



Wiremold

Design Trends in Wire and Cable Management Systems: Information Technology Spurs New Solutions

The single largest trend affecting wire and cable management systems is the explosive growth of information technology and the increased reliance of businesses and institutions on high-performance data/com cabling. Many leading manufacturers now report that more than half of their market for raceways and other systems is for data/com applications. As a result, manufacturers are developing new products and system enhancements that are taking these systems well beyond their humble origins.

Wire and cable management systems date practically to the dawn of the electrical age, when someone needed to run wire where concealing it was impractical, such as a brick wall. The solution was the raceway: a narrow metal channel that enabled wire to be run across rather than behind a surface. While this development expanded wiring capability, it also contributed to the view that raceways were something of a last resort, to be installed only when there was no other way to get wire where it was needed. This restrictive view has changed with the development of new wire and cable management solutions.

Design objectives

The rapid development of communications technology shows no sign of slowing down any time soon. What's more, people are working in ways -- and spaces -- that were unimaginable just a few years ago. Today's workspaces are designed for maximum communications capability and flexibility in the smallest space. They feature open and highly visible office landscapes with minimal restrictions on the placement of workstations and office furniture. Thus, the link between workstations and data/com networks is critical.

A variety of wire and cable management systems are available to manage, organize, protect, and connect the cabling infrastructure. These systems also enable communication and collaboration to take place anywhere, and they provide vital flexibility so that physical space can keep pace with changing business needs. These systems include:

Open space systems, such as floor boxes and poke-thru devices, serve areas that are not adjacent to partitions. Furniture-feed poke-thru devices can be precisely located within open spaces to provide direct feeds of power and data/communications into

modular office furniture. New-generation poke-thru devices also incorporate a variety of video, audio, and control connectors, as well as active modules such as VGA line drivers, audio buffers, and twisted pair transceivers.

Perimeter systems route wiring and cabling securely along walls. These systems are often specified for conference rooms, offices, classrooms, and training centers. Unlike with conventional conduit, cabling that is laid into a perimeter system remains easily accessible at all times. These systems are also easy to expand or reconfigure.

Overhead systems offer a high degree of flexibility, both in terms of locating the components and accessing the cabling contained within them. Cable trays are available in a variety of styles, including wire mesh, center spine, solid bottom, and ladder. Although cable tray was historically installed above drop ceilings, it is increasingly showing up in open ceiling applications.

Vertical distribution units are an aesthetically pleasing way to bring power and data/communications from the ceiling directly into workstations. Combined with an overhead cable tray horizontal distribution system, they can be used with modular furniture or for stand-alone access to power and data/communications. These units conceal wiring and cabling without the visual clutter of earlier generation service poles.

Tabletop modular outlet centers provide convenient access to power and data/communications on desktops, task tables, study carrels, and lecterns. Available in a variety of styles, including recessed and pop-up, these convenient units form the link between portable and networked computing.

High-performance cable

The trend toward high-performance copper and fiber optic cabling impacts the design of wire and cable management systems in several ways. Chief among these is the need to ensure the integrity of data transmission by maintaining the specified cable bend radius. Specialized fittings are now available for raceways and other wire and cable management systems that maintain a minimum cable bend radius and prevent damage and loss of cable effectiveness.

With the increasing demands of emerging technologies like 10 G/s Ethernet, it is more critical than ever that every aspect of the structured cabling system, including pathways, be designed to ensure the highest channel performance. Raceway systems, for example, need to ensure that the minimum bend radius specific to 10 G/s cable is maintained throughout.

Providing enough room to accommodate bend radius must be balanced with the desire to make the cabling infrastructure as visually unobtrusive as possible. This balance is impacted by a requirement that power and low-voltage channels be physically separated to eliminate the effects of electrical fast transient (EFT) disturbances. The required separation in raceway systems imposed certain design restrictions that limited

the placement of receptacles and data jacks, and reduced a raceway's capability to meet bend radius requirements. A new raceway design maintains complete separation of services while offering improved function and flexibility. It features crossover fittings that maintain required separation while providing greater space within the raceway to accommodate the bend radius of larger diameter 10G/s cable.

Aesthetics

Today's wire and cable management systems are designed to be aesthetically pleasing as well as functional. New generation nonmetallic raceways feature eye-pleasing profiles and are available in a wide range of colors. Specialized materials such as stainless steel, a wide range of color options, and device plates that hide cover seams have improved the aesthetics of metal raceways. System components that are commonly used together, such as raceways and information outlets, are color matched and manufactured for a seamless look.

The push for improved aesthetics is also seen in systems that offer flush and recessed activations that are very nearly invisible. Poke-thru devices, for example, offer receptacles and data/com ports in unobtrusive flush profiles. High-capacity service activations accommodate more outlets, making them less obtrusive than older, low-capacity fittings.

Conclusions

Much of the impetus for new wire and cable management products and systems continues to be driven by the need to effectively manage increasingly complex data/com requirements in business and institutional environments where flexibility is a paramount concern. Manufacturers have responded to the growing importance of information technology with wire and cable management solutions that accommodate all data/com cabling, including new 10G/s cabling, ensure maximum operational and systems flexibility, and enhance workplace aesthetics.