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Tulips from Amsterdam...

Figure 1

Most of the cut flowers and green plant sold in Europe and also in part overseas reach the international trade via the two world's largest flower auctions in the Dutch towns of *Aalsmeer* and *Naaldwijk*. The flower auctions lie within easy access either to the **international airport of Schipol** or to the important **north-south E 35 road link** (Amsterdam–Rome) respectively. On five week days per year the huge flower trading companies purchase several billion individual flowers by auction in Holland, the most of which reach their respective sales outlets at latest within 24 hours.

Electric towing vehicles pull the auctioned flowers on up to 30 coupled stacked trolleys to the lower-lying loading ramps for the refrigerated trucks (fig. 1). The flower trolleys are unbraked and the composition can weigh up to 12 tonnes. The electric towing vehicles could not possibly brake this load on the in part steeply inclined ramps.

The constructors of this transport system from the **Arnie Totaal Techniek Company** in Aalsmeer found a cost-effective solution to provide a low-cost braking system for the transport compositions. On the steep parts of ramps, pre-tensioned low wear polyamide profile rails press on both sides of the chassis of the trolleys and thus provide adequate braking for the train composition.

For elastic mounting and pre-tensioning of the braking rails, two **ROSTA vibration dampers of Type ESL 27** are fitted to both sides of the track segment. The desired braking capacity can be applied to the ESL 27 elastically-mounted friction rails with adjustable angle support brackets (fig. 2). A pair of braking rails mounted on a total of four damping elements (fig. 3).

All in all a simple technical solution, which also prevents any lurching of the long composition and thus keeps the flower bouquets neatly in their place.

Figure 2

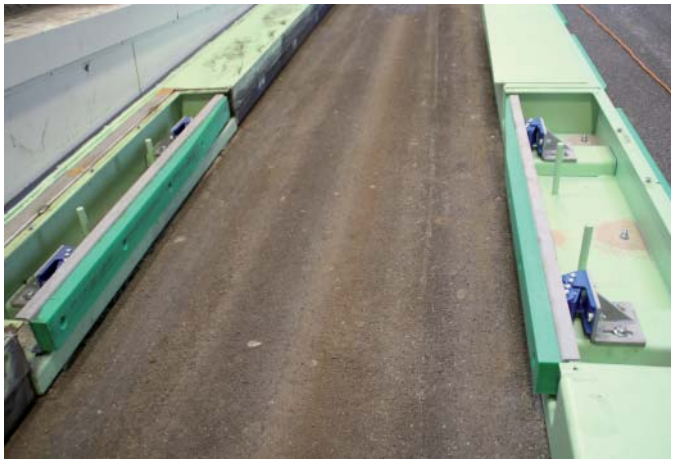

Figure 3

Can „Niagara" or eccentric vibrating screen be mounted on ABs?

This is a question that is repeatedly asked by ROSTA agents and end-users.

An eccentric vibrating screen, also known as the ***four bearing screen*** is not really a freely oscillating screen. At the excentre drive shaft positioned in the center of the screen box, the oscillating part is rigidly connected on both sides with bearings to the base or to the chassis frame. The resulting oscillation amplitude of the screen box is given by the respective eccentricity of the drive shaft. The feed- and discharge-end of this screen is however elastically mounted on springs on both sides, as for the freely oscillating screens. Fig. 1 shows the typical construction of the drive unit of an eccentric vibrating screen. The drive is mostly made with belts to the two-fold offset eccentric shaft. The two outer bearings are rigidly connected to the chassis frame. To the right and left of the screen box there are two bearings for the positively driven transmission of the cam offset to the screen.

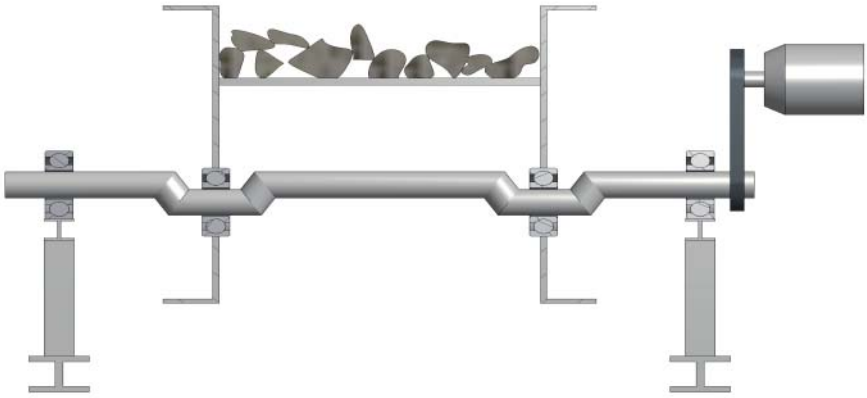

Figure 1

Yes, eccentric vibrating screens can be mounted onto ROSTA vibrating elements of type AB, **but** the retaining spring suspensions must be equipped with a **pre-tensioning** system. It is not sufficient to keep the screen box in balance and to install two, four or six AB oscillating elements without any **pre-tensioning** on each of the feed- and discharge-ends. The resulting radial load on the four bearings when in operation would be too high and their early breakdown would already be programmed. Pre-tensioning of the springs is a must, as it is the springs and not the bearings that bear the main load of the screen box.

A large Dutch building material manufacturer was tired of replacing the broken steel coil springs on his two eccentric vibrating screens and therefore wanted to scrap his really very efficient coarse screens (scalping screens) (fig. 2). During a routine visit of the field engineer from the Dutch ROSTA Agency, both screens were again inspected and a possible retrofitting with ROSTA screen suspensions was discussed.

After finding out the weight of the screen box and the possible material loading, it became clear that the eccentric vibrating screen should be mounted on 8 **AB 50** (x 120 mm) oscillating mounts in all, two at each support point, arranged in a diamond pattern. The operator of the installation also had to be made aware of the **pre-tensioned** method of fitting, to relieve the four bearings of the drive shaft. Using a simple drawing by hand (fig. 3), the ROSTA application engineer laid down the procedure. All four screen bearings had to be equipped

Figure 2

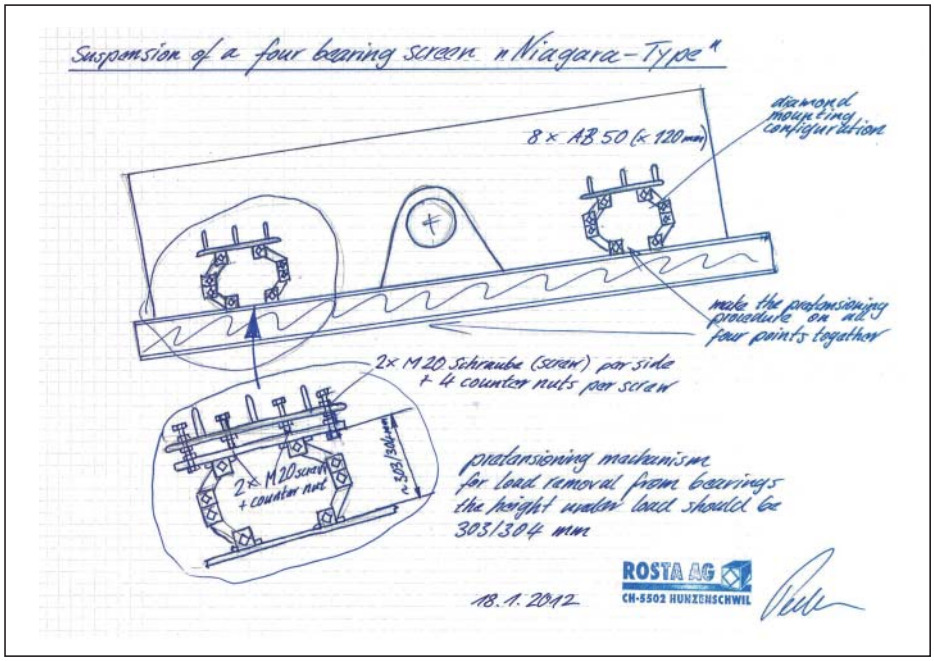

Figure 3

The retrofitting was successfully carried out in March 2012 and fig. 4 shows one of the screen suspensions during a machine stop in July 2013 – **after 17 months of two-shift operation without any breakdown.** The pre-tensioned intermediate plate as suggested by ROSTA can be clearly seen.

with a pre-tensioned, simple intermediate plate. Prior to assembling the four suspensions, the eccentric drive shaft was wedged at the **bottom dead centre** of the stroke. Subsequent to this, the operator's mechanics synchronously pre-tensioned all four springs to the element height of 303/304 mm (corresponds to a deflection of about 77 mm under nominal loading). Thus the weight of the screen box and its additional load are born by the oscillating elements – and not by the bearings.

Figure 4

Two-way conveying in a vibratory screening machine

For the preparation and selection of foodstuffs, fruit and vegetables, the respective producers today mainly make use of the cost-saving vibrating screen technology. Screening fractions with varying mesh sizes very efficiently separate small berries, nuts or peas from large ones for example, or also pasta and cookies from unwanted breakage. Usually in following vibratory screening machines, particles that are too small or pieces of the products that are broken are again separated and fed for further processing.

It would often be desirable if the respective screening machine could convey the qualitatively inferior products **backwards** to the material bunker or to a discharge chute for re-processing **in a single working step.** The production line for processing „A"-quality would thus not be unnecessarily extended by a further sorting screening conveyor.
However, a vibrating screen conveyor with a slider-crank drive only conveys the goods in one direction. The throw can be regulated by the respective inclination of the supporting rocker arms relative to the force exerted by the slider-crank drive.

If the vibrating feeder is supplemented with a counter-vibratory mass working out of phase (a second vibrating feeder), in which the rocker arm inclination is set in the other direction, this oscillating machine part conveys the screened small fraction/breakage **back** to the feed-end (see fig. 1). In addition to reverse conveying, a vibrating screen feeder with a counter-vibratory mass has the major advantage of compensating the acceleration forces by 100%, so that the conveying / sieving capacity can be more than doubled by increasing the drive parameters.

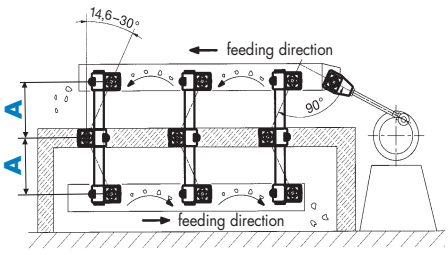

Figure 1

Figure 2 (two-way conveyor from RAVARO G.A. in IT-Granozzo)

With its oscillating elements Type AR 27 and AR 38, ROSTA offers the ideal construction components for the so-called „boomerang" rocker arm for two-mass vibratory screening machines, which enable two-way conveying of bulk materials. By simply connecting three AR vibrating elements with a standard circular tube profile, individual „boomerang" rocker arms can be fitted as desired (fig. 2).

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