

Integrating Cable Pathways in Advanced Insulation

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Spray polyurethane foam (SPF) experts are used to solving problems, not creating them. Spray foam insulation experts deliver value every day for energy-saving building- and homeowners now that energy efficiency and green building practices have become popular trends across all divisions of construction projects. It may then come as a surprise that, without a simple change in installation practices, the spray foam that has provided great satisfaction to forward-thinking customers may inevitably lead to pockets of discontent.

When the time eventually comes to modify or add theater components, computer network wiring, security systems, or many other wired subsystems, solidified foam insulations may make cabling upgrades or changes a major challenge. However, with preparation, a change in practices, and open communication between customers and contractors, spray foam experts may be able to extend their service offering, bring relative peace to trade conflicts, and avoid future wiring problems for building- and homeowners.

As practitioners in the SPF industry widely know, filling the stud cavities between external and internal walls with foam reduces air transfer and minimizes convection. Filling the walls also locks in place installed wires and makes it difficult to add or upgrade them. As long as customers never want to change their wires, they'll never have a problem. Telling them, though, that they have no choice in the matter other than to pick today's most advanced cabling is not practical. Things evolve. They already have.

Not All Wires Are Created Equal

There are significant differences between power cabling (e.g., line voltage) and the low voltage cabling that supports voice, video, data, and security applications. Line voltage cabling is subject to the standardized capacity metered out by the electric utilities to feed appliances at constant rates. It rarely changes. With low voltage, though, being able to improve the capacity of the wires for higher data throughput is not only desirable, but may be required for more sophisticated data appliances in the months and years to come.

Unlike line voltage cables, low voltage cables have a shorter lifespan and become obsolete earlier. Line voltage wires, which carry alternating current to electrical outlets within the walls, are standardized and unlikely to change for as long as the building or home is in use. Line voltage wires are strung together or "daisy chained" to create circuits. Most low voltage systems, however, use a "home run" or star topol-



ogy, where each outlet is connected directly to a patch panel or consumer electronics device. If not properly coordinated with each other, line voltage wires can interfere with data signals carried by low voltage cabling. This means that generally, low voltage wires must be installed perpendicular to line voltage cables to minimize signal interference.

Low voltage wires and cables used to support data transmission in consumer electronics also tend to change with technological advancement and require upgrading numerous times within the normal lifespan of most buildings and homes. The inevitable progress in consumer electronics will drive in-home cabling upgrades.

Cabling change is sure to come.

Opportunities for SPF Experts

Even though line voltage and low voltage wires differ in the rates at which they become obsolete, many contractors in the residential market don't seem to approach their installation differently, even on projects where the wires will be surrounded with foam. In many construction projects, wire and cable instal-

lation is managed by a single electrical contractor prior to the SPF experts arriving to insulate the home. Wires and spray foam insulation then compete for the same space within the walls. Trimming expanding foam can potentially damage exposed wires and cables. This can negatively impact the construction schedule, cause animosity, and create unnecessary cost overruns.

By offering and installing in-wall cable pathways, SPF experts may limit risks of wire damage, extend their product and service offering, and reap the rewards of solving a long-term problem for customers. Currently, SPF contractors incur uncompensated labor hours and resources in advance of the spray foam application, in the process of protecting construction elements from overspray. By offering and installing in-wall cable pathways during the prep phase of projects – after the framing and exterior walls are up but before the electricians and electronic service contractors run their wires – SPF applicators can turn this “expense activity” into a significant revenue generator while avoiding the risks of damaging wires when trimming excess foam.

Wires Shielded From Damage and Difficult Upgrades

When in-wall cable pathway systems are installed prior to the addition of line voltage and spray foam insulation, these pathways accommodate both foam insulation and changes to cabling, simply and cost-effectively.

There are many types of cabling systems. It is important for the SPF installer to understand the available cable pathway options to determine which products provide the best balance of installation ease and long-term cabling flexibility. Some common types of cabling systems include metallic conduit, non-metallic rigid conduit, flexible non-metallic raceway, and modern geometrically optimized in-wall cable pathway systems. There are also exterior solutions, but after selecting wall treatments, the last thing a building- or homeowner generally wants to do is add unsightly surface-mount raceways to hide cables that could have been more suitably hidden behind the walls.

When selecting pathways, it is important to choose systems that allow building- or homeowners to place outlets from floor to ceiling, before or after drywall or expensive wall treatments are in place. In-wall cable pathway systems help to capture nearly all the future cabling upgrade installation costs at the time of construction or renovation. Without such systems, there are many additional expensive risks of adding cables later: drilling, wire fishing, insulation displacement, cable installation, wall damage, wall repair, and redecorating. Cable pathways should also allow electricians to install line voltage wires permanently and horizontally in a daisy-chain manner while permitting low voltage cables to be installed perpendicularly to support best performance.

Once installed, in-wall cable pathways encourage low voltage cabling upgrades without disturbing insulation. By combining pre-installed pathways with advanced insulation, a business- or homeowner may have an energy-efficient building and enable future wiring decisions without compromise. Combining in-wall pathways with energy-efficient foam insulation may reduce the total cost of ownership and maximize satisfaction for customers. These technologies can offer the possibility of lower energy consumption and easier cabling upgrades.

By looking beyond insulation, SPF installers may add value for building- and homeowners, significantly expand their service offerings, minimize trade conflicts, and significantly grow their businesses. **SF**

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