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FED

James C. Meng, Editor *Summer 2002*

Chair's Message

Timothy O'Hern

The FED has had a productive year. We held our annual divisional conference, the FEDSM, in New Orleans, May 29–June 1, 2001. This meeting was co-located with the International Conference on Multiphase Flows (ICMF), held at the same time directly across Canal Street. This arrangement was appreciated by our many members with multiphase flow interests. Plenary talks were given on R&D funding, flow measurements, pump technology, and agile engineering. Tutorials were held on pumping machinery, experimental uncertainty analysis, and code verification and validation. The local industry session was with the NASA John C. Stennis Space Center, which sent four engineers to discuss their work and fluids-related programs at their site, NASA's lead center for propulsion testing. As at all of the FED summer meetings, clinics were held at FEDSM'01. These are sessions in which conference attendees are invited to meet with technical experts and get their advice. Each consultant is concerned with a specific topic of importance to industry; these experts are from government, academia, and industry, offering free of charge their advice and short consultation. Attendees of the meeting are welcome to visit a clinic, present their flow problem and seek advice. In New Orleans, clinics were held on CFD application to real world problems, surface pressure and temperature methods, internal flow velocity and turbulence measurements, particle image velocimetry, and multiphase flow.

The FED also participated in the ASME IMECE in New York City in November 2001. 35 technical sessions were held, a number of them cosponsored with other Divisions. The FED held a reception, where Manoranjan Dhaubhadel was awarded Fellow member status. At the IMECE, a new Technical Committee was put in place within FED, on Micro and Nano Fluid Dynamics. All of the technical committees and coordinating groups elected new officers. We are very excited about our upcoming FEDSM'02 in Montreal (see separate article).

The *Journal of Fluids Engineering (JFE)* continues to grow in number of submissions and general stature. The JFE provides a unique forum for the FED community to communicate new findings, techniques, and applications. Authors of papers presented at FED conferences are encouraged to submit their papers to JFE. The FED web site www.asme.org/divisions/fed is another means of communication among our members. The web site has been revised, and is continually upgraded with new information on recent and upcoming meetings, calls for papers, publications, committee activities, student programs, continuing education, etc. Please take a look.

You are invited and encouraged to become involved in activities and program planning of the FED. There are a number of opportunities for you. To find out how to get involved, contact one of the TC/CG officers, or any member of the Executive Committee, all listed in this Newsletter. The TC/CG meetings at our conferences are open to all attendees. Hope to see you in Montreal.

Timothy J. O'Hern, Ph.D., Chair
tjohern@sandia.gov

Joint US-ASME-European Fluids Engineering Division Summer Meeting-2002

The 2002 Joint US-ASME-European Fluids Engineering Division Summer Meeting will be held in Montreal, Canada on July 14-18. This conference is sponsored by Fluids Engineering Division (FED) of the American Society of Mechanical Engineers (ASME), Association Francaise de Mecanique (AFM), Society of German Engineers (VDI-GVC), and UK Institute of Mechanical Engineers (I Mech E).

The objective of this conference is to provide a forum for exchange of information related to fluids engineering for mechanical engineers from around the world representing academia, industry and government laboratories. The meeting will address topics ranging from analysis and numerical methods to experiments in single phase and multiphase flows. This meeting has large emphasis in the development and application of modeling and computational fluid dynamics (CFD). There will be three plenary talks, thirteen symposiums, twenty forums, two general papers sessions. There will be two tutorials, a clinic session, two workshops, two continuing education short courses,

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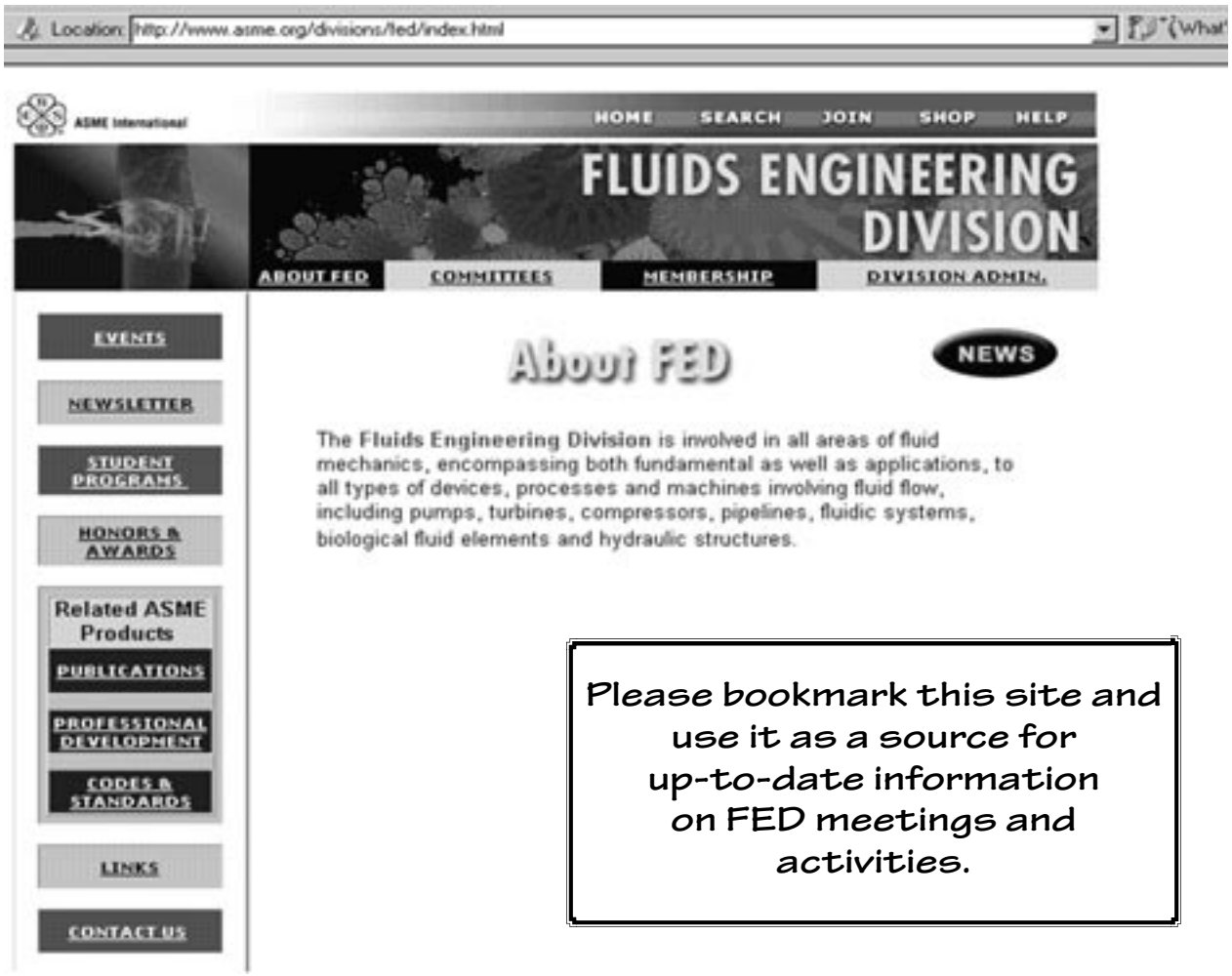
The Fluids Engineering Division Website

The FED has maintained, since 1996, an Internet Website for the purpose of disseminating information about activities of the division. It was one of the first ASME divisions to do so. The Website has now matured to the extent that it has become the primary source of information on division matters for FED members. There are links on the main homepage to:

- **Events:** - Information about conferences sponsored by the FED.
- **Newsletter:** - Division newsletters, technical briefs and other post-conference publications such as slides of plenary lectures, or tutorials.
- **Student Programs:** - Announcements of student contests and events.
- **Honors & Awards:** - Description of division awards and announcements of awardees.
- **Professional Development:** - Announcements of opportunities for professional development such as short courses, seminars and tutorials.
- **Committees:** - homepages of the various technical committees and coordinating groups in the division where specific information about committee membership, meetings and other activities can be found.
- **Membership:** - Information about FED membership goals and how to join.
- **Division Admin:** - Information about FED executive committee and other administrative officers.

A snapshot of the FED homepage is given below:



Please bookmark this site and use it as a source for up-to-date information on FED meetings and activities.

The **Division Webmaster** is: ***Ayodeji Demuren,*** Department of Mechanical Engineering, Old Dominion University, Norfolk, VA23452; Tel: (757) 683-6363; Email: demuren@mem. odu.edu.

TECHNICAL COMMITTEE REPORT

Fluid Mechanics Technical Committee (FMTC)

The Fluid Mechanics Technical Committee (FMTC) serves as the focal point within the ASME for technical activities in fundamental fluid mechanics. The main activity of FMTC is to organize symposia and forums related to all aspects of basic fluid mechanics. The committee strives to provide timely technical information to the ASME membership through well organized technical sessions. In addition to conducting very successful conferences the past Chair (Volkan Otugen) helped to streamline the TC by several active subcommittee assignments. The subcommittees cover areas of external, internal and unsteady flows and unconventional/emerging topics. Members are welcome to participate and to help organize the technical sessions and other activities of the FMTC. The FMTC conducted two business meetings in 2001. The first meeting was held at the Fluids Engineering Division's Summer Meeting held at New Orleans and the second was held at the winter meeting (IMECE) in New York. Awards presented at the FEDSM included the Fluids Engineering award presented to Dr. Ramesh Agrawal, the Moody award presented to Dr. Hafiz M. Atassi, the Knapp award presented to Drs. Hidrovo and Hart, and the Fluid Machinery Design Award presented to Dr. Gopalakrishnan. General information about FMTC including planned symposia/forums as well as past minutes of business meetings can be found on our web page (http://www.asme.org/divisions/fed/fmtc). For further information you may contact either the FMTC chair: Professor Ganesh Raman of the Illinois Institute of Technology (312) 567-3554 or Vice Chair: Dr. George Papadopoulos of Dantec Measurement Technology (201)-512-0037, x 121.

The FED Spring 2002 Newsletter Editor is:
Dr. James C. Meng

We are always interested to hear your comments and suggestions. Please feel free to send your comments to Dr. Meng at MengJC@kpt.nuwc.navy.mil.

Coordinating Group on Fluid Measurements

The Coordinating Group on Fluid Measurements (CGFM) is the center for experimental measurements within the FED. The CGFM membership includes specialists in instrumentation, experimental techniques, design of experiments, measurement accuracy and uncertainty, and data acquisition and analysis. The group membership is composed of individuals from each of the Technical Committees as the topic of fluid measurements permeates all of the FED. As a Coordinating Group, the group charter is to work closely with the technical committees and to provide updates on the latest developments in fluid measurements through programs at technical meetings and other technology transfer activities. In recent FED meetings, CGFM has cooperated on a number of symposia and forums.

The CGFM meets twice per year, at IMECE in the fall and at FEDSM in the summer. At the last meeting of IMECE in New York, Prof. Jim Liburdy of Oregon State University was elected the next Chair, and Ms. Judith Bamberger of Pacific Northwest National Laboratory as the Vice-Chair. They will take office after the summer meeting in Montreal in July 2002. For more information, visit the CGFM web site at http://www.asme.org/divisions/fed/committees/cgfm.html. The CGFM encourages all who are interested in planning, organizing, or participating in technical sessions in the general area of fluid measurements, or becoming involved. For more information on the CGFM, future meetings, and minutes, see the FED web page http://www.asme.org/divisions/fed/ or please contact the Chair, Dr. Joel T. Park of the U. S. Navy William B. Morgan Large Cavitation Channel, e-mail: ParkJT@nswccd.navy.mil or JTPark@bellsouth.net or the Vice-Chair, Prof. Jim Liburdy of Oregon State University, e-mail: liburdy@engr.orst.edu.

Joel T. Park, Ph. D.
CGFM Chair
ParkJT@nswccd.navy.mil

Micro and Nano Fluid Dynamics Committee

At the IMECE in Nov. 2001 the Micro and Nano Fluid Dynamics Technical Committee was formed in response to the significant international interest and high level of activity in both basic and applied micro and nano fluid dynamics. In the FED earlier efforts were supported within the Fluid Mechanics Technical Committee, from which the first symposium on this topic was organized by Promode R. Bandyopadhyay (Application of Microfabrication to Fluid Mechanics, IMECE (Chicago), P. R. Bandyopadhyay et al. (eds.) FED-Vol. 197, ASME, New York, 1994). Since then there have been a series of symposia at the IMECE in years 1996 and 1998 and starting in 1999 these became yearly events. At the IMECE there has been strong coordination between numerous divisions within the ASME for over ten years to organize sessions devoted to all aspects of microelectromechanical systems (MEMS), and the new committee will continue that tradition in addition to coordinating and building activities for the annual Fluids Engineering Division Summer Conference. The kick-off meeting for the MNFDTC will be at that upcoming meeting in Montreal, Canada on July 14-18. Check the ASME FED web site (http://www.asme.org/divisions/fed/committees/index.html) for more information on the new committee (available soon), or go directly to http://microfluidics.engin.brown.edu/ASME/index.html where you can visit now, learn more and sign up for MNFDTC News. For more information you may also contact the Acting Chair, Professor Fred K. Forster at the University of Washington, forster@u.washington.edu, 206-543-4910.

Professor Fred K. Forster
forster@u.washington.edu

Coordinating Group on Industry Technology

The CGIT is the committee of the ASME Fluids Engineering Division (FED), which addresses industry technology issues in Fluids Engineering. The focus is on industry applications of fluids engineering technology which may encompass all areas of fluids engineering, such as, theoretical, numerical, and experimental fluid mechanics. Activities may include formulation and sponsoring of programs that are of interest to fluid applications industry. Industry Exchange Program is one such activity sponsored by the CGIT and is designed to attract more industry people to FED meetings. CGIT may have sub-committees to focus activities in major industrial areas, such as, aerospace, automotive, chemical and MEMS. These subcommittees may be redefined as the need arises, based on new developments or trends in industry technology needs.

Dr. Manoranjan N. Dhaubhadel
Chairperson, CGIT
mano.dhaubhadel@cnh.com

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Technical Committee Report

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Coordinating Group on Computational Fluid Dynamics (CGCFD)

The Coordinating Group on Computational Fluid Dynamics (CGCFD) continues to sponsor forums and symposia on topics of current interest; the following have emerged as some of the recurring themes: Automotive Flows, Fluid-Structure Interaction and Flow-Induced Noise in Industrial Applications, Parallel Computing. Tutorials on Parallel Computing, and Panels on Benchmarking for Industrial Flows have emerged as very popular. Virtual Reality in CFD is the topic of a new forum scheduled for the FED Summer Meeting in Honolulu, Hawaii, in July 2003.

A major activity undertaken this year consists of re-visiting the standards for publication of CFD results. ASME was the lead society in this area of CFD, and the first to formulate and publish a formal policy for quantification of numerical uncertainties associated with computational research results. The ASME Journal of Fluids Engineering was also represented at the World Users Organization in Germany where discussion focused on standards for publication of numerical and experimental uncertainty.

A CFD Standards Sub-Committee has been constituted with the following membership: Ismail Celik, Hugh Coleman, Ray Cosner, Chris Freitas, Urmila Ghia, Peter Raad, Patrick Roache. The goal of the Sub-Committee is to re-visit ASME's existing policy, embellish it to include formal standards for publication of results of computational research, and help propel it to the level where the experimental research publication standards are today. This may include suggesting a method or two for quantification of the numerical uncertainty in computational results. Much work has also been done in the area of code validation and verification and benchmarking; this work will provide a sound foundation for the Sub-Committee's work.

The Sub-Committee anticipates a timeline of one year to achieve this goal. We expect that the outcomes will be incorporated into the standards of the national ASME Codes and Standards Committee. We believe that the proposed activity is very timely and essential for ASME's leadership in this area.

Professor Urmila Ghia, Chair, CGCFD
urmila.ghia@uc.edu

Fluids Engineering Division Government Relations Committee

The Fluids Engineering Division Government Relations Committee serves as a link between the ASME Board on Government Relations and the FED technical community. A key objective of the ASME Board on Government Relations is to provide government decision-makers with technical information needed to make the most informed decisions on technical and related issues. ASME's government relations activities prepare and enable the Society's members to provide all levels of government with this essential guidance. Under the direction of the Board on Government Relations, ASME conducts programs to facilitate participation in the public policy process through presentation of non-partisan analysis, study, or research; informal briefings for government personnel; formal comment on proposed legislation and regulations; and testimony before government bodies. The Policies and Issues Committee provides guidance for preparation of position papers, delivery of testimony before congressional committees and regulatory agencies, and preparation of briefing sessions and workshops on specific issues.

A vital function of the ASME technical groups and divisions must be to provide the expertise in the pertinent fields of study to facilitate these government relations activities. ASME maintains eight technical groups: Basic Engineering, Energy Conversion, Energy Resources, Environment and Transportation, Engineering and Technical Management, Materials and Structures, and Manufacturing Systems, and Design. Within these groups are 37 divisions; the Fluids Engineering Division is one of six divisions operating within the Basic Engineering Group, along with Applied Mechanics, Bioengineering, Bioprocess Engineering, Heat Transfer, and Tribology. We in the FED take great pride in our great wealth of expertise in the fluid sciences. It would be of great benefit to ASME to be able to solicit input on fluids engineering matters pertinent to public policy issues. No framework currently exists by which the public policy arm of ASME can directly utilize FED expertise. It is the goal of the FED Government Relations Committee—under the auspices of the FED Executive Committee, the Vice President for Basic Engineering, and the ASME Board on Government Relation—to establish a conduit through which the FED membership can provide their valuable expertise on these public policy issues. To this end, the FED Government Relations Committee seeks to compile a list of its internationally recognized technical experts so as to make them available on these public policy issues.

At the 2002 Summer FED meeting in Montreal, the Government Relations Committee will meet to develop a list of the relevant fluids specialties represented within the FED. Subsequently, we will compile a list of names to represent each of these specialties. All interested members are encouraged to attend this meeting and participate in the selection of specialties. Please notify the committee chair or vice-chair listed below of your interest in attending prior to the meeting:

R. S. Meyer

Dr. Richard S. Meyer (Chair)
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Dr. Richard A. Martin (Vice-Chair)
Los Alamos National Laboratory
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martin@lanl.gov

Fluid Applications and Systems Technical Committee

The Fluid Applications and Systems Technical Committee (FASTC) is the committee of the Fluids Engineering Division (FED), which addresses ASME activities involving fluid mechanics systems and applications of fluid mechanics technology. These activities include fluid machinery and components, fluid transients and structural interactions, and industrial and environmental applications of fluid mechanics technology and there are subcommittees to focus on these specific activities. As such FASTC facilitates the organization of forums and symposia.

The recent 4th symposia on pumping machinery at the FEDSM comes twelve years after the first pumping machinery symposium occurred in 1989, which was followed by other symposia in 1993 and 1997. There are still new and ongoing developments in many areas of the pump field and this collection is representative of the advances in CFD applications and

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Technical Committe Report
Fluid Applications and Systems Technical Committee
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experimental applications. In these papers, the use of CFD is evident, in addition to experimental measurements via LDA and other techniques. Significant steps having been taken recently in the ability to analyze and improve these machines. Fundamental to the progress that has been made during this period is the extensive R&D that has been done by contributors from universities, pump manufacturers, and pump users.

The papers include aspects of pump design and performance, such as the paper describing inverse pump design. Besides the description of integrated CAD/CFD/inverse design approaches, this includes the relationship of the design process to the pump business. From the other papers on impeller analysis, it is evident that CFD is now used routinely, as considerable progress in predicting the overall performance curves, the head curve shapes from shutoff to runout, has been made. Moreover, progress in controlling the performance curve shape is reported In particular, there is progress made in the still difficult area of performance prediction due to cavitation. Further, flow visualization is still used to aid the pump design process. The maturity of CFD can be seen by its extensive use in the design process, including numerical simulation of two-phase flow. Additionally, the fluid induced rotordynamic forces and instabilities associated with unshrouded impellers have been addressed, as well as, the new discoveries relative to diffuser stall, and with flows that influence hydrodynamic thrust. New concepts for pumps and pump components are introduced; including a MEMS micro-pump.

What is clearly evident is the continuing creative application of fluids engineering expertise that is required to produce viable new concepts in both design and performance improvement. Indications from these papers are that a lot more progress is still to be expected when we come to the 5th symposium as well as the Fluid Machinery Forum at the FEDSM in Montreal 2002.

Adiel Guinzburg, Ph.D., Chair FASTC
adiel@alumni.caltech.edu

Multiphase Flow Technical Committee

The Multiphase Flow Technical Committee (MFTC) serves as the main group devoted to the study and exploitation of multiphase flows. The committee organizes symposia and forums related to gas-liquid and fluid-solid flows in odd numbered years and computational and experimental methods in even numbered years at the FED Summer Meetings. Multiphase flows are an important element of many thermal fluid systems and processes. Interest in multiphase flows also intersects with the activity of other ASME divisions, including Heat Transfer, Manufacturing, Acoustics, Fuels and Combustion Technology, and Micromechanical Systems. The IMECE offers great opportunities for organization of joint activities.

If you have questions or suggestions please contact the Chair: Professor Steven L. Ceccio of the University of Michigan (734) 936-0433 or the Vice Chair: Professor Gretar Tryggvason of the Worcester Polytechnic Institute (508) 831-5759.

Professor Steven L. Ceccio
Mechanical Engineering and Applied Mechanics
734-936-0433
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Honors & Awards

Fluids Engineering Award

The Fluids Engineering Award is conferred upon an individual for outstanding contributions to over a period of years to the engineering profession and in particular to the field of fluids engineering through research, practice or teaching. The winner of the 2001 Fluids Engineering Award is Dr. Ramesh Agarwal of Wichita State University. Dr. Agarwal was selected for his pioneering work in computational fluid dynamics and contributions to the development and application of codes and methodologies for flow-field analysis in commercial aerospace systems. Dr. Agarwal is the executive director of the National Institute for Aviation Research (NAIR) at Wichita State University. Since 1997, he has also been the Bloomfield Distinguished professor of aerospace engineering at the university. Professor Agarwal is also the director of the Aircraft Design and Manufacturing Research Center (ADMRC), which he established in 1995. A statewide center with faculty members and students participating from four Kansas regents institutes (University of Kansas, Kansas State University, Wichita State University and Pittsburgh State University), ADMRC focuses on basic and applied research in manufacturing technologies. The 28 participating industrial members range from Boeing, Cessna, Raytheon and Silicon Graphics to various smaller manufacturers. From 1978 to 1994, Dr. Agarwal worked at McDonnell Douglas in various scientific and managerial positions. He worked at NASA Ames Research Center in California between 1976 and 1978 focusing on problems related to the simulation of supersonic/hypersonic viscous flows.

Dr. Agarwal is a Fellow of ASME. He is also a Fellow of the American Association for the Advancement of Science, the American Institute of Aeronautics and Astronautics, and the Society of Manufacturing Engineers. Honors conferred upon him also include the Irving Youngberg Award (1998), the state of Kansas' highest research award in applied science, and the Wichita State Excellence in Research Award and the President's Award (1998). Dr. Agarwal earned his bachelor's degree degree in mechanical engineering at the Indian Istitute of Technology (Kharagpur, India) in 1968 and his master's degree in aeronautical engineering at the University of Minnesota in 1969. In 1975, he earned his Ph.D. degree in aeronautical sciences at Stanford University.

The award was presented to Dr. Agarwal at the Fluids Engineering Summer Meeting in New Orleans, LA, May 30, 2001.

Robert T. Knapp Award

This award is given to the authors of the best paper presented to the Fluids Engineering Division dealing with analytical, numerical and laboratory research. The year 2001 award is received by Drs. Carlos H. Hidrovo and Douglas P. Hart for their paper titled "Dual Emission Laser Induced Fluorescence Technique (DELIF) for Oil Film Thickness and Temperature Measurements". The paper was presented at the ASME FED Summer Meeting June 11-15, 2000 in Boston, MA.

Dr. Hidrovo received his doctorate in mechanical engineering from Massachusetts Institute of Technology in 2001. He is currently a post doctoral fellow at MIT. Dr. Hart received his Ph.D. degree in mechanical engineering from California Institute of Technology in 1992. He is currently an associate professor and the director of the MIT Hatsopoulos Laboratory for Microfluid Dynamics. His research interests include instrumentation and optical diagnostics related to fluid mechanics and tribology.

Lewis F. Moody Award

The Lewis F. Moody Award is given to the authors of the best paper presented to the Fluids Engineering Division dealing with a topic useful to in mechanical engineering practice. The year 2001 award is received by Dr. Hafiz M. Atassi for his paper titled "Swirl in Tur-

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Honors & Awards

Lewis F. Moody Award

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bomachinery Flow". The paper was presented at the ASME FED Summer Meeting June 11-15, 2000 in Boston, MA.

Dr. Atassi is the Viola D. Hank Professor of Aerospace and Mechanical Engineering at the University of Notre Dame. He received his doctorate degree at Sorbonne University (Paris) in 1966. After a year as a research engineer at the Office national d"eEtudes at de Recherces Aerospatiales and two years as a research associate at Cornell University, he joined the faculty at University of Notre Dame in 1969. Prof. Atassi is a Fellow of ASME.

Fluid Machinery Design Award

This award is given every other year and recognizes the excellence in the design of machinery involving significant fluid mechanic principles which benefits mankind as exemplified by product use within the past decade. The winner of the 2001 Fluid machinery Award is Dr. S. Gopalakrishnan.

Dr. S. Gopalakrishnan received his M.S. degree in Aeronautics from California Institute of Technology in 1966 and his Sc.D. in Mechanical Engineering from M.I.T. in 1969. He is at present the Vice President of Technology at the Pump Division of Flowserve Corporation. In this capacity, he has developed a number of new products, the most prominent one being an advanced design for nuclear primary pumps. This design has greatly increased the safety and reliability of these pumps by eliminating shaft thermal cracking, which in the past has led to shaft failures. This design is now operating world wide in most of the Byron Jackson primary pumps. His other developments include a long life nuclear seal, a compact design for multi stage horizontal pumps, a high efficiency cryogenic expander, and seal less pumps using magnetic drives and magnetic bearings. He has also contributed to pump technology in the areas of hydraulics, cavitation and rotor dynamics. Dr. Gopalakrishnan is the 2001 incoming member at the ASME Fluids Engineering Division Executive Committee. He was elected fellow of the ASME in 1995.

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CEI Programs

In today's cost conscious fluids industry, employees need to perform at peak efficiency and training plays a key role in becoming more efficient. As the premiere organization addressing the ever-changing field of engineering, ASME International offers customized professional training on topics relevant to your company. ASME International's Continuing Education Institute (CEI) programs provide the most current information on complex engineering and technological issues facing a company.

The quality of CEI's courses is the reason companies continue to use them as a valuable tool to reach their goal of improved productivity. Benefits include expert training from industry leaders who will provide hands-on and problem-solving activities to further enhance learning. In addition, In-Company Programs provide flexibility and maximum cost effectiveness to meet organizational needs.

Here are a few examples of courses geared towards fluid industry professionals that can be customized to meet your particular needs:

- **PD027: HEATING, VENTILATING, AND AIR-CONDITIONING SYSTEMS -- SIZING AND DESIGN** — Through a combination of lecture and workshops, learn and practice state-of-the-art methodology for sizing and selecting heating, ventilating, and air-conditioning (HVAC) equipment for commercial buildings. The common types of HVAC systems are discussed and analyzed as are currently available energy conserving/recovery equipment.
- **PD221: WATERHAMMER AND FLUID STRUCTURE INTERACTION IN PIPING SYSTEMS** — Examine the nature and source of pressure transient phenomena in piping systems as they relate to the power industry. Topics include computational techniques for analyzing single and two component transients in fluid machinery, valve operation, and the condensation-induced waterhammer in nuclear piping.
- **PD338: COMPUTATIONAL FLUID DYNAMICS (CFD)** — This course provides a thorough understanding of computational fluid dynamics (CFD) for the analysis of multidimensional fluid flow, heat and mass transfer, chemical reaction, turbulence, and related processes encountered in practical applications.

CEI continues to respond to our customers and members by upgrading current courses and developing new ones to meet the changes in industry. ASME In-Company Training Programs can be tailored to meet each individual company's needs. For more information on ASME courses please contact Elite Rubin at 212-591-7752 or via e-mail at rubine@asme.org

Joint US-ASME-European Fluids Engineering Division Summer Meeting-2002

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one industry exchange program and exhibits. The meeting will have one reception and one Fluids Engineering Award luncheon. About 400 contributed papers and keynote papers are expected. The papers will be published in CD-ROM and each registrant will be provided with a CD-ROM. The meeting information is available at ASME web site (www.asme.org/conf/FED02).

The plenary sessions provide the attendees an opportunity to hear an overview from experts in fluids engineering. Symposium provides the researchers an opportunity to present complete work of current or archival value. The symposium papers undergo two independent reviews. The forums are a place to present ongoing work. The papers are reviewed for relevance to the topic and completeness. The open forums are designed for the presentation of work that is current. The submittal of a paper is optional although encouraged. The workshops are given by industries to educate and train engineers who are interested in their products such as computational tools or instrumentation. The ASME Continuing Education Institute has co-located their regular short courses related to fluids engineering to provide opportunities to short course participants to attend many of the sessions. FED also provides two other services to the attendees; tutorials and clinics. The tutorials are presentations by experts to provide basic information on a topic of current interest. The clinics are another avenue where experts in the field volunteer to free consultancy to engineers at the conference who bring technical issues from their work. Finally, the industry exchange program provides opportunities to industries to discuss fluids engineering related activities in their companies. The exhibits are arranged to enable industry to display their products and to inform the attendees about new products.

Dr. Upendra S. Rohatgi, General Program Chair, U.S.A email: rohatgi@bnl.gov

Professor Jean Bataille, French Program Chair, France email: bataille@mecaflu.ec-lyon.fr

Professor Dieter Mewes, German Program Chair, Germany
email: dms@c36.uni-hannover.de

Professor Ivor Rhodes, UK Program Chair, U.K
email: i.rhodes@cranfield.ac.uk

2002 ASME International Mechanical Engineering Congress & Exposition

November 17-22, 2002 New Orleans Hilton & Ernest Morial Convention Center New Orleans, Louisiana

The Forums presented at the upcoming meeting will be:

FORUM ON GLOBAL FLOW MEASUREMENT: TECHNIQUES AND INDUSTRIAL APPLICATIONS

Lead organizer: **Dr. George Papadopoulos,** Dantec Dynamics, Inc., 777 Corporate Drive, Mahawah, N.J. 07430 Ph: 201-512-0037 Ext 121, Fx: 201-512-0120, george.papadopoulos@dantecdynamics.com

Other Organizers:
Dr. Khaled J. Hammad, Dantec Dynamics, Inc., 777 Corporate Drive, Mahawah, N.J. 07430, Ph: 201-512-0037 Ext 114, Fx: 201-512-0120, khaled.hammad@dantecdynamics.com

Dr. Gregory J. Fiechtner, Sandia National Laboratories, PO Box 969, Livermore, CA 94551-9053, Ph: 925-294-3161; Fx: 925-294-1004; gjfiech@sandia.gov

Dr. Frank Y. Wang, USDOT-John A. Volpe Center, Surveillance and Sensors Division, 55 Broadway, Cambridge, MA 02142, Ph: 617-494-2873; wangf@volpe.dot.gov

FORUM ON PARALLEL COMPUTING METHODS VII

Lead Organizer: **Dr. Christopher J. Freitas,** Computational Mechanics, Southwest Research Institute, 6220 Culebra Road, San Antonio, TX 78238-5166, Ph: 210-522-2317, Fx: 210-522-3042; cfreitas@swri.edu

INDUSTRIAL COMPRESSORS

Lead Organizer: **Dr. Jinkook Lee,** Argo-Tech Corp., 23555 Euclid Ave., Cleveland, OH 44117-1795, Ph: 216-692-5084, Fx: 216-692-6639, leej@argo-tech.com

Other Organizer:
Prof. Abraham Engeda, Mechanical Engr. Dept., Michigan State University, A231 Engineering Bldg., East Lansing, MI 48824-1226, Ph: 517-432-1834, Fx: 517-353-1750, engeda@me.msu.edu

FORUM ON BIFURCATION, INSTABILITY AND HYSTERESIS IN FLUID FLOW

Lead Organizer: **Dr. Francine Battaglia,** Dept. of Mechanical Engineering, Iowa State University, 3027 H.M. Black Engineering Building, Ames, IA 50011-2161, Ph: 515-294-2085, Fx: 515-294-3261, francine@iastate.edu

Other Organizers:
Dr. George Papadopoulos, Dantec Dynamics, Inc., 777 Corporate Drive, Mahawah, N.J. 07430, Ph: 201-512-0037 Ext 121, Fx: 201-512-0120, george.papadopoulos@dantecdynamics.com

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The Symposiums presented at the upcoming meeting will be:

NINTH INTERNATIONAL SYMPOSIUM ON MEASUREMENT AND MODELING OF ENVIRONMENTAL FLOWS

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RHEOLOGY AND FLUID MECHANICS OF NONLINEAR MATERIALS

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ADVANCES IN MATERIALS PROCESSING SCIENCE

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DISPERSED FLOWS IN COMBUSTION, INCINERATION AND PROPULSION SYSTEMS

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5th INTERNATIONAL SYMPOSIUM ON FLUID-STRUCTURE INTERACTIONS, AEROELASTICITY, FLOW-INDUCED VIBRATION & NOISE

Lead Organizer: **Prof. Michael P. Paidoussis,** Dept. of Mech. Eng., McGill University, 817 Sherbrooke Street West Montreal, QC, Canada H3A 2K6, Ph: 514-398-6294, Fx: 514-398-7365, maryf@mecheng.mcgill.ca

2nd SYMPOSIUM ON MULTIPHASE FLOW AND HEAT TRANSFER IN MANUFACTURING AND MATERIAL PROCESSING

Lead Organizer: **Prof. Malcolm Andrews,** Dept. of Mechanical Engr., Texas A&M University, College Station, TX 77843-3123, Ph: 979-847-8843, Fx: 979-845-3081, mandrews@mengr.tamu.edu

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Other Programs:

YOUNG ENGINEERS PAPERS CONTEST

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OPEN FORUM FOR CFD APPLICATIONS FOR POSITIVE DISPLACENMENT MACHINES

Lead Organizer: **B. G. Shiva Prasad,** Dresser-Rand, Dept. of Analytical Engineering, 100 Chemung St., Painted Post, NY 14870, Ph: 607-937-2621, Fx: 607-937-2390, b_g_shiva_prasad@dresser-rand.com

SENIOR DESIGN PROJECT REPORT CONTEST

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Professional Development

Plans are progressing for a full slate of workshops, tutorials and short courses for the FEDSM 02 in Montreal. Two workshops are planned, one for incoming chairs and vice chairs, and one for future session organizers. The workshop for incoming chairs and vice chairs of the technical committees and coordinating groups anticipates their taking office at the end of the FEDSM. The workshop, led by members of the Executive Committee and outgoing chairs, is planned to provide discussion and guidance to the new officers. The workshop is open to all incoming chairs and vice chairs. The second workshop will be led by Dr. Ali Ogut, FED conference chair for FEDSM03, and will provide discussion and guidance to organizers of sessions at both the IMECE02 and FEDSM03.

Two or three tutorials are planned. One tutorial will offer insights into research funding opportunities for young faculty in fluids engineering. The workshop is open to all conference registrants, but particularly young faculty. The objectives of the workshop are to give young faculty insights into successful proposal ideas and techniques. One or two other tutorials will be organized, but topics and speakers have not yet been selected.

At least five short courses are planned. AEA Technologies will offer a short course for one half-day on Sunday at the beginning of the conference. The course will be at no extra charge to full paid registrants at the conference, but attendees will be required to sign-up in advance since attendance is limited to approximately 10-12 for each offering. AEA will provide attendees with hands-on training with their CXF-5 fluid dynamics software. Dantec Dynamics and Concepts NREC will offer their short courses. Each company will handle their own registrations and attendance at their course will include access to conference technical sessions and ticketed meal events. The ASME Continuing Education Institute (CEI) will offer two short courses: Waterhammer and Turbulence Modeling. As in the case of the commercial companies, registration at a CEI short course will also include access to all conference sessions and events.

Visit the FED Professional Development website at
http://www.asme.org/divisions/fed/conedu/index.html

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