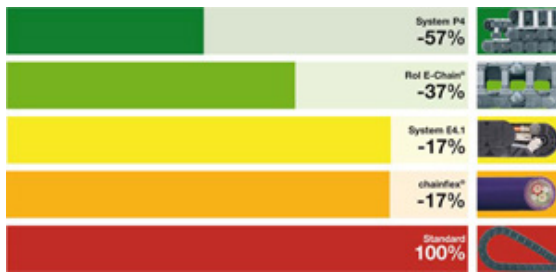


TECHTALK DESIGN ADVICE SERIES

REDUCE ENERGY CONSUMPTION WITH PLASTIC CABLE CARRIERS



Cable carrier systems not only transport energy, data and media to various types of machines, but also greatly influence energy costs.

To keep energy costs low, one important consideration is the amount of push-pull, or driving force, that is required at a given speed to move the cable carrier. Secondly, the stability and maximum weight for the cable carrier system is also important to ensure it consumes the least amount of energy possible. Cable carriers made of high-performance plastics, combined with continuous-flex cables, can reduce the required drive power, energy consumption and costs for environmentally conscious applications.

Rolling versus gliding

Recent tests and sample calculations performed at igus® test laboratory prove energy consumption can be drastically reduced by using the right cable carrier material with a sophisticated design, especially in long-distance, high-load applications. For example, Rol-E-Chain®—a specially designed cable carrier with built-in wheels that rolls instead of glides to facilitate travel over long distances—is used, the friction factor is drastically reduced from 0.3 to less than 0.1. This correlates to a 37 percent reduction in drive power with Rol E-Chain® when compared to a traditional gliding application, as well as a significant decrease in overall costs.

Modern plastic instead of steel

Metal cable carriers are being replaced more and more by plastic Energy Chains® because they are lightweight, require no lubrication



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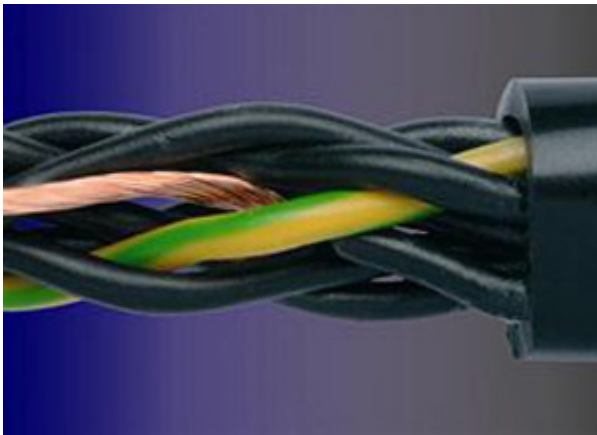
and can withstand even the toughest applications. One example is a 1,804 foot Rol E-Chain[®] system from igus[®] being used in a taconite mine in Minnesota. Another is one of the longest-known Energy Chain[®] application in the world: a 2,018 foot cable carrier system in a lignite-fired power plant in the Czech Republic.



A third application in which plastic cable carriers replaced metal cable carriers is at a steelworks company in Iran. The steel cable carrier failed because of a combination of dust, lubricants and oils. The cables were also damaged by the sharp edges of the metal carrier and UV radiation from the sun.

Dimensions and weight

In addition to reducing friction, Rol E-Chains[®] are energy efficient thanks to their dimensions and weight. A comparative test performed at igus[®] test laboratory proved that 17 percent of the drive power required can be saved by using a plastic cable carrier with smaller dimensions, yet which can still handle heavy loads. The test used a plastic cable carrier suitable for long travels and unsupported, side-mounted applications.



Cable sheathing and insulating materials

Continuous-flex cables can also reduce energy consumption. Tests show that using high-performance sheathing and insulating materials, depending on the combination of cross sections and number of cables used, can provide between a five and 30 percent reduction in energy.

In addition, if the sheathing mixtures are optimal for the application, abrasion will be reduced. High-quality sheathing materials can be extruded with an extremely thin wall, which saves up to 18 percent in weight compared to conventional cables. These two factors can reduce the drive power required.

High-grade insulating materials can achieve higher currents with the same electric cross-sections, which mean the cross-sections can often be reduced without compromising the electrical performance. This enables weight reductions of up to 30 percent.

Closer analysis reveals that there is basically no difference between the energy consumption in machine and plant engineering, including all costs for power electronics, and the automobile industry. In the same way that a driver can reduce fuel costs by around 60 percent by using different tires or fuel,

using a different design cable carrier (such as igus® RoI E-Chain® Series P4 for very long travels and high speeds) can also lead to significant technical and cost advantages.

More solutions for long travel applications here

[Guidelok vertical guiding system](#)

[RoI E-Chain®](#)

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Useful links

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