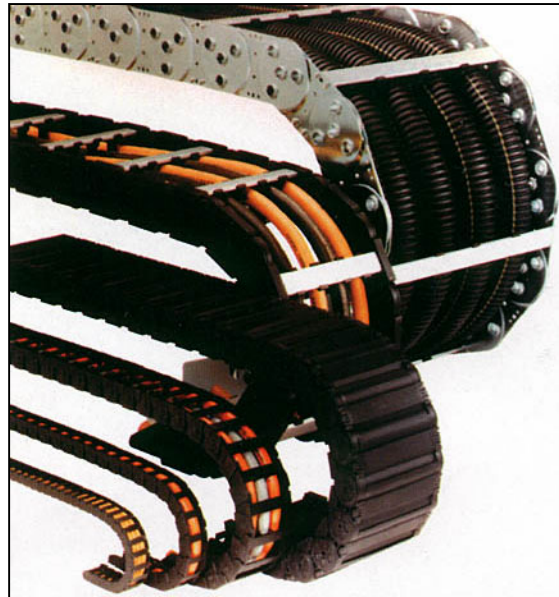


## *Cable and hose carrying systems done right*

As the use of automated equipment grows, so does the use of energy-efficient cable and hose management systems. These systems provide guidance and protection for cables while allowing them to relay energy from fixed sources to moving mechanisms. Correctly applied, they also greatly reduce and eliminate wear on cables and hoses. An engineered system reduces maintenance and downtime costs, while promoting long life, and improving machine operating efficiency and appearance.



Applications range from offshore drilling rigs and truck-wash gantries to automated machining centers and computer print heads. Every application is unique and requires designers to consider all specific or unusual requirements. The most common and costly mistake engineers make when selecting a cable and hose carrying systems is not taking into account all of the factors that will determine its success. Here is a list of critical criteria in selecting suitable systems:

- **Total travel distance** It is critical that the designer determine the exact length prior to choosing a cable or hose carrier. A machine's travel may limit choices.
- **Bend radius** Carrier systems control the bending radius of cables and hoses. If they are too small, cable or hose failure is inevitable. In fact, if a bend radius is calculated incorrectly, a carrier system can damage what is was designed to protect.
- **Direction and orientation of travel** The travel path of a carrying system must be defined, i.e. horizontal, vertical, side-mounted or multi-axis configurations.
- **Mounting bracket position** The location of the fixed-end mounting bracket must be the center of the total travel length or a specific point offset from the center. The most economical configuration for any carrier system uses the center of a machine's travel to locate the carrier's fixed anchor point.

- **Carrier system contents** The contents of a carrier system affects the carrier size and type, and determines the need for internal dividers for segregation. Positioning cables and hoses vertically instead of horizontally will change the carrier system width. The relative movement and bending characteristics of different sized cables and hoses must also be considered when designing a carrier. Correctly using internal dividers and horizontal separators ensures optimum operation and reduces cable and hose wear.
- **Operating speeds** It is important to determine a machine's maximum capabilities and operating speeds when selecting a carrier system.
- **Acceleration** Extremely high accelerations may cause additional wear, reducing life and leading ultimately to failure.
- **Dimensional limitations** Such limitations refer to a carrier system's operating parameters. Incorrectly specified equipment may cause cable and hose wear. This factor is usually not considered until the actual fabrication process, causing numerous problems. It is imperative dimensional limitations be considered at the design stage.
- **Environmental conditions** Is it an indoor or outdoor application? Corrosive and abrasive? Are metal chips or hot metal present? For optimum performance, environmental conditions must be taken into account when designing a carrier system.
- **Operating temperature** Determine the operating temperatures before choosing the type of materials best suited for the application.

Engineers must be able to answer all these questions and consider every factor before designing or choosing a new carrier system. Most importantly, engineers should work with a supplier who takes time to assess the intended use of the carrier system to provide an optimum engineered solution that best suits the application. Be careful when selecting your vendor. Many vendors manufacture either plastic or steel systems, limiting their selection. A vendor who offers a wide range of both plastic and steel systems will not "adjust" your application to fit their limited product line.

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