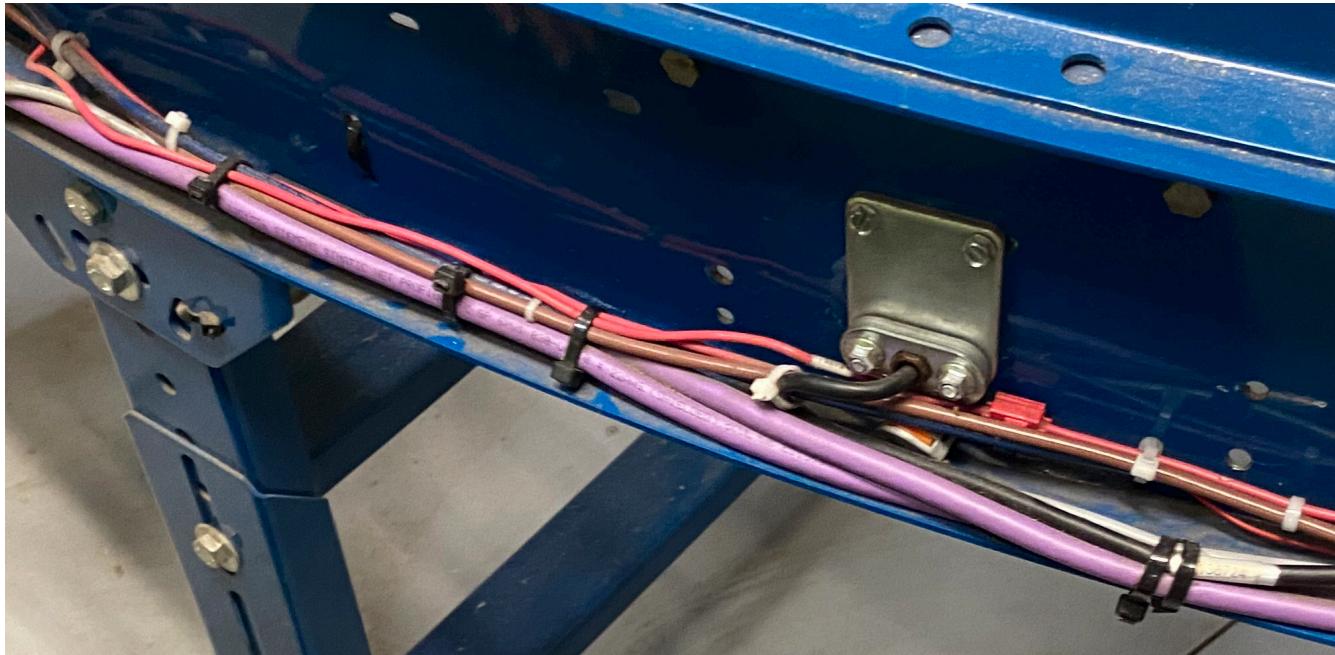




BEST PRACTICES IN WIRE MANAGEMENT

Wire routing for industrial automation and machine builders

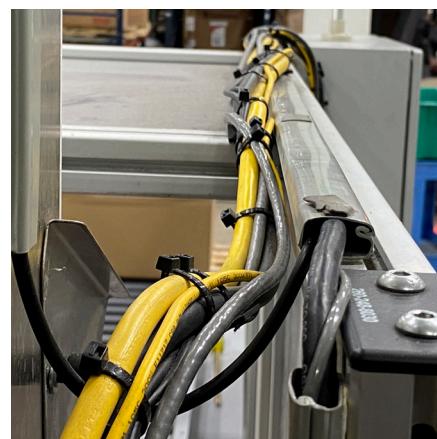


Let's get wire management under control

Wire management along and in between the devices in industrial automation environments has no agreed-upon standard. That can spell trouble for assemblers, installers, systems designers, MROs and EPCs. Aside from a handful of popular fastening products, the hands-on folks use varying techniques to interconnect these systems. There's ...

- ✗ No authority to consult.
- ✗ No code book to ensure safety.
- ✗ No routing standards to prevent premature failures or simplify future upgrades.
- ✗ No industry-specific approach to address the unique challenges in industrial automation.
- ✗ No naming conventions to describe wiring routes.

In other words, the lack of wire management best practices presents the potential for serious consequences.

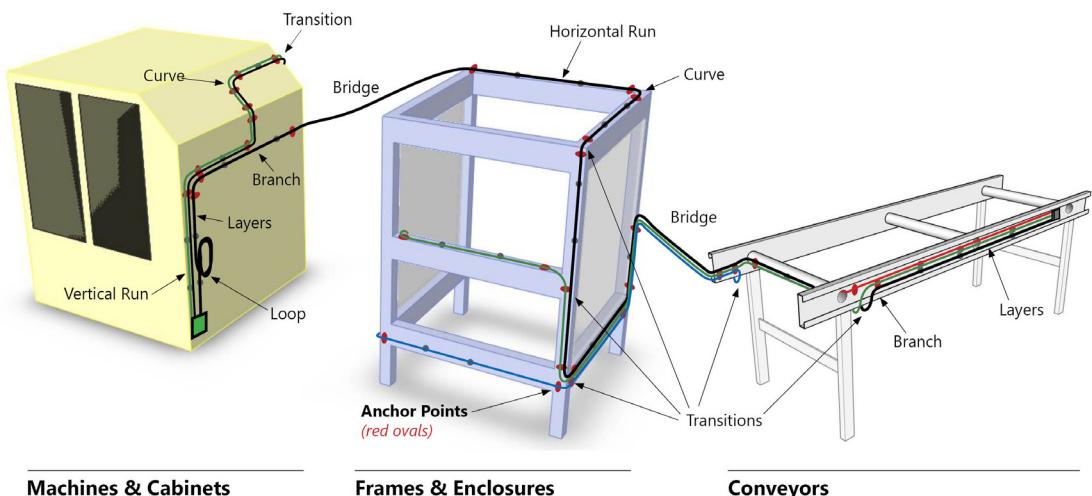


Here's a unique solution

The total solution for wiring your automation equipment includes understanding the automation space, agreeing on a universal routing language, having product expertise and being able to recommend the optimal routing possibilities.

HellermannTyton has become synonymous with industrial wire management solutions. So, we did it – created a best-practices landscape for the industrial automation environment, defining the best in safety, aesthetics, efficiency and upgradability.

Here's how it works.



Terminology

- 1) Horizontal run** – a wire pathway following the plane of the floor.
- 2) Vertical run** – a wire pathway traveling up or down.
- 3) Curve** – a wire pathway that changes direction along the same plane. Care must be taken to maintain a bend radius that won't stress wires, particularly optical cables. Anchor points are located at each end of the curve to control routing.

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- 4) Transition** – a wire pathway that bends from one face to an adjacent face. This can result in bends and twists, and adequate mounting should be used to respond to the stiffness of bent cables.
- 5) Bridge** – a wire route that spans a gap between two structures, leaving an unsupported pathway in between. Note any motion from attached equipment and whether the gap is prone to contact from operators or vehicles. This will determine how to properly anchor the cabling before it leaves the equipment.

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- 6) Branch** – the point where a group of wires or cables split in different directions. At the branch, pressure is increased due to resistance from bending wires and their insulation, so adequate mounting should be considered.
- 7) Anchor points** – the first point of connection on either end of a bridge or curve, where pull stress is at its highest.

The infrastructure



Machines and Cabinets

Machines and cabinets are mostly made up of flat, metal surfaces that can run horizontally, diagonally or vertically. Most wire routing will be attached to these surfaces to keep loose conductors from getting caught or snagged.

Where wiring must cross a transition point, attention should be given to anchor points just before and after for routing integrity. If mounts are used along front and side surfaces, use an adequate number of them spaced appropriately to bear the weight of the bundle while accounting for movement due to vibration.



Frames and Enclosures

Frames and enclosures use posts (vertical) and beams (horizontal). Their aluminum construction precludes the use of magnetic fasteners. However, T-slot channels throughout provide a secure method of anchoring wire runs.

Wiring tends to run along the channels, so T-nuts and twist-in mounts tend to be the preferred method to manage cables, as these fasteners can be moved if necessary. Adhesive mounts are only used where a channel isn't available for needed routing.



Conveyors

Conveyors represent motion in the automation workspace. Since items move along the roller surface, wiring must be carefully mounted and routed out of the way – typically along the sides, which are also known as channels.

There are no standard wire management mounting hole sizes for conveyors, so cable ties are typically inserted through holes in conveyor channels. Constant movement and impact will contribute to vibration wear, so we recommend industrial grade cable ties from HellermannTyton versus big-box retail products to avoid wire management failure and also to protect against wires abrading against metal surfaces.

The solutions

Now that we're speaking the same language, we have identified and recommend solutions that meet the specific needs of the areas above.



Cable Ties

We've developed Wire Management Kits that include the ideal selection of cable ties for industrial automation. Many styles are offered with included fixtures such as edge clips, hole mounts, etc. for added convenience.



Cable Tie Anchor Mount

A heavy duty solution for mounting cables and wires to a surface using a screw or bolt. A cable tie gets threaded through a saddle on the mount and then is cinched around the cable bundle.



Adhesive Cable Tie Mounts

Strong and versatile, these mounts feature a peel-and-stick base and can adhere virtually anywhere there is a clean, solid surface. A cable tie gets threaded through a saddle on the mount and then is cinched around the cable bundle. Some adhesive mounts can flex to adhere to angled or curved surfaces.



Protection

Keep wires and hoses safe from abrasion, chemicals, heat and other potential hazards. Choose from varying levels of protection and ease of installation. Within the Wire Management Kit, we've recommended the best options to meet your needs.



Magnetic Parts

These routing aids incorporate ultra-strong neodymium magnets, so they attach quickly to steel industrial surfaces – even those covered in grease or debris. No need for mounting holes or peel-and-stick adhesive.



Inline Ratchet Clamps

An inline clamp has its method of mounting (adhesive, bolt, twist-on to name a few) directly below the center of the clamp. The ratchet component is a proprietary feature that closes over a bundle and fits multiple bundle diameters. The ratchet allows the clamp to lock at a desired tension, and the clamp can be reopened for future maintenance.



Labels

Safety labels are as important as your wire management. Protect operators from potential hazards for a safety-first workplace, and rest assured you are compliant with OSHA regulations.



Clips and Clamps

Clips and Clamps have adhesive, screw mount and twist in options for T-slot extruded metal frame building materials.