

# The Critical Nature of Controls ...

and the crucial role designers play in ensuring comfort, health, and safety

By LARRY FELKER • Belimo Aircontrols (USA) Inc. • Danbury, Conn.

**T**he complex interaction of controls and equipment in modern buildings requires coordination at the design level. The initial design, commissioning, and technical review of sequences of operation must reflect the designer's intent. It is the designer who must verify that controls are right, from overall design down to control sequences. The stakes are high and, it seems, getting higher.

In commercial and institutional buildings, such as schools, frequently high population densities create atmospheres rife with potentially harmful communicable diseases, allergens, and irritants. In hospitals, laboratories, and research facilities, the potential for transmission of airborne contaminants is much greater, contaminants can be much more potent, and occupants, including research animals, can be much more sensitive.

Regardless of the environment or location, temperature and humidity controls are needed. These not only affect worker productivity and tenant satisfaction, but keep structures and furnishings from getting wet and growing mold.

In addition to environmental control, life-safety requirements exist in every building. Smoke from a building fire must be removed from occupied areas. Further, dangers posed by extraordinary hazardous events must be recognized and plans to mitigate death and injury put into effect.

Security is another issue, as access must be restricted both to keep occupants from entering

dangerous areas and to keep out criminals.

Environment. Life safety. Security. Controls are needed for all and, in many cases, are required to be integrated to allow monitoring and response from a single workstation.

These days, designers frequently are working under time and budget constraints. As a result, many design details are left to controls contractors. However, controls contractors tend to be specialists. They may know their products and how their products control equipment, but may not know, for example, the conditions under which certain equipment should not operate. Complicating matters is that coordination among specialists does not always occur. For example, smoke alarms and outside-air intakes typically are installed by different contractors and controlled separately. The specifications are written by different disciplines, although they may be generated by separate departments in the same engineering firm. These systems must be connected so that if a fire breaks out, proper action will be taken. Typically, air handlers are shut down. However, firefighters may need to evacuate smoke and be able to override air-handling units. This needs to be detailed in specifications and coordinated by contractors.<sup>1</sup>

Too slow of a control response can cause uncomfortable conditions near an entrance. Too rapid of a response can move a damper while a door is closing and hold the door open, thus lengthening the time a zone is out of control. Design engineers should dictate how systems are handled, rather than let contractors decide.

The trend among designers to leave controls details to controls contractors is not in the best interest of public health.

## NOTE

1) See the January 2005 Control Freaks column, "Control Specifications: Ask for What You Need; Enforce What You Ask For," by David A. Sellers, PE.

*Larry Felker is a product manager for Belimo Aircontrols (USA) Inc.; a member of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Technical Committee (TC) 1.4, Control Theory and Application; and a corresponding member of ASHRAE TC 5.6, Control of Fire and Smoke.*



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