



## Session 1D:

### Alternative Fire Protection Toward Reducing Water Demand

With water resources available for fire protection becoming scarce around the world, there is an increasing demand for new technologies that can protect property with reduced water demand. FM Global undertook a research study to evaluate emerging technologies - SMART sprinklers and automatic water cannon (AWC), alternatives to traditional sprinklers. The objective is to explore reducing water demand for low-piled storage and rack-storage of plastics. SMART sprinklers use detectors (smoke, heat and/or optical) to detect a fire, identify its location and open sprinklers simultaneously to surround and control it. Automatic water cannons generally utilize imaging-based detection to locate a fire source and direct a water stream to control a fire. Large-scale tests demonstrated that SMART sprinklers can reduce the water demand by a significant quantity (>50%) for both high rack storage and low-pile storage, while the AWC showed even further reduction on top of that for the SMART sprinkler. SMART sprinklers were also evaluated for open top combustible containers, which revealed potential to protecting this very challenging fire hazard.



#### Stanislav Kostka

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Stanislav Kostka is currently a Senior Research Scientist at FM Global in Norwood, MA. He joined the company in 2017 as a member of the water suppression team within the Fire Hazards and Protection Research Group. In this role, Stanislav has led several tests to develop improved fire protection approaches and requirements in support of FM Global's Chief Engineer's Group, Innovation Team and FM Approvals.

Prior to joining FM Global, Stanislav worked in the aerospace industry. He was a Senior Engineer at Pratt and Whitney and a Senior Research Engineer at Spectral Energies working with the Air Force Research Laboratories (AFRL). At Pratt and Whitney, he was involved in the design of gas turbine combustors for military applications. While at Spectral Energies, Stan led experimental efforts related to gas turbine combustion and the development of advanced laser diagnostics.

Stanislav holds a B.S. and Ph.D. in Mechanical Engineering from the University of Connecticut, where he specialized in thermal fluids and combustion laser diagnostics. He is a member of the National Fire Protection Association (NFPA), the Society of Fire Protection Engineers (SFPE), and the Optical Society of America (OSA).

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