The air pressure gauge and the fan may supplant rubber boots and the fireman’s helmet as symbols of fire fighting. That seemed to be the trend here today as modern methods of fighting fires in high rise buildings were described at the annual meeting of American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE).

William A. Schmidt, research project supervisor at the Veterans Administration, Washington, D.C., told a symposium at the meeting that exhausting smoke and gases from the site of a fire and increasing the air pressure in the areas surrounding the blaze is an effective fire-fighting tool. He said that a new building’s air-conditioning system could be designed to perform this function at minimal extra cost. But, he added, the cost of modifying an existing structure would be more expensive. It would depend on the kind of air-conditioning system in the building.

Mr. Schmidt, chairman of ASHRAE’s technical committee on fire and smoke control, maintained that smoke is the villain. More people die from smoke and gas generated by fires than from the flames themselves, he said.

Studies of fire fatalities in Maryland by Byron Halpin of the Applied Physics Laboratory, Johns Hopkins University, Silver Spring, Md., show that 70% of all deaths are from smoke inhalation.

“I personally feel that the old method of stopping all air systems (for heating, cooling, and ventilating), closing all dampers, and praying won’t work,” Mr. Schmidt declared. In many communities local law requires that all such systems be turned off immediately in the event of a fire.

Fires in hotels and other buildings with multi-story atrium spaces present a special problem of fire control, according to Paul R. DeCicco and Robert J. Cresci, professors at the Polytechnic Institute of New York. But such fires can also be fought with air pressurization. Pressure should be built up in the atrium space just enough to compensate for leakage from doors, windows, elevator shafts, and other apertures, they declared. Their paper described experiments using a scale model of large hotels with towering lobbies.

The third speaker, William A. Webb, vice president, Rolf Jensen & Associates, Inc., of Deerfield, Ill., argued that additional research work on air pressurization as a fire control technique was needed. He also said that vertical smoke shafts or a smoke port on each floor of a tall building might solve the problem.

Richard E. Masters, of Jaros, Baum & Bolles, New York, was chairman of the symposium.

There was disagreement over the efficiency of automatic sprinklers in fire control. After several recent fires, the Port Authority of New York and New Jersey decided to spend $5,000,000 to install these devices in the World Trade Center. It was argued, however, that since 155° F heat is required to melt the lead link in the sprinkler heads, such equipment would in many situations be ineffective.

A fire in a waste basket or certain kinds of plastics fires may produce acrid and sometimes fatal smoke, but not enough heat to activate the sprinklers.

Mr. Schmidt said that ultimately smoke detectors instead of heat will turn on sprinklers but many of these cannot now distinguish between cigarette smoke and the smoke of a real fire.

The researcher told the audience of studies in six VA hospitals in which sulphur hexafluoride — an odorless, colorless, harmless gas which is used as a tracer — showed how smoke and gases generated by fires travel through a building. According to Mr. Schmidt, the tests showed that:

• Fire barrier doors do not prevent the spread of smoke and gas.
• If elevators must be used to evacuate people from a building or to carry firemen to the site of the fire, elevator controls must be designed or upgraded to make these uses possible. And the elevator shafts must be pressurized to keep smoke out of them.
• Smoke spreads freely through most buildings, and therefore designers should be urged to take smoke and fire control into consideration when the building project is in the concept stage.

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Exhausting smoke and gases from the site of a fire and increasing the air pressure in the area is an effective fire-fighting tool.

Smoke is the culprit