

Performance Analysis on the Smoke Management System of the Weiwuying Center for the Arts Using Hot Smoke Tests

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Abstract : In this study, a series of full-scale hot smoke tests has been conducted to validate the performances of the smoke management system in the WWY center for arts before grand opening. Totalled 19 scenarios has been established and experimented with fire sizes ranging from 2 MW to 10 MW. The measured ASET data provided by the smoke management system experimentation were compared with the computer-simulated RSET values for egress during the design phase. The experimental result indicated that this system could successfully provide a safety margin of 200% and ensure a safe evacuation in case of fire in the WWY project, including worst-cases and fail-safe scenarios. The methodology developed and results obtained in this project can provide a useful reference for future applications, such as for the large-scale indoor sports dome and arena, stadium, shopping malls, airport terminals, and stations or tunnels for railway and subway systems.

Keywords : building hot smoke tests, performance-based smoke management system designs, full-scale experimental validation, tenable condition criteria

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