Let There Be Light
The Evolution of Columbia’s elevator light curtain

by Ralph M. Newman

Virtually everyone who has ridden an elevator over the past several decades knows the feeling of his or her person, children, pets and/or possessions being annoyingly bumped by an automatic door that withdraws upon contact by the mechanical shoe, or buffer, at the door’s edge. Many people take advantage of the way these work by using them to hold the car for delayed passengers or to load/unload belongings on a particular floor, inconveniencing others up and down the line.

Columbia is not in the edge-selling business, but rather in that of edge design, development and manufacturing.

Developed with the advent of automatic elevator doors, these mechanical door edges were designed to help prevent injury to slow-moving passengers as they entered and exited the car and to help avoid litigation from possible harm caused by doors as they closed. While they largely fulfilled their intended purpose, they were not without limitations and problems. These systems relied entirely on direct contact, while the doors, which were quite heavy, were often slow to stop and change direction. Injury, property damage and litigation were vastly reduced but not entirely eliminated. Equipment failure due to constant, rugged use and abuse was not uncommon. An alternative method of presence detection needed to be found, avoiding direct contact and its inherent problems.

An early approach was the addition of so-called “electric eyes” — one- or two-beam systems that shot light across the opening a few inches above the floor — that worked along with the mechanical door edge to help eliminate direct contact with doorway obstructions. These did help catch many obstructions, but, since they did not protect the entire opening, the requirement remained for direct contact with the mechanical edge to protect the balance of the opening.

“The modern solution is light curtains,” says L.J. Blaiotta, president of Columbia Elevator Products Co. Inc., continuing:
Light curtains are a much more certain and safe way to detect a presence, since they entirely eliminate physical contact and instead function by reacting to unbroken/broken beams of infrared light across the pathway of the elevator door. This technology enables passengers to enter and exit the car at their own chosen speed, within limits, while keeping the doors open as long as the beams remain intercepted. Should passengers take an excessive amount of time, however, a buzzer or other signal can be included to encourage passengers to move in or out of the elevator. The system can also be equipped to regulate the speed of the doors and the pressure with which they close. In addition to the safety and comfort they provide, light curtains, since they are much less mechanical, can significantly reduce ongoing maintenance time and costs and prolong the life of the elevator.

As awareness and demand for light curtains took hold, Columbia began receiving requests from convenience-seeking customers to ship its products with this newer technology already installed. At first, Columbia was not inclined to fulfill such requests, since, according to Blaiotta, “we were making only doors.” But, he explained:

“As we entered the door-operating business with our 2007 acquisition of Kansas-based Elevator Solutions, we began providing light curtains as part of the door-operator/light-curtain ‘mini-packages’ that our customers were increasingly requesting for a one-stop-shopping advantage. This was a natural progression for us, from offering only entrances and doors, to then adding cabs, then operators and, finally, light curtains, and made us into the only domestic independent manufacturer able to provide this architectural product configuration and service.”

Columbia’s first step into light curtains was with residential products, using its ALURE® operator product line. Why the initial start with residential rather than commercial? Blaiotta explains:

“Because the residential elevator companies fairly suddenly developed an immediate need. During their first several decades in the business, with no requirement to install power-operated..."
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— L.J. Blaiotta, president of Columbia
included in Columbia’s door/operator/light-curtain package. Today, according to Blaiotta, the company is not in the edge-selling business, but rather in that of edge design, development and manufacturing. To service other manufacturers wishing to order these edges in volume to supply to their own customers, Columbia has assigned exclusive global distribution rights to SCS Elevator Products Co. of Red Wing, Minnesota. According to SCS Business Development Manager Kevin Rippentrop, the company provides two distinct distribution programs: one for OEMs requiring volume and another for independent elevator companies.

Rippentrop explains:

“When we sell volume to an OEM, we’ll be told, for example, that it wants them all in 24-V configuration, and we’ll design the product specifically to work with the OEM’s power supply, door operator, etc. When, on the other hand, we sell to an independent, we make it universal so that it works with everybody’s product. The shape is the same in both cases, but the products are configured differently for each sector.”

Concludes Blaiotta:

“Our ‘better mousetrap’ quest has turned into a very popular solution, and we see demand for our mini-bundles growing rapidly. We’ve ended up with an ‘enlightened’ solution to this aspect of elevator safety: an easy-to-fasten, universal holder and a light curtain that is vandal-resistant, waterproof and multi-voltage, with self-diagnosing LEDs and 154 beams of infrared light for object detection. To the best of my knowledge, all this is unique to the industry.”

**Ralph M. Newman** has written for ELEVATOR WORLD over the years and is a freelance writer with extensive experience in the elevator industry. Newman is a partner in Dott Communications, an Internet development company and advertising agency with several clients in the field.