

An Experimental Study on the Optimum Installation of Fire Detector for Early Stage Fire Detecting in Rack-Type Warehouses

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Abstract : Rack type warehouses are different from general buildings in the kinds, amount, and arrangement of stored goods, so the fire risk of rack type warehouses is different from those buildings. The fire pattern of rack type warehouses is different in combustion characteristic and storing condition of stored goods. The initial fire burning rate is different in the surface condition of materials, but the running time of fire is closely related with the kinds of stored materials and stored conditions. The stored goods of the warehouse are consisted of diverse combustibles, combustible liquid, and so on. Fire detection time may be delayed because the residents are less than office and commercial buildings. If fire detectors installed in rack type warehouses are inadaptable, the fire of the warehouse may be the great fire because of delaying of fire detection. In this paper, we studied what kinds of fire detectors are optimized in early detecting of rack type warehouse fire by real-scale fire tests. The fire detectors used in the tests are rate of rise type, fixed type, photo electric type, and aspirating type detectors. We considered optimum fire detecting method in rack type warehouses suggested by the response characteristic and comparative analysis of the fire detectors.

Keywords : fire detector, rack, response characteristic, warehouse

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