

## Water Mist Fire Suppression Workshop Summary

The imminent lack of availability of halon fire suppressants has sparked worldwide efforts in developing other total-flooding agents. Water mist systems are potential replacements in many industrial uses, as well as in new markets, such as residences and commercial aircraft. To facilitate the process of commercializing water mist systems, a workshop on water mist fire protection was held at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD, 1-2 March 1993. The workshop was funded by the Building and Fire Research Laboratory (BFRL) and the Advanced Technology Program (ATP) at NIST. One goal of the workshop was to stimulate proposals to the ATP program in the area of water mist fire protection.

NIST, a principal agency of the Department of Commerce's Technology Administration, has as its mission to strengthen U.S. industry's competitiveness, advance science, and improve public health, safety, and the environment. NIST conducts basic and applied research in the physical sciences and engineering, developing measurement techniques, test methods, standards, and related services. NIST does generic and precompetitive research and development work on new advanced technologies. BFRL's mission is to provide performance prediction and measurement technologies and technical advances that improve the quality of constructed facilities.

The Advanced Technology Program, which is administered by NIST, funds advanced technologies that have a significant potential for improving the competitiveness of U.S. businesses. The ATP is a federal assistance program, and awards are based on merit as determined through a full and open competition. ATP appropriations for FY93 and \$68 million and are scheduled to grow dramatically in succeeding years.

To facilitate the process of commercializing water mist systems, the workshop brought together a diverse group of people from industrial, academic, governmental, and approval organizations to discuss the issues impeding the commercialization of water mist technology. The workshop included representatives from system suppliers, end users (consumers), researchers, insurance, and approval laboratories. The workshop united the industrial effort by assessing the value of such systems, and identifying the areas of concern for all groups that could form the basis of future ATP projects.

The director of ATP presented an overview of the program and information on application for an ATP award. Speakers presented state-of-the-art papers on the incentives of using misting sprays, the advances in spray drop size measurement, and the engineering criteria for water mist fire suppression systems. Three papers discussed projects demonstrating the use of water mist systems in aircraft, marine, and telecommunication applications.

### About the panels

With this common background, the speakers and attendees were prepared to participate in the panel discussions. Participants were divided into three panels: Research Needs, End Use Criteria, and Marketing. Each panel was composed of representatives from various technical and industrial backgrounds or interests. The panel themes were identified prior to the workshop, and attendees were asked to identify discussion items for each panel. This list of discussion items was provided to the panel chairs prior to the workshop and also inserted into the information packet received by each attendee at workshop registration. The sole purpose of the list was to provide discussion points within each panel.

After three to four hours of discussion, each panel chair summarized the conclusions of their panel to all participants. Participants voted on each panel recommendation, and a prioritized list was developed. Each participant could cast a total of from one to five votes for the priorities within each panel. It is possible that the results of the voting would be different if there had been more time to vote.

The Research Needs Panel identified 17 topic areas to be discussed. The End Use Criteria Panel identified 39 user needs which they broke down into three categories: Research and Development Needs, Information Affecting the System Selection, and Standards Development Needs. Research and Development was further subdivided into Research-Oriented Needs and Development-Oriented Needs. The Marketing Panel identified seven impediments to commercialization of water mist systems.

In the Research Needs Panel, the top four of the

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17 needs identified received nearly 50% of the votes. They are: (1) full-scale tests of drop size, application rate, fire size, and room geometry; (2) determination of relationships among drop size, application rate, fire size, and room geometry; (3) development of at least one application to the point where standards/requirements can be set for that application; and (4) tests to determine the effects of water mist on all types of energized and de-energized electrical equipment.

In the End Use Criteria Panel, standards development needs received the most (46%) votes, including development of NFPA standards, development of standardized fire tests, third party testing, and listing of equipment. Receiving an additional 30% of the votes was information affecting system selection.

In the Marketing Panel, 46% of the votes were for issues relating to the fact that water mist is a "new technology." Another 26% of the votes related to system reliability and effectiveness.

The following topics concerned more than one panel:

- Water mist and electrical equipment
- Standards development
- Drop size/system optimization
- Additives
- Confidence in design criteria/system reliability
- Cost
- Acceptability by authorities having jurisdiction
- Water quantity and/or quality.

The above topics reflect areas where the workshop participants felt work could be done that would aid in the commercialization of water mist systems. With the availability of ATP funding to sponsor such work, it is hoped that industry will develop proposals for developing and implementing water mist fire suppression systems.

The workshop proceedings contain the recommendations of each panel and the individual technical papers that were presented. It is hoped that the proceedings can serve as a resource to organizations researching, marketing, or employing water mist systems, as well as documentation of the thinking of a cross section of individuals representing a broad range of technical expertise, experience, and responsibility of their respective organizations. Workshop proceedings may be obtained by contacting either Kathy Notarianni or Nora Jason at NIST. Further information regarding the ATP program at NIST can be obtained by calling the ATP "hotline" recording at 301-975-2273 or General Inquiries at 301-975-2636.

## University of British Columbia Appoints Jim Mehaffey

SFPE member James R. Mehaffey has been appointed to the faculty of the University of British Columbia, with the mandate to introduce the university's new Fire Protection Engineering Program. The Program, the first of its kind in Canada, will lead to a Master of Engineering (M.Eng.) degree. The university will offer a series of workshops in fire protection engineering before the anticipated opening of the M.Eng. program in the fall of 1994.



Dr. Mehaffey has been active in the fire protection community since 1980 and has extensive experience in research, consulting, teaching and codes and standards. While a research scientist at the National Fire Laboratory of the National Research Council of Canada for seven years, he conducted re-

search on room fire dynamics and offered sections of a graduate course in fire protection engineering at Carleton University.

He subsequently spent a year with Professional Loss Control Ltd. in Toronto as a consultant. In 1988, he joined Forintek Canada Corporation where he has been modelling the fire performance of wood-frame assemblies. An agreement has been reached with Forintek whereby he will continue to participate in Forintek's research program while developing the University's Fire Protection Engineering Program.

Dr. Mehaffey is a member of ASTM E05 on Fire Standards, LSO TC/92 on Fire Standards, and several Task Groups of the ULC Fire Test Committee. He is also a member of the Standing Committee on Fire Performance Ratings (National Building Code of Canada) and of the Japan-Canada-USA Building Experts Committee.

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