Is Something Cooking?

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A very costly fire recently occurred at an Air Force installation — a fire that involved a "special range-top fire extinguishing system." While the official investigation results have not yet been released, it's clear that many installations could benefit from a review of the special requirements for such systems. Headquarters Air Force Civil Engineer Support Agency has also issued A-Gram 08-01, "Special Range-Top Fire Extinguishing Systems," which addresses ensuring system operability.

When and Where to Use the Systems

The Life Safety Code (NFPA 101) and the International Building Code classify all cooking equipment as "commercial" whenever it is not located in a residence (e.g., military family housing, dormitory rooms, or temporary living facilities). Therefore, any range — even one specifically manufactured for residential use — installed anywhere else (e.g., a dormitory common room, office building break room, chapel kitchen, or a cooking classroom) must be protected from fire with a range-top fire extinguishing system. Unified Facilities Criteria 3-600-01, *Fire Protection Engineering for Facilities*, allows the system to be an approved "residential range-top extinguishing system" if it's protecting a residential-type range. If it's not, a listed system for protecting commercial cooking must be installed.

Note that residential-type range top extinguishing systems are not authorized for new installations in dwelling units. Existing systems in dwelling units may remain to the end of their service life but should not be replaced (see UFC 3-600-01).

Several installations have identified residential-type ranges that were installed as "self-help" projects — without including the required range-top fire extinguishing system. These installations now have several options: 1) remove the range entirely; 2) install a range-top fire extinguishing system (typically costing about $1,000); or 3) if the range is electric, retrofit the range with fire safety range elements (burners) (costing about $250 per range).

This third option will be new to most Air Force installations. AFCESA has identified one commercial retrofit product that provides a level of fire protection essentially equiva-

Range-top fire extinguishing systems such as the one at right are installed above the range. (Note that the safey pin is out, which means the system is ready to deploy when needed.) The system's fusible links and nozzles are installed in the range hood (far right).
(photos by Mr. Guy Ivie)

Fire Safety Concerns with Special Range-Top Fire Extinguishing Systems

lent to a residential-type range top extinguishing system (with a side benefit of reducing energy consumption). The retrofit product adds a thermocouple under each burner along with a control circuit that prevents any burner from exceeding the maximum needed cooking temperatures. There still is plenty of heat for cooking, even when cooking on the "high" setting, but the retrofit system compensates for the causes of most cooking fires experienced by the Air Force: unattended cooking and combustibles exposed to the burners. A qualified electrician can install the unit in about one hour without any special training. The system is patented and, at this time, is sold by only one company. (Contact the author for more information.)

Residential vs. Commercial Systems

A residential-type range top extinguishing system shares several characteristics with a commercial-type system: both discharge fire extinguishing agent on the fire, activate the building fire alarm system, and automatically shut off all sources of fuel and electric power to the range. There are two major differences between them: residential-type extinguishing systems do not require an approved hood and exhaust duct, and the initial and annual costs are much, much less.

System Maintenance

Residential range-top extinguishing systems require annual maintenance, primarily to replace the fusible links. The links are directly exposed to heat from cooking and can gradually weaken over time, which might result in an unnecessary system discharge that causes a building evacuation, fire department response, and an expensive clean-up. After replacing the fusible links, it's very important to check that the system's safety pin has been removed to place the system back into operation (see A-Gram 08-01).

Who should do this annual maintenance? The installations with the best record of performance are those with these systems included in their maintenance contracts. However, the individual building manager of each facility is ultimately responsible for annual inspection and maintenance.

For additional information, please contact the author through the AFCESA Reach-back center at 1-888-AFCESA1 (DSN 523-6995) or afcesar@tyndall.af.mil.

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