Enhancing Firefighting Efficiency on Water Mist Technology: Advancements in Mobile Systems and Nozzles.

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Abstract

Water mist technology is a promising firefighting solution, efficiently suppressing fires while minimizing water use and collateral damage. We examine advancements in mobile water mist systems, emphasizing the impact of different nozzle systems on droplet distribution and overall effectiveness in varied scenarios. Spray characterization measurements performed using Phase Doppler system operate as follows: particles scatter light from two intersecting laser beams, as they pass through the intersection, interference fringes form, causing the particle to reflect a modulated optical signal due to its velocity. Two receivers placed appropriately gather and compare the modulated optical signal, determining its phase shift. The frequency correlates with the particle velocity, while the phase shift of the signals received by the detectors corresponds to the particle diameter. The study explored the profound impact of various factors on droplet distribution, size and velocity. Through meticulous experimentation, divergent outcomes emerged as a consequence of manipulating pressures, nozzle types, diameters, and materials of the nozzles. Each variable wielded a unique influence, shaping the trajectory of droplets with precision.

KEYWORDS: water mist, nuzzle, drilling