

Fire Engineering[®]

Construction Concerns: Energy Conservation Systems

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By Gregory Havel

For www.fireengineering.com

Photos by author.

Energy conservation systems were developed in the 1970s, when the price of energy (electricity and fuels) increased so rapidly that it became a fiscal necessity to shut off lights and reduce the heating and air-conditioning needs in unoccupied spaces in buildings.

Photo 1 shows one type of early energy-saving device that is still in common use today because it is required by building and energy efficiency codes. This device installs in a single-gang light-switch box and incorporates a motion sensor and a timer. When a small office or washroom is occupied, the device turns on the lights.

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(1)

After a few minutes, if no activity is detected, it turns off the lights. If the room is occupied and the lights go out they can be turned back on by waving at the sensor. It is also possible to use the square push-button to operate the lights manually.

Photo 2 shows another type of motion sensing device that is commonly used in larger spaces like classrooms and open office areas and which is usually mounted on the ceiling, usually controls the lights in the room, and sometimes reduces the ventilation and heat or air conditioning in the room when it is unoccupied.

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(2)

Photo 3 shows a modern type of light switch that is being used in hotels and some office buildings. This type of light switch is installed at the entrance to an office or a hotel room. Lights and heating, ventilation, and air-conditioning (HVAC) are activated by inserting the door's key card (or, in some cases, the employee's photo ID) in the vertical slot next to the switch. When the employee's card is removed from the slot in the switch, the room lights are turned off after a short time delay and the ventilation and HVAC are reduced to a preset "unoccupied" setting.

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(3)

These first two energy conservation devices should be of interest to firefighters since lights and HVAC may be activated or deactivated independently of the manual switches that we may flip when entering a room. Even if the lights do not go on when we flip the switches, the fixtures and wiring may still be energized.

The third type of device should be of interest because lights and HVAC controls may not work when we are searching an area, but they may still be fully energized and waiting only for the insertion of a key card or a short circuit from fire within a wall overheating control cables. If the space we are searching has this type of device, and the lights and HVAC suddenly turn on without any action on our part, this could suggest that there is fire or products of combustion in a concealed space, creating more problems than we may have anticipated.

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Gregory Havel is a member of the Town of Burlington (WI) Fire Department; retired deputy chief and training officer; and a 30-year veteran of the fire service. He is a Wisconsin-certified fire instructor II, fire officer II, and fire inspector; an adjunct instructor in fire service programs at Gateway Technical College; and safety director for Scherrer Construction Co., Inc. Havel has a bachelor's degree from St. Norbert College; has more than 30 years of experience in facilities management and building construction; and has presented classes at FDIC.

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