TECHNOLOGY

Wet Gas Temperature Measurement Probe

OVERVIEW

Current technology makes it difficult to accurately detect hot gas temperature when the hot gas is laden with water droplets. The droplets tend to deposit on detecting surfaces resulting in evaporative cooling that causes inaccurate measurement of the gas temperature. For example, this problem is particularly evident in fire sprinkler arrays installed in buildings to protect against fire. When a fire occurs the sprinkler closest to the fire location typically activates first, releasing water droplets into the rising plume of hot gases. Some of these droplets are entrained by the plume and impact on adjacent sprinklers providing evaporative cooling that counteracts the heating from the hot gases, thus increasing the time required by the adjacent sprinklers to activate.

Researchers at the University of Maryland have developed a novel probe for accurately measuring hot gas temperature and volumetric water fraction. The probe has been designed to be unaffected by the evaporative cooling phenomenon and has a broad range of applications.

In addition to the measurement of gas temperature in a hot gas laden with water droplets, the probe enables the determination of water volumetric fraction. At present only very sophisticated, expensive laser optical techniques are capable of providing this information, requiring massive amounts of data collection to establish a sufficient statistical basis. The new probe would achieve similar results at a fraction of the cost while providing an instantaneous measurement of the water volumetric fraction.

For further information, please contact the Office of Technology Commercialization, (301) 405-3947, E-mail: otc@umd.edu.

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EXTERNAL RESOURCES

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