. Srinivasa, Hartmut Louis, Dirk Peter and Ralf Versemann
- High Precision and High Power ASJ Singulations for Semiconductor Manufacturing, Shan Jiang, Ross Popescu, Cris Mihai and Kim Tan
- High Pressure Pumps & Systems, Michael T. Gracey
- Influence of Rotational Water Jet Kinematics on Effectiveness of Flat Surface Treatment, Przemyslaw Borkowski
- Innovative Jetbased Material Processing Technology, V. Samardzic, O.P. Petrenko, E.S. Geskin, G.A. Atanov, A.N. Semko and A. Kovaliov
- Mechanics of Powder Hydro Cannon for Incompressible Fluid, O.P. Petrenko, E.S. Geskin and A.N. Semko
- Medical Applications of the High Powered Parallel Waterjet, Mark Granick, Ramazi Datsishvili, Parham Ganchi and Donald Freeman Jr.
- New Abrasive Waterjet Systems to Compete with Laser Machining Systems, Don Miller
- New Results of Underwater Rock Cutting by Pure Waterjet, L.M. Hlavác, V. Mádr, M. Kušnerová, and J. Kalicinsky

- New Tungsten Carbide Material with Nanoscale Grain Size for Focusing Tubes, L. Bourgeois, E. Fabbri, P. Fastre, J. Kremer and R. Koesters
- Numeric Simulation of Ultra-High Pressure Rotary Atomizing Waterjet Flow Field, S.X. Xue, J.Y. Li, H.J. Peng, Z.W. Chen, Y.Q. Wang and H. Zhu
- Numerical Simulation and Flow Analysis of Submerged Abrasive Waterjet, Yu-Feng Yang, Shou-Gen Hu, Zong-Long Wang
- Offshore Washdown Pump Unit: A Manufacturing Case Study, Weimin Dai and Michael T. Gracey
- On the Residual Energy for Cutting Plastic Materials with Abrasive Water Injection Jet, Chuwen Guo, Hiroshi Katakura and Lang Liu
- Prediction of a Single Impact Crater Shape in AWJ Machining Using FEA, M. Junkar, B. Jurisevic, H. Orbanic and M. Grah
- Rock Drilling with Abrasive Suspension Swirling Jet and Effects of Additive Polyacrylamide, Yongyin Yang, Zhonghou Sheng, Ruihe Wang and Weidong Zhou
- Safe Waterjet Cleaning of Sewer Pipe, Doug Wright, John Wolgamott and Jerry Zink
- Safe Waterjet Cleaning of Steel Process Lines, Doug Wright, John Wolgamott and Jerry Zink
- Strategies for Cost- and Time-Effective Use of Abrasive Waterjet Cutting, Ulf Andersson and Gustav Holmqvist
- Strategies for Introducing New Abrasive Waterjet Technologies, Don Miller
- Study of Inherent Frequency of Helmholtz Resonator, Weili Gong, Longlian Cui and Liqian An
- Study on the Temperature Distributions of Water Jet By Infrared Thermal Testing and Image Processing Technology, Weili Gong, Longlian Cui and Liqian An
- Taper-Free Abrasive Waterjet Cutting with a Tilting Head, Jay Zeng, John Olsen, Carl Olsen and Brian Guglielmetti
- The Effectiveness of Hydroabrasive, Suspensive Waterjet Cutting of Rocks, Andrzej Perec
- The Efficiency Analysis of Rotating Nozzle with Handheld on Flat Surface Cleaning Work, Zhou Den and Wang Qingguo
- The Experimental Study on Eroding Properties of Submerged Abrasive Low Pressure Waterjet, Zong-Long Wang, Shou-Gen Hu, Yu-Feng Yang
- Waterjet Cutting Beyond 400 MPa, T. Susuzlu, A.M. Hoogstrate and B. Karpuschewski
- Windows-Based Process Monitoring of Abrasive Waterjet Shape Cutting, M. Ramulu, I. Conner and P. Liu

FOR QUALITY, PERFORMANCE & DELIVERY YOU CAN COUNT ON

Orifice Assemblies

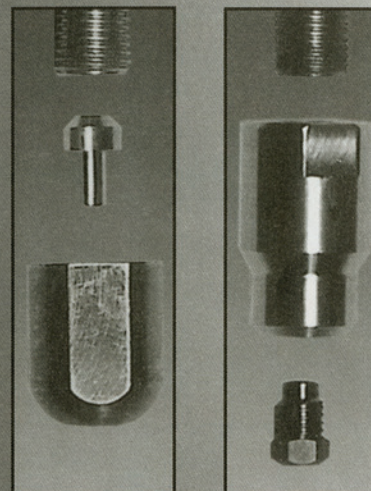
We offer many different types of mountings. Assemblies have the size clearly marked, for easy identification.



Adaptors

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

Change from this...to this!



83 YEARS OF
EXCELLENCE

A.M. GATTI
INC.

1922 - 2005

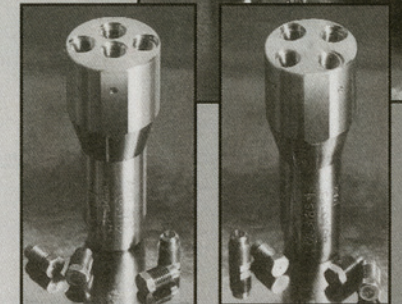
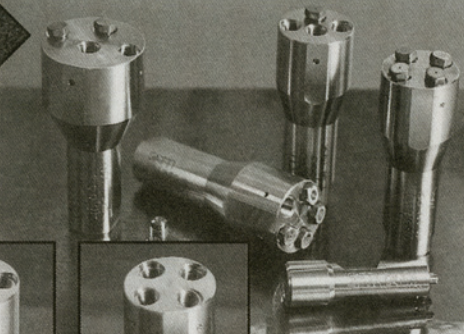
FOR THE BEST ORIFICE ASSEMBLIES AND NOZZLE BODIES

← INCREASE PERFORMANCE →

A.M.GATTI INC.
524 TINDALL AVE., TRENTON, NJ 08610
1-800-882-0105
609-396-1577 • FAX: 609-695-4339
www.gattiam.com

Multi-Orifice Nozzle Bodies

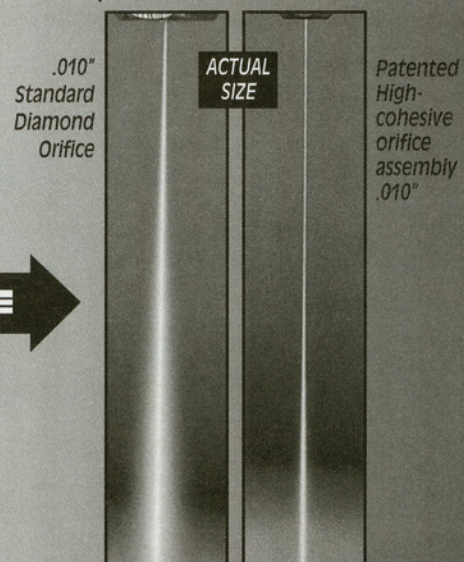
State-of-the-art nozzle bodies designed for even energy distribution.



High-Cohesive

Use our high-cohesive assembly for better and faster cutting and coating removal

Compare the streams...



50,000 psi — No Additives to Water

Abstracts Of Papers To Be Presented At The American Waterjet Conference

August 21-23, 2005 • Marriott Westchase Hotel • Houston, Texas, from page 8

Estimation Of Abrasive Mass Flow Rate By Measuring Feed Line Vacuum During Jet On-Off Cycling

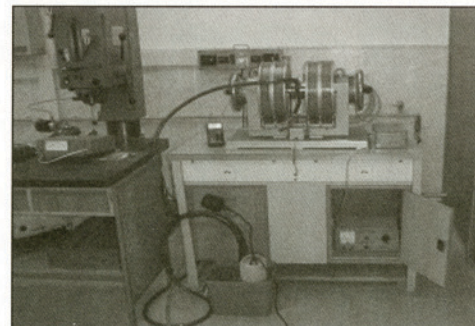
Ian Conner and M. Ramulu
University of Washington
Seattle, Washington

This paper explores various aspects of vacuum creation in an AWJ nozzle, particularly the role of the abrasive particles themselves in increasing the effective air flow resistance.

Experiments With Fluids In Magnetohydrodynamic Channel

I.M. Hlaváčová, L.M. Hlaváč
VŠB - Technical University Ostrava
Ostrava, Czech Republic

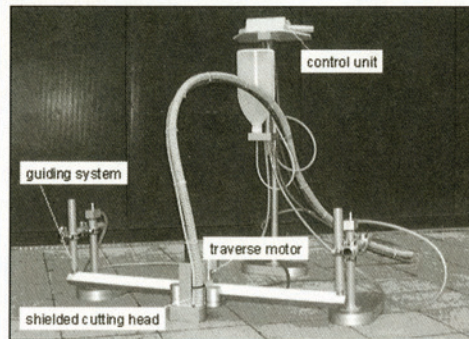
A method of generating modular jets based on the inverse magnetic phenomenon is discussed and experimental data are presented.



Measurement of the magnetohydrodynamic effects in liquids: above - the configuration; below - the detail of measuring apparatus.

Flexible And Mobile Abrasive Waterjet Cutting System For Dismantling Applications

H. Louis, D. Peter, F. Pude, R. Versemann
Institute of Materials Science,
University of Hannover
Hannover, Germany



Model of the mobile AWJ cutting system

For the decommissioning of nuclear power plants Abrasive Waterjet (AWJ) cutting has been used successfully in dismantling activities.

High contaminated materials are normally cut by AWJ with remote controlled handling systems. However, in non- or low contaminated environments a mobile and flexible cutting system will become more important for simple cutting applications.

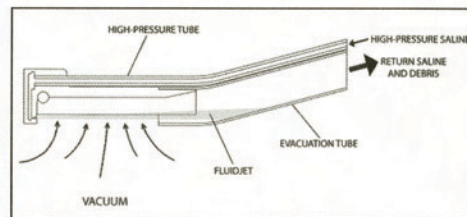
A first hand-controlled Abrasive Water Suspension Jet system was developed and successfully tested at the Waterjet Laboratory Hannover. Based on these experiences a new mobile and flexible cutting system for injection jets as well as suspension jets was conceived and built.

The developed AWJ cutting system and the results of first successful tests will be presented.

Medical Applications Of The High Powered Parallel Waterjet

Mark S. Granick, M.D.
Ramazi O. Datiashvili, M.D.
Parham A. Ganchi, M.D., Ph.D.
Division of Plastic Surgery
Department of Surgery
New Jersey Medical School-UMDNJ
Newark, NJ

Donald C. Freeman, Jr., Ph.D.
Board of Directors
HydroCision, Inc.
Andover, MA



Sterile saline is directed through a high pressure tube into the handpiece of the VersaJet where it is redirected 180 degrees and ejected through the nozzle. The waterjet is collected across an 8-14 mm gap creating a suction (Venturi) effect on the surrounding tissue.

Acute and chronic wounds are a major medical problem. Preparing a wound bed is an essential feature of their treatment. Wound bed preparation requires the removal of unhealthy and necrotic tissue as well as foreign bodies. The purpose of this study was to develop an improved surgical debridement instrument (VersaJet™, Smith and Nephew, Hull, UK) using fluidjet technology and to evaluate its applications in clinical medicine.

(continued on page 12)

Pre-Conference Workshop • Sunday, August 21, 2005 • Preliminary Program

WATERJET TECHNOLOGY – THE BASICS

8:00 a.m. – 9:00 a.m.

Registration

9:00 a.m. – 9:30 a.m.

History

By: George A. Savanick, Ph.D.

9:30 a.m. – 10:10 a.m.

Equipment

By: David A. Summers, Ph.D.

10:10 a.m. – 10:20 a.m.

Break

10:20 a.m. – 11:10 a.m.

Applications

By: John Wolgamott

11:10 a.m. – Noon

Safety

By: Tim Bonvillian

Noon – 1:00 p.m.

Lunch

WATERJET TECHNOLOGY – BEYOND THE BASICS

1:00 p.m. – 3:00 p.m.

Concurrent Sessions

• Surface Prep Applications

By: Lydia M. Frenzel, Ph.D.

- Waterjet Cleaning in Industrial Paint Removal
- Where Does Waterjet Fit In?
- Current Status of Global Standards
- Problems and Solutions
- Benefits in the Three Components of Surface Preparation
- Concrete Profile Measurement

• Cleaning Applications

By: Doug Wright

- Fan and round jets
- The use of heat as a supplement
- The use of chemicals as a supplement
- Dealing with fragile surfaces
- Health and safety issues

• Cutting Applications

By: Mohamed Hashish, Ph.D.

- Accuracy and precision
- Improved process techniques

- Advanced capabilities (drilling, milling, peening, etc.)
- General non-obvious improvements
- Ancillary hardware (recycling, vision, sensors)

3:00 p.m. – 3:20 p.m.

Break

3:20 p.m. – 5:00 p.m.

Concurrent Sessions: "Ask the Experts" Panels

- **Surface Prep Applications**
Chaired by: L. Frenzel
- **Cleaning Applications**
Chaired by: J. Wolgamott
- **Cutting Applications**
Chaired by: M. Hashish

Pumps, accessories and answers.
All at www.nlbcorp.com.

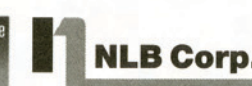
Experienced contractors can tell you: the first name in water jet solutions is NLB.

From immediate equipment needs to simple questions, help is only a click away. NLB is the source for:

- top-quality pumps and accessories (to 40,000 psi) for virtually any job
- 1-man pump conversions
- convenient rentals, parts and service
- industry-leading R&D
- on-line water jet tips and forums

For a 24/7 link to the most productive water jet solutions, visit www.nlbcorp.com. Or speak with one of the NLB pros, toll-free, at 1-877-NLB-7988.

NLB. The Contractor's Choice.



29830 Beck Road, Wixom, MI 48393
MI: (248) 624-5555, TX: (281) 471-7761
NJ: (856) 423-2211, LA: (225) 622-1666
CA: (562) 490-3277
e-mail: nlbmktg@nlbusa.com

www.nlbcorp.com

Abstracts Of Papers To Be Presented At The American Waterjet Conference

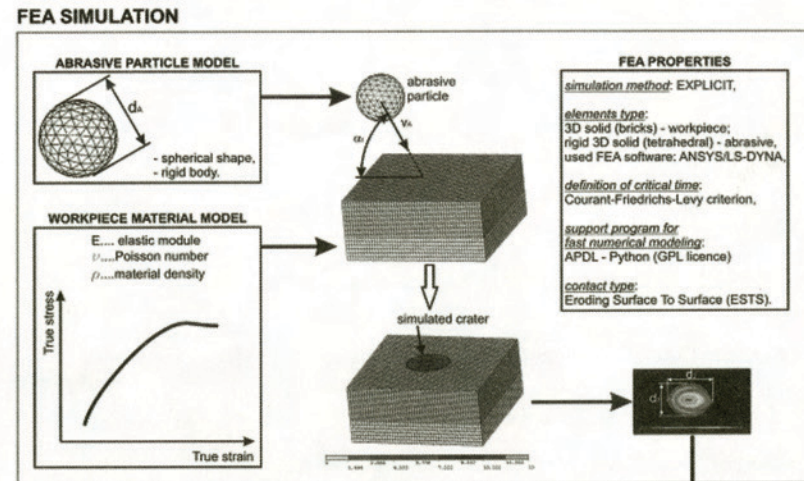
August 21-23, 2005 • Marriott Westchase Hotel • Houston, Texas, from page 12

Prediction Of A Single Impact Crater Shape In AWJ Machining Using Finite Element Analysis (FEA)

M. Junkar, B. Jurisevic, H. Orbanic
Laboratory for Alternative Technologies
University of Ljubljana
Ljubljana, Slovenia

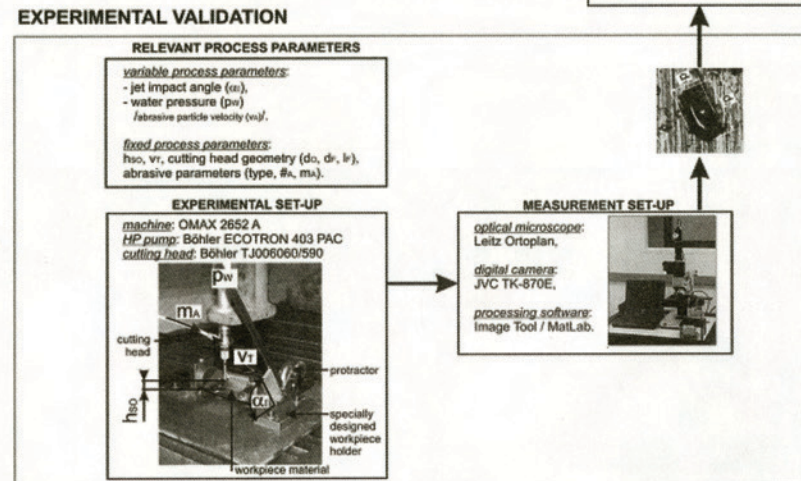
M. Grah
Litostroj E.I.
Production of Power Generation and Industrial Equipment
Ljubljana, Slovenia

Finite Element Analysis (FEA) is used to simulate the crater shape made by a single abrasive particle impact in Abrasive Water Jet (AWJ) machining. Impacts are observed at different impact angles and abrasive particle velocities. The proposed method is experimentally validated for stainless steel 1.4301 (AISI 304) as a workpiece material. Based on this experimental validation the simulation is extended to other engineering materials such as titanium alloy and aluminum alloy.



$$\Delta_S = \frac{S_{C,FEA} - S_{C,exp}}{S_{C,FEA}} 100\%$$

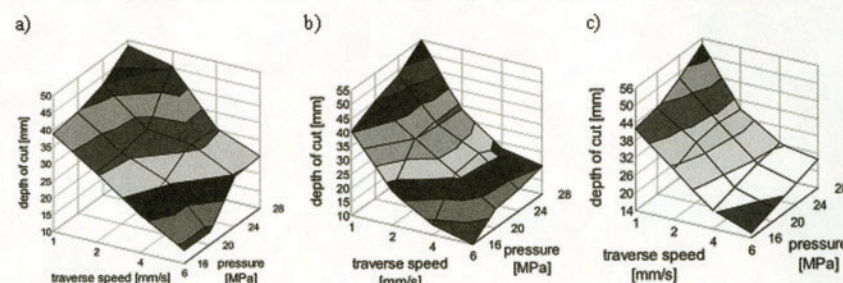
EVALUATION CRITERIA:



Proposed approach of FEA simulation and experimental validation

hydraulic and technological parameters on the cutting depth is presented in the paper. The effectiveness of suspensive jet cutting

with a pressure reduced to 30 MPa is comparable to conventional hydroabrasive jet cutting with a pressure of 300 MPa.



Influence of traverse speed and pressures on depth of cutting: a) marble, b) limestone, c) syenite

The Effectiveness Of Hydroabrasive, Suspensive Waterjet Cutting Of The Rocks

A. Perec
Management and Economics Faculties
Technical University of Koszalin
Koszalin, Poland

This paper presents the results of complex studies on parameters of cutting chosen rocks with a hydroabrasive suspensive jet, whose pressure is reduced to 30 MPa. The influence of the most important

Accustream Expands Pump Manufacturing Capability

Accustream has recently added 6000 square feet of floor space for the purpose of assembly and testing of its waterjet pump product line.

Accustream manufactures a complete line of waterjet products including ultra-high pressure pumps for operating at pressures up to 60,000 psi. Currently, Accustream offers both 50 and 75 horsepower intensifier based pumps. Additional pump models will be added in the near future to create a full pump line. These waterjet products are marketed to system integrators, OEM's and end users

"The expansion will allow us to build and perform the run-in of the pumps more efficiently so that we can meet our customers' need for waterjet equipment that is of high quality and affordability," says Eric Chalmers, president of Accustream.

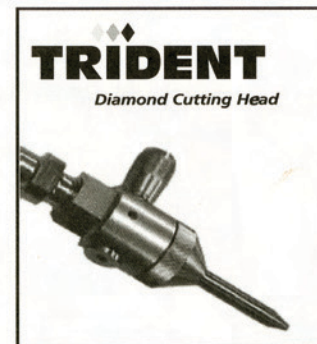
For further information call 763-717-7099 or visit www.accustream.com.



BARTON

The Pacesetter in Abrasive Waterjet Technology
Presents the Future of Waterjet Cutting

- Optimizes Cutting Power & Speed
- Extends Nozzle Life by 10 to 15% (on average)
- Increases the Life of the Solid Diamond Orifice Fixture up to 1,000 Hours
- Unique Construction Provides Perfect Orifice to Nozzle



Find out how to put the TRIDENT to work in your cutting system. Ask about our Special Offers.

No Other Cutting Head Offers These Advantages

Barton Mines Company, LLC • 1557 State Route 9 • Lake George, NY 12845
USA/Canada 800-741-7756 • Fax 518-798-5728 • www.barton.com

SOLUTIONS!

WORLDWIDE SERVICE (24/7)



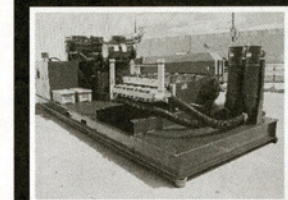
SUPPORT:

We can design, produce and deliver products to fit even the most demanding project.



RELIABILITY:

Featuring Partek® waterblasting pumps and Liqua-Blaster® units, 5,000 PSI to 50,000 PSI, flows to 274 GPM and up to 750 HP.



ACCESSORIES:

Including shellside machines, rotary line cleaners, flex and rigid lancing systems, nozzles, control guns, hoses and fittings up to 50,000 PSI



RENTAL & SERVICE:

Large rental fleet, with high-horsepower multi-speed units and shellside machines are available. Complete repair facility for all pumps and units.



Your **ONE SOURCE** Solution.



GARDNER DENVER WATER JETTING SYSTEMS INC.

281-448-5800
FAX: 281-448-7500
1-800-231-3628
www.waterjetting.com
mktg.wjs@gardnerdenver.com

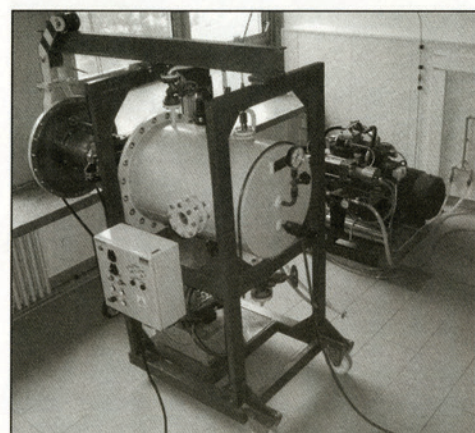
Abstracts Of Papers To Be Presented At The American Waterjet Conference

August 21-23, 2005 • Marriott Westchase Hotel • Houston, Texas, from page 10

New Results Of Underwater Rock Cutting By Pure Waterjet

L.M. Hlaváč, V. Mádr, M. Kušnerová,
J. Kaličinský
VŠB - Technical University Ostrava
Ostrava, Czech Republic

Experiments performed in a pressurized vessel with several kinds of rock-like materials (sandstones, marbles, granites, concretes) in several conditions – in the air, in the non-pressurized water and in the pressurized water without previous wetting of the sample. Results are discussed with regard to the theory reliability and the underwater applications.



View of the mobile pressure vessel, the high-pressure pump for waterjet generation and vessel feeding and their location in our laboratory.

IMPORTANT NOTICE REGARDING SPAM

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

The WJTA 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 membership.

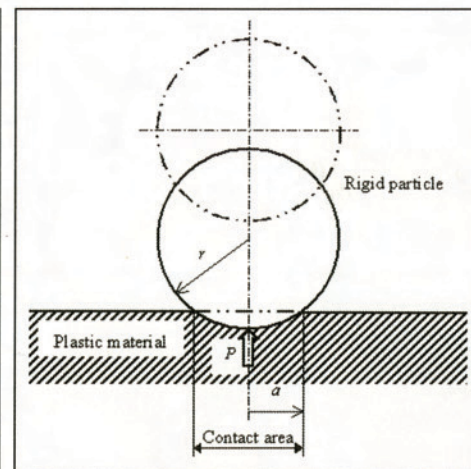
On The Residual Energy For Cutting Plastic Materials With Abrasive Water Injection Jet

Chuwen Guo
China University of Mining & Technology
Xuzhou, Jiangsu, P.R. China

Hiroshi Katakura
Tokyo University of Technology
Hachioji, Tokyo, Japan

Lang Liu
China University of Mining & Technology
Xuzhou, Jiangsu, P.R. China

This paper studied the residual energy of an abrasive water injection jet after it reaches the maximum cutting depth for plastic materials. It is found that the residual energy is related to various parameters, such as the flow



Deformation model of an abrasive particle

rates of water and abrasive, the physical properties of materials, the nozzle diameter, and the size of abrasive particles. This result could be applied for evaluating the safety of cutting with abrasive water injection jet under certain dangerous environments.

(continued on page 14)

American Waterjet Conference

August 21-23, 2005 • Marriott Westchase Hotel • Houston, Texas

Preliminary Schedule Of Events

Saturday, August 20, 2005

9:30 a.m. - 4:30 p.m.
Optional Trip to Space Center Houston, NASA's Johnson Space Center

Sunday, August 21, 2005

9:00 a.m. - Noon
Pre-Conference Workshop: Waterjet Technology - Basics and Beyond*
Noon - 1:00 p.m.
Luncheon For Workshop Participants*
1:00 p.m. - 5:00 p.m.
Workshop (continued)
6:30 p.m. - 9:30 p.m.
Welcoming Reception In The Exhibit Hall -- Exhibit Officially Opens*

Monday, August 22, 2005

8:00 a.m. - 10:00 a.m.
Onsite Live Demonstrations
10:00 a.m. - 5:00 p.m.
Exhibits Open

11:30 a.m. - 1:00 p.m.
Lunch In Exhibit Hall*
1:30 p.m. - 5:00 p.m.
Research, Development, New Technology: Paper Presentations
5:00 p.m. - 6:00 p.m.
WJTA Membership Meeting
7:30 p.m. - 10:30 p.m.
Awards Presentation/Party*

Tuesday, August 23, 2005

8:00 a.m. - 10:00 a.m.
Onsite Live Demonstrations
10:00 a.m. - 3:00 p.m.
Exhibits Open
11:30 a.m. - 1:00 p.m.
Luncheon In Exhibit Hall*
1:30 p.m. - 5:30 p.m.
Research, Development, New Technology: Paper Presentations

*Ticket will be required.

Papers To Be Presented At The WJTA 2005 American Waterjet Conference

August 21-23, 2005, Marriott Westchase Hotel, Houston, Texas

- A Two-Dimensional Cellular Automata Model of Abrasive Water Jet Cutting, Henri Orbanic and Mihael Junkar
- Abrasive-Entrained Forced Pulsed Waterjet: Basic Study, Mohan Vijay
- Abrasive Waterjet Cutting Beyond 400 MPa, T. Susuzlu, A.M. Hoogstrate and B. Karpuschewski
- Abrasive Waterjet Cutting in Orthopedic Surgery – A Report About In-Vitro and In-Vivo Studies, F. Pude, H. Louis, C. Biskup, L. Kirsch, M. Honl, K. Schwieger, S. Schmolke, S. Krömer, and A. Andreae
- Abrasive Waterjet Cutting of Microelectronic Components, Mohamed Hashish
- Abrasive Waterjet Cutting Using a Rotating Axis Motion Control, Gustav Holmqvist and Ulf Andersson
- Accurate Hole Drilling Using an Abrasive Water Jet in Titanium, S. Zhang, P. Nanbiath, G. Galecki, D.A. Summers and D. Bowden
- An Experimental Study on Dual-Jet Flow with PIV Method, Gensheng Li, Jian Song, Jilei Niu, Zongwei Huang and Can Yi
- Analysis of the Abrasive Waterjet Drilling Process Models, M. Ramulu, I. Conner, P. Posinasetti and M. Hashish
- Analytical Characterization of Flash Rust Formed on Carbon Steel After UHP Waterjetting, Moavin Islam, Wayne McGaulley and Mike Evans
- Application of Ice Powder in Biomedical and Food Industries, K. Kluz and E.S. Geskin
- Application of Numerical Techniques for Optimization of the Water Cannon Design, O.P. Petrenko, T. Bitadze, E.S. Geskin, O. Rusanova and A.N. Semko
- Autofretage – Basic Information and Practical Application on Components for Waterjet Cutting, Franz Trieb, Johannes Schedelmaier and Manfred Poelzl
- Brazilian Focus Tubes and Abrasives Researches on Rock Cutting in AWJ Systems, Wildor Theodoro Hennies, Carlos Tadeu Lauand, Amilton Sinatora and Jean Carlo C. de Paola

(continued on page 16)

Powerful Garnet Abrasives

RUBY GARNET

Sized for performance

SHARPJET
Premium Waterjet
Cutting Garnet

GRIT SIZES: 16 36 50 60 80 120 150

- Ruby Garnet is a naturally occurring almandine garnet, the hardest of all garnet types, and is mined from hard rock deposits in Montana's Ruby Valley.
- Crushed Garnet — Angular — very sharp
- Inert — no free silica or heavy metals
- Washed, works well with recyclers
- Specific gravity of 3.95 and a Moh's hardness of +8.
- Bulk Density between 120 and 160 pounds per cubic foot depending upon gradation
- Available in 50 lb bags and 1 & 2 ton bulk bags

GRIT SIZES: SJ36 SJ50 SJ60 SJ80 SJ120

- Sharpjet garnet is mined in its natural, angular form, making it one of the most sought-after abrasives in the business. UMI has sourced its Sharpjet garnet from the most reliable and consistent garnet mines in the world.
- All of UMI's garnet is washed to eliminate dust.
- Due to its highly durable crystalline structure, Sharpjet Garnet exhibits very low particle breakdown on impact.
- Available in 55 lb bags and 1 ton bulk bags

800.528.7086



waterjetsupply.com

Universal Minerals, Inc.

DISTRIBUTION CENTERS IN THE U.S.

- Albuquerque, NM
- Atlanta, GA
- Baltimore, MD
- Baton Rouge, LA
- Charleston, SC
- Chicago, IL
- Dallas, TX
- Denver, CO
- Detroit, MI
- Houston, TX
- Kent, WA
- Louisville, KY
- Phoenix, AZ
- Salt Lake City, UT
- St. Paul, MN
- Tampa, FL
- Wichita, KS
- Worcester, MA