Technical Paper

Frequently Asked Questions on the New K3 Vibratory Feeder

Vibratory feeders are ideal for the gentle handling of a wide variety of materials. The completely new K3 line of vibratory feeders offers significant advantages over traditional technologies.

WHAT ADVANTAGES DOES THE NEW LOSS-IN-WEIGHT VIBRATORY FEEDER HAVE IN COMPARISON WITH PREVIOUS MODELS?

Both its predecessor and the current state of the art use elastic shock absorber elements that permit movement in all directions. Thus the feed tray movement is not parallel, but rather occurs in all directions. As a result, the height of product along the feed tray is inconsistent, and the material on the tray shifts around, particularly after setpoint changes. This leads to lagging and a material flow that is more difficult to control.

With the new, patent-pending flexible pendulum shock absorbers, a more controlled and uniform product flow is ensured because the movement of the feed tray is no longer random, but is instead parallel. The clean, parallel movement keeps the product flow consistent, and the more-easily controlled material flow leads to better precision across the entire feeding range.

The newly-developed drive and motion control is directly built in to the drive coil. This has the advantage that measurement and drive signals no longer have to travel long distances where they might be exposed to interference. Thus the drive is more precise and less susceptible to environmental influences. Particularly in the case of low amplitudes the considerably more precise digital control system has a positive influence on the material flow and the accuracy.

In addition to the drive control, the newly-developed mechanical design offers striking advantages in comparison to previous models:

- A Hygienic Design with a clear reduction in cleaning effort
- More flexibility in the design of customer-specific feed trays
- The rapid replacement of the feed unit reduces the downtime of the facility during product changes
- Minimal residual product when running until empty
- The feeder is certified for use in an ATEX Zone 22/2 (outside), and provides a Zone 21 for the product room (inside). The drive was designed in such a way that it also meets the requirements of an ATEX Zone 21, so that, if necessary, the type examination without adaptations is possible.
- A Pharmaceutical Design is planned in accordance with GMP, which results in a higher "containment level"

IS THE NEW LOSS-IN-WEIGHT VIBRATORY FEEDER COMPATIBLE WITH MY EXISTING CONTROL UNIT?

YES If the existing control unit is a KCM, this can be upgraded with a replacement of the drive board card.

If it is a previous model of the KCM, Coperion K-Tron offers attractive possibilities for upgrading the system.

IS THE NEW VIBRATORY FEEDER SUITABLE FOR FREE-FLOWING BULK MATERIALS?

YES Basically, the new vibratory feed tray is suitable for all free-flowing bulk materials such as powders, pellets, granules, flakes, fibers, etc. The new loss-in-weight vibratory feeder is particularly suitable for products in which a reduction of mechanical impact on the bulk material is necessary, or in applications in which short cleaning and product change times must be achieved.

In the case of products that do not flow freely, the suitability should be examined in laboratory tests.

CAN NON-UNIFORM PRODUCTS BE FED WITH THE NEW VIBRATORY FEEDER?

YES Vibratory feeders are eminently suitable for non-uniform products. They offer the great advantage that the bulk material is transported gently, and thus scarcely damaged during feeding.

IS THE NEW VIBRATORY FEEDER SUITABLE FOR COLD AND WARM PRODUCTS?

YES Because the feeder tray is separated from the vibratory drive, the new loss-in-weight vibratory feeder can be used with product temperatures from –20°C to 120°C. With additional cooling, solutions for even higher temperatures can be provided.

IS THE NEW VIBRATORY FEEDER SUITABLE FOR OPERATION IN HAZARDOUS LOCATIONS?

YES The new loss-in-weight vibratory feeder is certified for the categories 3G and

3D (EN 60079-0) and is thus permitted to be operated in European ATEX zones 2/22. In the classification in accordance with NEC 500.5, operation in Class I & II, Division 2, is permitted.

CAN THE NEW VIBRATORY FEEDER BE EMPLOYED IN THE PRODUCTION OF FOODSTUFFS?

YES A Hygienic Design was developed specifically for the food industry, which, thanks to the ability to quickly remove/exchange the feed tray, is extremely easy to clean. Additionally, the vibratory drive is equipped with a silicone cover, so that no product residues can develop in crevices

The Hygienic Design of the new vibratory feeder is FDA-compliant, and is supplied with Food CE in accordance with EN1935/2004.

Numerous tests in our laboratory have shown that the new vibratory feed tray is capable of feeding a wide variety of foodstuffs, such as peas, nuts, lettuce leaves, potato chips, and frozen fruits, etc. Thanks to the possibility of constructing customer-specific trays, a uniform discharge over differing widths and lengths can be achieved, which, for example, can be utilized for applying spices.

Special quick-release clamps hold the cover on the tray.

CAN THE NEW VIBRATORY FEEDER BE EMPLOYED IN THE MANUFACTURE OF PHARMACEUTICALS?

YES A specific design for the pharmaceutical industry is also planned. The feeder will be constructed in accordance with GMP, and all employed plastics are FDA-compliant. In order to meet the high hygienic requirements, all connections are equipped with Tri-Clamp fittings. Thereby, a high "containment level" can be achieved.

Thanks to the gentle transport of the bulk material, the new pharmaceutical vibratory feeder will be suitable for dispensing tablets or supplying tablet coating lines.

IS THERE A VOLUMETRIC VERSION OF THE VIBRATORY FEEDER?

NO Currently, no volumetric configurations are being offered.

SINCE THE NEW FEEDER IS A VIBRATING DEVICE WILL THERE BE UNWANTED INFLUENCES FROM THE FEEDER ONTO THE SURROUNDING STRUCTURE?

NO Even though the feeder is stiff against rotation, the patent pending shock absorbers are very efficient in absorbing the vibrations created by the drive. This is easily demonstrated by touching the baseplate — almost no vibration is perceptible — and by the fact that the noise of the feeder is very low. Therefore, no significant vibrations are transferred to the surrounding structure.

DOES THE NEW LOSS-IN-WEIGHT VIBRATORY FEEDER REPLACE EXISTING MODELS?

YES The new K3 vibratory feeder product line replaces the existing K2-KV product line.

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