ROSTA Info

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OSCILLATING CONVEYOR TECHNOLOGY

New application for ROSTA oscillating mountings

The first coil conveyor units supported by Type AB-D oscillating mountings!

That the Type AB-D ROSTA oscillating mountings would be outstandingly suitable for the suspension of coil conveyor units was clear to us as early as the concept phase of this oscillating mounting in the year 2000. As normal for new components, however, it was very difficult to win over a manufacturer for the first installation; although supports using helical springs have a long tradition in the suspension of these widely used cooling and feeding units.

In July 2004, the **COMET Engineering S.r.l.** company in IT-Milan mounted each of two coil conveyor units onto 4 oscillating mountings of the Type AB-D 50 (Fig. 1). The height of the conveyor screw, on which the chromium oxide is cooled from 110°C to 45°C, is 4.5 metres; diameter 1.7 metres with 18 turns, which is equivalent to a conveyor distance of approx. 85 metres (Fig 2). The oscillation amplitude of 8 mm with the motor frequency of 960 rpm provides a transportation speed of approx. 18 m/min. The bulk material that is to be cooled thereby remains on the feed screw for approximately 5 minutes.

Drive using two 4 kW VENANZETTI vibration motors, 960 rpm. (Fig. 1)

Figure 2

The great advantages of the Type AB-D 50 ROSTA oscillating mountings in comparison with the previously used helical springs are:

- the **higher stability** of the conveyor screw, which is increased several times (see the mechanic who is climbing the feed screw = hardly any inclination; important for maintenance work).
- the complete **omission** of **safety cover anchorages** using wire ropes (was necessary due to the helical springs being susceptible to fracture).
- the **increase** of **15%** in the **transportation speed** of the goods. The AB-D suspensions, which are very stable laterally, transmit the oscillation amplitudes in the desired direction without disturbing wobbling movements.
- the **high isolation efficiency** and the almost 100% isolation of **structurally transmitted noise** towards subframe and surroundings.
- the considerably **smaller number of suspension points** (these coil conveyors were formerly mounted on 8 helical springs).

RUBBER SUSPENSION TECHNOLOGY: Serial connections

The concept of the ROSTA element offers a angular torsion range of +/– 30° to the neutral position. This deflection is completely sufficient for the typical applications of the torsion spring as a chain or belt tensioner, motor base or as a conveyor belt scraper, as well as for all oscillating mountings.

The rubber suspension unit would also be outstandingly suitable as a maintenance-free and silent hinge – but the total torsion angle of 60° is insufficient for the desired function in many cases. With a so-called **serial connection,** similar to Fig. 1 or 2, the deflection can be doubled to a total of 120°. The resulting torque only corresponds to 50% of the effective length of the element, however.

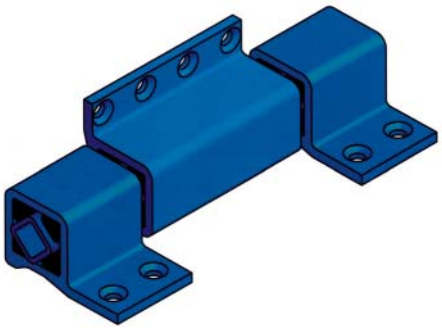

Figure 3

Three manufacturers of refrigerated counters or stalls with refrigeration systems for food use a ROSTA element in a serial connection as the swivel hinge for the very heavy mineral glass covers (Fig. 3). The external housings are manufactured from an extruded aluminium profile, and a continuous steel profile tube is used as the inner square. The two shorter side elements are screwed to the base of the counter; the middle element, which is twice as long, is secured to the glass plate. The illustrated element is a **DR 15** combination.

Figure 4 shows the mode of operation of this serial connection on refrigerated counters in butcher's shops or the fine pastry departments of supermarkets. For reasons of hygiene, the glass covers must be cleaned every day from both the inside and the outside. The dead weight of the closed counter cover from mineral glass pre-tensions the serial connection by 60°. This position is secured by means of spring-loaded catch (spring-loaded hook). When closing, a slight push is required so that the spring-loaded hook snaps into the

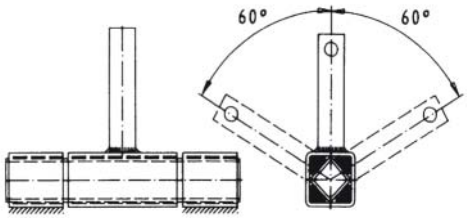

Figure 1

Serial connections, similar to Figure 1, are very frequently used in practice. Combinations similar to Figure 2, using the DO-A/S rubber suspension units, are less suitable as hinge suspensions as the angular movement takes place via two pivots, and the pivotal point is therefore not central.

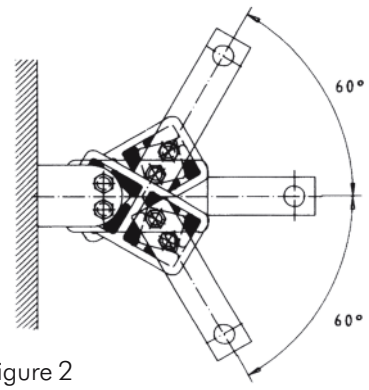

Figure 2

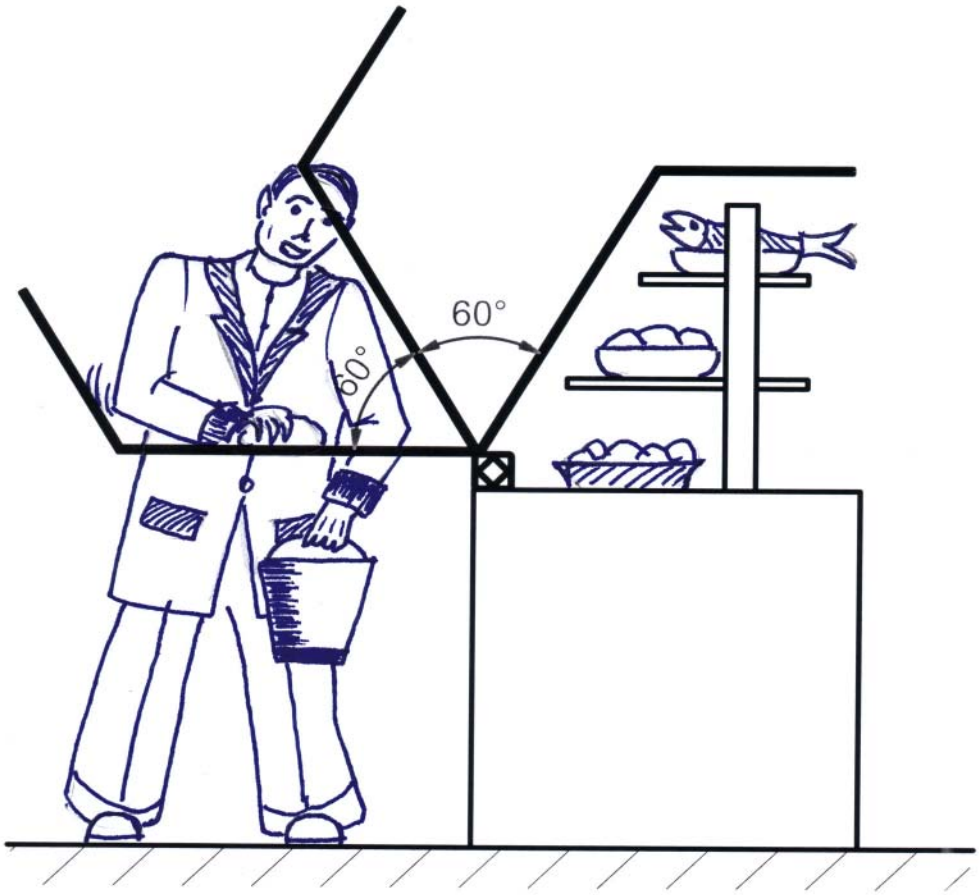

Figure 4

# of ROSTA rubber suspension units

Figure 5

glass profile. When opening the cover for cleaning every evening, the pre-tensioned serial connection helps to lift the very heavy mineral glass plate. The plate is turned through the neutral position of the ROSTA hinge suspension by the cleaning personnel without using a great deal of strength (Fig. 5). When swivelling into the horizontal cleaning position, the torsion spring fitting helps to brake the large acceleration of the heavy mass. The series combination is pre-tensioned by 60° in the opposite direction during the cleaning process. After cleaning, the cover will be swivelled back into the closed position with a large amount of spring assistance.

A series connection that functions in a very similar manner is installed as an engine hood hinge on **Peterbilt** trucks in the USA (Fig. 6). One element of the series connection is screwed to the truck chassis (behind the bumper), while the other is fixed to the engine hood (Fig. 7). The housing parts of the serial connection are manufactured from precision cast steel. An engine hood fixation consists of one „left" and one „right" model, and are delivered to **Peterbilt** in pairs. This serial connection consists of two ROSTA **DR 27 x 50** rubber suspension units.

Figure 6

The most impressive advantage of this suspension is once again the considerable spring-force assistance when opening and closing the approx. 200 kg heavy swivelled engine hood. After opening the interlocking hook, the pre-tensioned spring combination powerfully assists the driver in swinging open the hood, and strongly reduces its speed before the locking position is reached!

In addition, this suspension also acts as a **vibration damper** between the truck chassis and the polyester engine hood. The vibrations of the diesel engine are effectively kept away from the hood. The component is **non-corroding** and offers an extremely long service life **without any maintenance outlay.**

The ROSTA serial connections are used in almost all applications as bearing hinges with spring-force support. Even more bonnets, hoods, covers, protective plates and gratings could be swung open with power assistance, absolutely maintenance-free and **with less effort for the operating personnel!**

Figure 7

Advantages of this type of suspension:

- It offers a great deal of spring assistance for opening and closing
- It works silently and is absolutely maintenance-free
- It has an extremely long service life, and is unbreakable
- It is resistant to corrosion

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RUBBER SUSPENSION TECHNOLOGY

For longer service lives for transport belts

An 800 metre long rubber belt with a width of 1.4 metre costs as much as a detached house! Hard to believe – but it is a fact. Naturally, not all belt transport installations are 800 metres long, but even belts with 50, 70 or 100 metre lengths can cost a fortune.

Transport belts are subject to the greatest wear at the feed and transfer locations. The impacts of chunks of stone or ore tear up the rubber cover, and quite often also damage the load-bearing textile carcass of the belt. In order to limit the damage, the installation has to be immediately stopped so that the ripped sections can be vulcanised. Even if there is no immediate damage at the feed and transfer locations through impact, the increased friction of the continuous flow of material causes rapid wear to the rubber layer, with the consequence that the expensive rubber belt only has a very short service life.

The wear and damage to rubber belt installations can be drastically reduced

Figure 2

Figure 1

by means of spring-mounted garland suspensions (Fig.1) or dampened transfer tables (Fig. 2).

ROSTA provides both standardised garland suspensions (Fig. 3) and damping suspensions for the transfer tables of belt conveyors. The service provided by ROSTA also includes the provision of

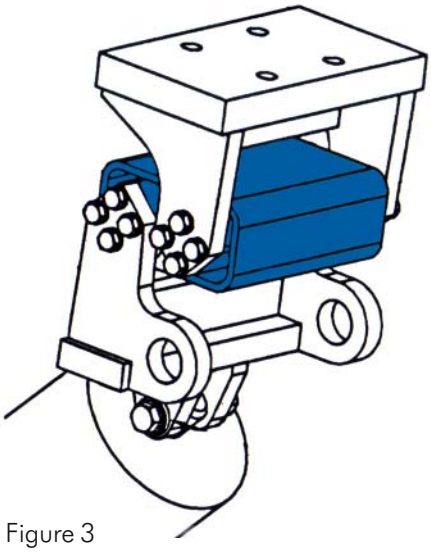

Figure 3

drawings and design documents for the manufacture of the complete transfer table.

Ask for our detailed questionnaire, so that we can ascertain the kinetic impact energy at the transfer locations on the basis of your data, and can determine the damping system suitable for the application.

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