



Society of Fire Protection Engineers

New Jersey Chapter

Editor Fusible Link:
Brad Hart &
Ana Crisostomo
Tel.: (212) 837-0827
Fax: (212) 344-3060

FUSIBLE LINK

OCTOBER 2004

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Message from the Chapter President...

This month we are having our annual Fall Technical Seminar. This year's topic is on High Rise Building Fire Protection concentrating on fuel oil systems for diesel generators and steel fireproofing. Both high-rise steel fireproofing as protection and diesel fuel systems in office buildings as a hazard were one of the focuses of the investigation of the World Trade Center disaster. Steel fireproofing and its effects at reducing fire exposure to steel were looked at extensively by experts investigating the twin tower collapses. World Trade Center Building No. 7 experienced pumped diesel fuel fires that contributed to the collapse of the building. Both topics will be covered in depth.

This upcoming seminar to be held on Tuesday October 19th at the Parsippany, NJ offices of FM Global should be attended by all those who design, review, inspect, insure or install protection systems in these structures. A seminar registration form is attached to this issue of the Fusible Link. Don't miss it.

Dues notice packages are going out this month. When you receive it please send in your renewal application and dues and help keep the Chapter strong.

Congratulations again to our new SFPE Fellow, John Cholin.

Rich Reitberger
Chapter President

NJ SFPE Membership Meeting Minutes September 13, 2004

The meeting was called to order at 6:00 by our First Vice President Glenn Deitz. A salute to the flag was followed by all attendees introducing themselves as is our normal custom.

The June minutes and September's treasurer's report were read. Motions were made to accept, seconded and both the secretary's minutes and treasurer's report were accepted.

Joe Janiga took a few minutes to inform the general membership that he and Glenn performed the annual audit of the Chapters Books and found all to be in order. Joe expressed the need for a better paper trail, proper receipts and records for board approved spending.

A request for membership by Guy VandVaarst of Empire System Solutions was brought before the membership, Ed Armm made a motion to accept Guy which was seconded and approved by all in attendance.

Glenn informed the membership that there were currently 86 members in good standing, he followed with an announcement that the by-laws called for the removal from the membership rolls of all not paid within three months of the dues notices going out. This is not a new by-law, however, it will be enforced and there will be new fee's for those not in good standing to attend meetings and/or seminars.

Joe Janiga took the floor to advise membership that he is working with the Governors Board and DCA to amend the Fire Alarm and Suppression law to allow larger industrial and commercial sites the ability to "self inspect" per NFPA 25 with a "Certificate of Fitness" from the sites insurance company.

Joe also spoke about the Chapter Seminar which will be held October 19, at FM Global.

Joe will be doing the AM presentation, it will deal with fuel oil for generators and fire pumps in high rises. The afternoon sessions will deal with fire proofing and high-rise fire safety coordination. The seminar will cost approximately \$55.00 per member in good standing and \$75.00 for others.

Our presentation this evening was "Water Mist Systems - The Current State of Water Mist Technology" by Mr. Victor Gameiro of Marioff Corp. Victor Gameiro is President for Marioff, US. Marioff is a world leader in fire suppression and smoke minimization solutions using water mist technology.

Victor informed us that Marioff Corporation is the world's leading supplier of water mist fire protection systems. The systems are high pressure and marketed as HI-FOG®, Victor's early experience was with another company that used low pressure for their mist systems.

The company's background in marine and offshore high pressure hydraulics has led to the development of a fire protection technology which makes use of the attributes of the only truly environmentally benign agent - water. This was years prior to the Montreal Protocol.

In 1991 the company, using its hydraulics expertise and piping skills, began to develop a totally new fire protection technology, initially as an alternative to conventional sprinkler fire protection on passenger ships.

The early success as an 'alternative sprinkler' technology led to the rapid development of other HI-FOG® systems for a wide range of applications including various range of machinery spaces, special hazard areas and turbines, commercial cooking and frying systems, and even engine test cells; all fire protection areas which conventional water spray systems could not tackle.

Recently Marioff has led the industry in the introduction of innovative and environmentally benign approaches to the fire protection of sensitive computer and telecommunications rooms. Using ultra-low water levels HI-FOG smoke scrubbing systems address the real danger in these applications, which is smoke.

Marioff manufactures all system components from the pumps to the nozzles which are capable of protecting from 20 sq. ft. to 250 sq. ft. In the US the systems are used in light and ordinary hazards with solids and in some special hazards with liquids and gases.

Marioff believes that they provide superior protection because they actually suppress fire, use minimal water, are low cost systems to maintain and refill, are flexible in design, quickly installed and provide an important benefit of smoke scrubbing. They feel that their advantage is in minimizing damage from thermal radiation, smoke and water.

The size of a droplet of water from a standard sprinkler is >1000µm while low pressure water mist is typically 300µm and high pressure water mist is 30 to 50µm. Victor informed us that HI-FOG extinguishes fires by use of three primary mechanisms: cooling, oxygen depletion and radiant heat blocking.

Some time was spent on applications which can have piping from ½ inch to 1 inch. The typical system will provide water for ten minutes in a machine space and longer in the case of a turbine having to coast down. The water is delivered using bottled nitrogen or compressors which can run on electricity, gas or diesel fuel. The NFPA Standard for water mist systems is NFPA 750.

Victor's very informative presentation was followed by a Q & A session.

Water Spray Protection of Machinery Spaces - Part II

The following technical article has been taken from the "Fire Suppression and Detection Research Application Symposium" - Fire Protection Research Foundation. The entire paper will be part of a series in subsequent Fusible Link issues.

The extinguishment times for the obstructed spray fire tests conducted during Phase I as a function of fire size (heat release rate). As with the water mist systems, the larger fires were easier to extinguish with extinguishment occurring faster than the smaller fires. This was attributed to need to reduced the oxygen concentration in the space (due to consumption by the fire and dilution with water vapor) in order to achieve extinguishment. All the water spray systems were capable of extinguishing the 6.0 MW spray fires with variations in system capabilities becoming apparent as the fire size was reduced. Only about half of the systems were capable of extinguishing the 1.0 MW obstructed spray fire located on the side of the engine mock-up.

The results of the 91 suppression tests can be found in the final report. At first glance, there appeared to be little if any trends in the test data with respect to system parameters/characteristics (drop size, application rate, etc.) For example, the systems with medium size drops (400-800 microns) typically performed the worst (as compared to both large (greater than 800 microns) and small (less than 400 microns) drop systems). A more thorough analysis did however identify two system parameters/characteristics that could account for this behavior; how much water vapor is produced by the system for a given fire scenario and how well

the system disrupts the air flow through the vent openings. Both of these parameters are associated with the spray characteristics of the system.

The amount of water vapor produced by each system is primarily a function of drop size. The smaller drops not only have better heat transfer characteristics (greater surface area to volume ratios) but also produce higher mist concentrations in the space due to their lower terminal velocities. The amount of water vapor produced by each system was estimated based on the oxygen concentrations (dry [no water vapor]) measured in the space just prior to extinguishment. These oxygen concentrations were plotted as a function of the steady-state compartment temperature in Figure 4.

The small drop systems typically extinguished the fire when the dry oxygen concentration was reduced to 16%. The medium drop systems extinguished the fire when the dry oxygen concentration was reduced to 15% and the large drop systems when the oxygen concentration dropped to 13.5%. If we assume a limiting oxygen concentration of 13%, the small drop systems produced a 3% water vapor concentration, the medium drop systems a 2% concentration, and the large drop systems virtually no water vapor (0.5%).

The ability of a system to disrupt the flow of air through the vent opening (similar to a water curtain) was determined to be a function of the spray momentum of the system. The spray momentum variable contains both mass (flow rate of the system) and velocity (terminal drop velocity) terms. The terminal velocity of a drop increases with drop size and the mass flow rate of the system is synonymous

with application rate. As a result, high flow rate large drop systems significantly reduced the flow of air through the vent opening causing the fires to be extinguished faster than many of the other systems.

So in summary, lower flow rate small drop systems and higher flow rate large drop systems both performed fairly well during this investigation.

With respect to actual shipboard applications, the ability of the system to disrupt the flow of air through an opening may be unimportant and just an anomaly of this test configuration. The large vent opening in the IMO test enclosure may be a useful safety factor with respect to approving systems but is somewhat artificial. In an actual installation where the machinery space doors are typically kept closed, or are closed just prior to activating the fire suppression system (as is the case with gaseous agents or water mist), the water vapor production becomes the predominant variable. This suggests that the smaller the drops, the better the performance of the system.

To illustrate this point, the results of these tests were used to estimate the capabilities of water spray systems in an actual application (closed machinery space). The extrapolation of these results was based on the assumption that the oxygen/vapor concentrations measured during these tests are representative of what would occur in an actual machinery space. Using these oxygen/vapor concentrations, the expected extinguishment times for fires in closed machinery spaces were determined and expressed in terms of fire size to compartment volume ratio for a range of drop sizes.

TIMOTHY R. COSTELLO, P.E. 

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360 WEST 31ST STREET SUITE 1104
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+1 212 695-6670
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John M. Cholin P.E., S.F.P.E.

J.M.Cholin Consultants, Inc.
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SFPE Announces New Executive Director, David D. Evans, P.E., Ph.D., FSFPE

David D. Evans has been appointed Executive Director of the Society of Fire Protection Engineers. He will join the Society in October of this year from his current position as manager of the Advanced Fire Service Technologies Program in the Building and Fire Research Laboratory at the National Institute of Standards and Technology (NIST). Previous to his present position, Dr. Evans was Chief of the NIST Fire Safety Engineering Division. Recently he has been advancing the understanding of urban fire spread and the resistance of communities to wildfire, developing standards for transfer of building fire alarm systems directly to first responders to increase the safety and effectiveness of fire fighting, and heading the active fire protection systems portion of the NIST investigation of the World Trade Center September 11, 2001 fires and collapse. Dave is the creator and first editor of the electronic publication FIRE.GOV.

Throughout Dr. Evan's distinguished engineering and research career, his focus has been on applying fire science to solve practical problems. He developed the foundations for the first detector actuation model, DETACT, and made critical advances in the understanding and modeling of fire sprinkler performance. He led studies of in-situ burning of oil spills on water that resulted in guidelines for the use burning as an oil spill response method.

Dave has served SFPE and the fire protection engineering profession for over twenty years in various capacities ranging from contributions to the SFPE Handbook, membership on the SFPE Education Committee, to long service on the SFPE Board of Directors culminating in his Presidency of the Society in 1999. In 1998 Dave led the Society in the development of a strategic plan which fundamentally changed its direction toward meeting the needs of the practicing fire protection engineer.

He received his B.S. degree from Case-Western Reserve University and M.S. and Ph. D. from Harvard University and is a registered professional engineer in the District of Columbia.

Meeting Dates/Program 2004-2005

(Programs Subject to Change)

Watch web page concerning cancellation in case of possible inclement weather conditions

Oct. 4	"AS Piping Corrosion" - The Growing Number of Incidents & Methods to Prevent - Mike Kim, PE - fpsCMI
Oct. 19	Annual Fall Technical Seminar - "High Rise Fire Safety" at FM Global Office, Parsippany, NJ
Nov. 1	"NJ Administrative Code 574 - Who Can Touch and Test Fire Protection Equipment"
Dec. 6	"Pharmaceutical Hazards & Loss Prevention"
Jan. 3	"Occupant Alarm Notification" - Issue and Design of Occupant Directed Alarms
Feb. 7	"Risk Management - The State of the Property Insurance Market Place" - Panel of Speakers - Bob Baker, FM Global, Mike Newman, Johnson & Johnson, Brad Hart, Willis
March 7	"Mitigating Earthquake Damage - Reinforcing Techniques"
April 4	"Fire Trailer & Dynamics" - NFSA Fire Burn Trailer & Fire Burn Dynamics
May 2	"Chubb Lab" - Visit and Demonstration of Chubb's Fire Protection Systems Lab in Warren, NJ
June 6	"Annual Meeting/Loss Lessons"

POSITIONS TAKEN BY SPEAKERS ARE NOT NECESSARILY THE POSITION OF THE NJ S.F.P.E.

All meetings are held at the Hanover Manor, Eagle Rock Road, Hanover, NJ (approximately 1½ miles west of Eisenhower Parkway). Get Acquainted Hour 5:00-6:00 p.m. Adjournment is usually before 8:30 p.m. The Executive Committee meets at 4:00 p.m.

Editors Note--If you would like to advertise your company and help offset the cost of this publication, as well as having your business card in front of over 150 Fire Protection Professionals please call John Cholin at (201) 337-8621 for further information. The cost is \$100 for fiscal year.

Seminar - Fuel Oil Systems in High Rise Buildings - October

We have all heard and read that fuel oil systems at the World Trade Center had some level of impact on the collapse of the 7 World Trade building. The NJ Chapter of SFPE will be sponsoring a 1-day seminar on October 19 at the offices of FM Global in Parsippany, NJ. A history of this exposure and proposed protection standards will be just some of the topics presented at this seminar.

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Society of Fire Protection Engineers

NJ CHAPTER

Proudly Announces

TECHNICAL SEMINAR FALL 2004

Tuesday October 19th, 2004

FM Global Office, Parsippany, NJ

HIGH RISE FIRE SAFETY

This is a full day Technical Seminar with presentations by Experts in the field of commercial building and high rise fire and loss prevention and protection.

Highlights

The Fire Hazard of Generator Fuel Supplies in High Rise Buildings.

Joe Janiga PE, FM Global

This seminar will brief on the latest fire hazard to high rise buildings. Joe will go over the fuel hazard at the top and bottom of the buildings and what steps should be taken to limit the hazard and help make the fuel oil distribution and use much safer. This should not be missed.

Building Steel Fire Proofing.

Tim Vellrath, PE, Wesconn, Co.

Tim is an expert in steel fire proofing. He is a consultant on application, inspection and the mechanics of proper design and use of fire proof materials in modern buildings. Fire proofing is often overlooked in building inspections. Tim will brief on this important protection method.

High Rise Fire Safety Coalition

Vinny Fichera, NFSA

Fire Protection in High Rise Buildings in NJ is the focal point of this Coalition of which our Chapter is a part. Vinny will give us an update on where we are going and the goals ahead.

Time : 8:30 am to 4 pm

Place: FM Global

400 Interpace Parkway, Building C -3rd Floor

Parsippany, NJ 07054

(parking at the rear of the building - top deck of parking garage)

Course CEUs will be awarded for those who attend (0.6 CEU/6.0 contact hours).

Coffee and Danish will be served in the AM. Deli lunch served at Noon.

Please Note: Space will be limited to 50 people max.

REGISTRATION FORM

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Price for the seminar is **\$65.**

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Fax: (973) 541-6909

MEETING NOTICE

- Date:** October 4, 2004
- Place:** Hanover Manor
16 Eagle Rock Avenue
East Hanover, NJ
- Price:** In Advance - \$22 At door - \$25
- Dinner:** 5:00-6:00 (Cash bar for mixed drinks)
Dinner at 6 PM
- Speaker(s):** Mike Kim, PE - fpsCMI
- Topic:** "AS Piping Corrosion - The Growing Number of Incidents & Methods to Prevent"

Please note for this meeting:

All officers, directors and committee chairman are requested to attend a meeting at 4:00 p.m. at the Hanover Manor.

PLEASE COMPLETE AND RETURN WITH YOUR CHECK PAYABLE TO
"SFPE NJ CHAPTER" TO:

Vicki Serafin
Affiliated FM
400 Interpace Parkway, Bldg C - 3rd Floor
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ALL RESERVATIONS SHOULD BE RECEIVED BY FRIDAY, OCTOBER 1, 2004. TELEPHONE RESERVATIONS OR CANCELLATIONS SHOULD BE RECEIVED BY NOON OF THE MEETING DAY.



Fusible Link Editors NJSFPE
C/O Rich Reitberger
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400 Interpace Parkway, Bldg. C, 2nd Floor
Parsippany, NJ 07054

2004-2005 Chapter Committees

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