



CASE STUDY

ROLLER CABLE CARRIERS FOR A COMPOSTING PLANT

APPLICATION OVERVIEW:

These roller cable carriers and Chainflex® cables operate despite extreme conditions in this compost plant

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Extreme conditions

Roller-style cable carriers in a compost plant

Heat, abrasive dirt, high humidity: these are just some of the ambient conditions in a compost plant. Every single component is called upon to last a long time and avert unnecessary machine downtime. In this application, roller-style cable carriers have been in successful operation for the past 2 years.

Since the compost plant opened, various different igus® cable carriers have been operating in the 'layer-rearranging unit'. Whereas before the plant manufacturer recommended an urgent replacement every year, since the time roller cable carrier systems – so-called 'Rol-E Chains®' from igus® modular, rugged E4/4 System – were installed, a minimum lifetime of five years can be expected.

Organic acids and high temperatures

The ambient conditions in this compost plant are extreme. Organic waste rots in an enclosed hall and becomes damp and hot. Temperatures up to 104°F and atmospheric moisture of nearly 100% are common. Anyone entering must wear a face mask.

Moreover, there are all sorts of substances in the air which influence the procedure. In an exploratory analysis, concentrations of ammonia and organic acids were found in the air in the rotting hall.

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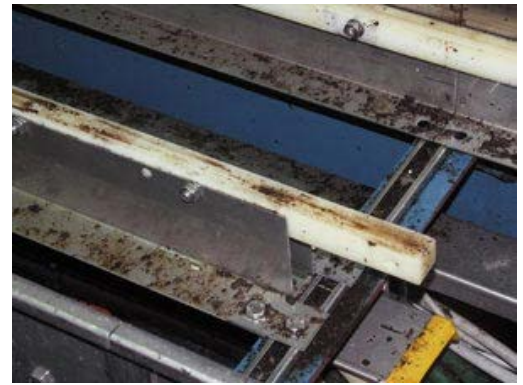
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Slimy bio-films had formed on all surfaces including the igus® cable carrier systems. The pH values on these surfaces are about pH 5.

The plant is in operation day and night, so the demands on the durability of the components are extremely high.

Roller cable carrier in extreme application

The hall where the rotting compost is kept is 443 feet long and 197 feet wide, which roughly corresponds to the size of the layer-rearranging unit. The unit works at speeds of 0.3 ft/s.



Although the roller cable carriers have been in operation for over two years, they so far show no sign of wear whatsoever. The cable carrier systems are tested every month, after which a test report is generated. These reports confirm that no abrasive wear has taken place to date.

The roller cable carriers do not need lubrication and are not hindered by the weight of the encased cables, water and hydraulic hoses, or the slimy organic waste involved in this application.

Besides cable carriers, Chainflex® continuous-flex cables, guide troughs, separators and strain reliefs from igus® are also used. The cables had to be laid in such a way that the load distribution was maintained throughout the length of the cable carrier. Separators keep cables and hoses apart.



Control cables for higher service life

The application conditions in the compost plant influence not only the cable carriers, but also the cables responsible for the energy supply. If they become brittle and corkscrewing occurs, the main supply line could go down and the entire plant would come to a standstill. For this reason, the plant procures continuous-flex cables from igus® and has done since 1999.

'Chainflex® CF 5' unshielded control cables are used onsite. This cable series' structure - with its gusset-filling pressure extruded inner jacket and PVC outer jacket - means it is suitable for heavy-duty use.

The factory manager confirmed that service life has been increased as a result of using Energy Chain® cable carriers and Chainflex® continuous-flex cables.

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