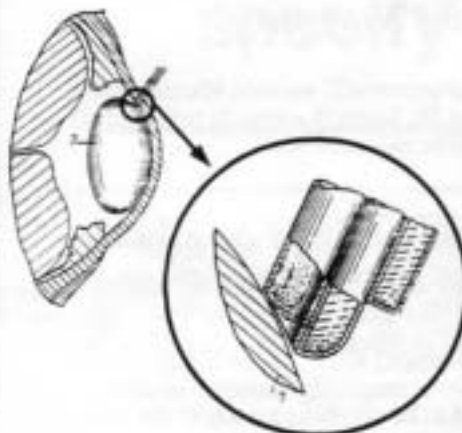


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Water Jet Apparatus for Eye Surgery



U.S. Patent 3,930,505, "Surgical Apparatus for Removal of Tissue," has been granted to Mark Wallach and assigned to Hydro Pulse Corporation of New York. This apparatus removes defective or unwanted tissue from small, selected areas in the body by directing a pulsating, high velocity liquid jet into the tissue, disintegrating the tissue, and sucking the liquid entraining the disintegrated tissue from an area adjacent to the tissue into a suction conduit. Figures 1 and 2 above illustrate the use of the apparatus in surgery on the lens of the eye.

Fifth American Water Jet Conference Inn on the Park Toronto, Ontario, Canada

August 29-31, 1989

For more information, contact:

Mrs. H. Lacoste
Conference Coordinator
Conference Services
National Research Council
of Canada
Ottawa, Ontario, K1A 0R6
Canada

Water Jet Course At New Jersey's Institute of Technology

The New Jersey Institute of Technology (NJIT), Newark, NJ, is offering a two-day course called "Introduction to Waterjet Cutting," to be offered in their waterjet cutting lab on Monday and Tuesday, December 5 and 6. "Because of the increasing demand for more sophisticated cutting equipment, like Ingersoll-Rand's waterjet, needed to machine the more difficult-to-cut materials that are more commonly being used, the Waterjet Cutting Lab of the Mechanical Engineering Department at NJIT is carrying out continuing education courses in theory and technology of this compelling cutting tool," explains Dr. Ernest S. Geskin, Associate Professor of Mechanical Engineering, NJIT; Director, Waterjet Cutting Laboratory. "The course will combine lectures, demonstrations, and case studies to cover the basic theory of waterjet cutting, detailed description of the equipment, and equipment operation, including numerical control systems and the technology of the shaping of different materials. The most recent applications of water cutting will be discussed, and participants are encouraged to bring their own samples to evaluate the applicability of the shaping of this technology for use by their companies," continues Geskin. Conducted by Dr. Geskin, the course will include presentations by two Ingersoll-Rand representatives. Dennis Thompson, a design engineer, will discuss various details of the equipment, such as water preparation and motion control. John T. Romano, an Atlantic region sales manager, will discuss possible applications of waterjet cutting. NJIT faculty and students are currently using an Ingersoll-Rand waterjet cutting system to conduct research and explore futuristic manufacturing applications. A "Factory of the Future" is currently under construction, and will be used as a facility to develop the technology for computer-integrated manufacturing to encourage new industries for New Jersey.

Current waterjet applications are wide-ranging, cutting everything from frozen tuna and Black Forest cake to concrete and glass with fine precision.

For more information about the waterjet cutting course, contact: Phil Levy, Division of Continuing Education (201)596-3062.

Ingersoll-Rand Waterjet Cutting Systems Names Director, Asia Pacific Operations

Ingersoll-Rand Waterjet Cutting Systems today announced the appointment of W. Larry Orton, as Director, Asia Pacific Operations.

Mr. Orton started his career with Ingersoll-Rand in 1960 as an office engineer and has held various managerial positions with the company since then.

Mr. Orton was formerly President, Ingersoll-Rand Japan, Ltd. and Managing Director Ingersoll-Rand Northern Asia, from 1980-1987, responsible for Japan, Korea, Taiwan, Hong Kong, and China. Prior to that he was Vice-President, Ingersoll-Rand Canada, from 1978-1980, responsible for engineering and manufacturing. Before that Mr. Orton held the position of President, Ingersoll-Rand, Ltd. - Tokyo, from 1973-1978, responsible for all Ingersoll-Rand products in Japan.

Other Ingersoll-Rand related positions include working as an Assistant Manager, Ingersoll-Rand International, from 1965-1967 and Branch Manager, Ingersoll-Rand, Calcutta, India, from 1962-1965.

Mr. Orton graduated from the University of Idaho in 1960 with a Bachelor of Science degree in mechanical engineering.

From the President's Desk...

The range of applications of water jet cutting is impressive. Jets are used in delicate operations, e.g., operations of the eye, back and liver (see Dr. Summers' review of the Sendai meeting). They are also used on a massive scale to mine coal, to strip bark from trees, or to remove concrete from roadways. The beauty of a water jet is that it can deliver high energy densities to difficult-to-access places, such as the eye or the bottom of a drill hole.

Mining machines, such as the borehole miner or the water jet perforator, use water jets to deliver several hundred horsepower to a square inch of rock at the bottom of a well several hundred feet deep. Further concentration of energy is accomplished by placing abrasives in a water jet as in the abrasive jet rock drill described in the January 1987 JET NEWS. Here, pressures in excess of 100,000 psi occur at the point of impact of millimeter-sized particles. This focusing of energy permits the drilling of the hardest materials with a moderate pressure water jet, e.g., a quartzite with a compressive strength of 73,000 psi can be penetrated by a 10,000 psi abrasive water jet.

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Ingersoll-Rand Waterjet Cutting Systems Names Senior Product Manager

Ingersoll-Rand Waterjet Cutting Systems announced the appointment of Damon C. Schroter as Senior Product Manager.

Before joining Ingersoll-Rand Waterjet Cutting Systems, Mr. Schroter was Vice-President, Engineering, at Lumonics Material Processing Corp., Livonia, MI. Prior to that he worked as a technical director at Combustion Engineering Industrial Lasers, Inc., Westminster, MD.

Mr. Schroter has held various technical management positions including Operations Manager at Koppers Laser Systems Division of Koppers Co., Inc., Westminster, MD; Technical Services Director at Robotics, Inc., Malta, NY; and Branch Manager of field service at Control Data Corp., Bloomington, MN.

He received an Associate of Science Degree in digital electronics from Hartford State Technical College, Hartford, CT, in 1961.

Water Jet Instructor Training Workshop

A training workshop for water jet instructors will be held March 13-14, 1989, at The Stouffer Concourse Hotel [near St. Louis (Lambert) International Airport] in St. Louis, Missouri. Details will be released soon.

Abrasive Jet Rock Drill Commercially Available

The abrasive jet rock drill developed by the U.S. Bureau of Mines and described in the January 1987 JET NEWS has been licensed for manufacture by Weatherford Water Jet Cutting Systems of Houston, TX. The drill, Model AJ-20, offers the following advantages:

1. The operating pressure of the AJ-20 is far lower than that of conventional water jet drills.
2. It does not require a bit.
3. It can be used for enlarging (chambering) selected zones of a drill hole.
4. It can drill through loose rock.
5. It can drill overlapping holes.
6. It can cut long, narrow kerfs deep into hard rock.

International Journal of Water Jet Technology

A quarterly international journal dedicated to the advances in scientific and technical aspects of WATER JET TECHNOLOGY. The decision to publish the journal has been taken following the discussions held at the International Water Jet Symposium (Beijing, China, Sept. 1987) and the worldwide positive response to a questionnaire on the journal. The principle objective of this peer-reviewed high quality journal will be to encourage authors around the world to publish their findings, apart from the national and international symposia, in a journal unique to WATER JET TECHNOLOGY.

Negotiations with a publisher in Canada are in progress to bring out the premier issue of the journal in June 1989. If the cost of publications can be covered by means of individual and institutional subscriptions or donations, there will be no page charges to the authors. Otherwise, there will be a charge of \$50 (Canadian) per page of article printed. Names of sustaining donors will be published in every issue of the journal. DONORS who contribute \$500 or more will be recognized as PATRONS of the journal.

Articles can be submitted to the editor at any time during the year. Articles should be in triplicate, typed double spaced and in ENGLISH.

For further information, please contact:

Dr. M. Vijay, Editor
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Recommended Practices For The Use Of Manually Operated High Pressure Water Jetting Equipment

Copies of the U.S. Water Jet Technology Association publication, "Recommended Practices" developed by industry, government, and university representatives to the Standards Committee of the U.S. Water Jet Technology Association are available for purchase. The publication includes personnel requirements, operator training, operating procedures, equipment care and maintenance, protective clothing, personnel protection, freeze precautions, and accident precautions for manually operated high pressure water jetting equipment commonly used by industries involved with construction, maintenance, repair, cleaning and demolition work. Attention is drawn to the relevant or proposed OSHA, ASTM, and ANSI standards.

Copies are available at the following prices (excluding shipping and handling): 1-10, \$5.00 each; 11-99, \$4.00 each; 100 or more, \$3.00 each. To order, contact the U.S. Water Jet Technology Association, 818 Olive Street, Suite 918, St. Louis, Missouri 63101, (314)241-1445, FAX: (314)241-1449.

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The Ninth International Symposium on Jet Cutting Technology Sendai, Japan, October 4-6, 1988

By Dr. David A. Summers

The international meetings of the waterjet community, sponsored by BHRA, are organized on a two-year cycle. There is, therefore, often sufficient progress between these meetings that each symposium acquires a different emphasis. For example, at the eighth meeting there was considerable interest in the addition of high pressure waterjets to conventional mechanical tools, as a means of improving rock cutting performance.

By this, the ninth such meeting, waterjet assisted cutting was almost a footnote, although one paper did examine the new field of waterjet assisted metal cutting, and showed considerable promise for the technique. The meeting was, instead, dominated by the application of abrasive laden waterjets to cutting applications. The papers carried the process through from an analysis of the correct concentrations of abrasive, and their theoretical evaluation, to their use in removing the concrete cladding around nuclear reactors and concrete walls from within hospitals. In this sense the selection of papers was aided by the decision of BHRA to run the meeting in coordination with the Water Jet Technology Society of Japan. Many of the practical industrial advances came in reports from the country, with the research and laboratory investigations being more commonly reported from Western delegates.

The progress of abrasive jet applications included their evaluation as a means of milling to replace conventional tools, and studies have begun to examine the potential for recycling the abrasive, a telling indication of the progress of the technique from exotic to more mundane applications. The advent of the DIAJET system, the lower pressure Direct Injection of Abrasive system which BHRA announced at the eighth meeting was only the complete subject of two papers, one from China and one from the UK. The influence of this new technology was, however, more widespread in terms of the discussions which occurred throughout the meeting. One can therefore anticipate a much stronger showing for the technique at the next meeting.

In the poster session which occurred with the meeting, a Japanese surgeon discussed the 60 human operations, in which diseased liver tissue was removed using low pressure waterjets.

The jet was used to expose the blood vessels, which could then be tied off before being cut. This reduced blood loss, and for 10 of the patients no transfusions were required.

For those fortunate enough to be able to go to Sendai, the excellent quality of the papers was enhanced by the hospitality and high quality of the social environment which accompanied the meeting. From the sushi to the Japanese music and dancing, the experience provided a pleasant end to each day's work. Thanks are due to those who arranged the meeting and to the many Japanese authors who presented their papers in English, despite the vast preponderance of Japanese at the meeting.

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