

# VIBRA SCHULTHEIS



Vibrating trough conveyors  
for cereals and potato chips



# Vibrating trough conveyors for cereals and potato chips

Vibrating trough conveyors represent a particularly gentle, hygienic and easily adjustable means of conveying and are thus ideally suited for handling cereals (e.g. cornflakes or rice) and potato chips. Their most important applications include conveying cornflakes and potato chips from the roasters or the deep fat fryers to the packaging machines and transferring rice from the steeping bins to the batch type cookers.

## Cornflakes and potato chips

Since a whole range of product variants have to be simultaneously produced in order to cater for the needs of the marketplace – uncoated or coated cereals, for instance, or differently flavored potato chips – several parallel or multiple-track conveyors are used to transfer these products from the roasters or the deep fat fryers to the packaging machines. The frequently voiced demand for simultaneous feeding of several packaging machines is met by means of level controlled, pneumatically activated discharge flaps or gates that supply the different product variants to feeding troughs with branches to the individual machines.

The vibrating conveyor plants used for this purpose can basically be designed according to two alternative principles:

### 1) Plants that return product not accepted by the packaging machines

The generally long conveying distances between production and packaging are bridged with as few individual conveyors as possible, whereby these machines ideally take the form of natural-frequency trough conveyors. The troughs which branch off from the discharge flaps or gates to the bag-filling scales and the packaging machines are equipped with electromagnetic vibrating motors that stop immediately after switching off. The excess product that accumulates if one of the packaging machines fails is recirculated to the start of the conveying system via return troughs acting as buffers.

### 2) Non-return plants with intelligent control

The long conveying distances are also designed with electromagnetically activated, individually controllable trough conveyors two to four meters in length and arranged in tandem. The branches to the packaging machines are similar to those of variant (1). However, the large mass flow that accumulates if one of the packaging machines fails is not recirculated, because the individual troughs are intelligently controlled in such a way that they buffer the non-accepted product for the required period of time.

The decision in favor of a particular design principle usually hinges on financial and commercial criteria. Variant (1) is always the cheaper of the two solutions.

## Rice

When rice is processed, the raw rice is first of all steeped, then transported via electromagnetic batching trough conveyors and long natural-frequency trough conveyors, dewatered and fed to the cyclically operating cookers. Once again, specially designed vibrating conveyors are far superior to other conveyor types (such as screw or belt conveyors).



Fig. 1 Distributing trough for potato chips between the deep fat fryer and the flavor drums



Fig. 2 Feeding to a vertical conveyor



Fig. 3 Partial view of a vibrating conveyor plant with an overall length of 120 m used to convey potato chips at a rate of 60 m<sup>3</sup>/h



Fig. 4 Section of a conveying plant with electromagnetically activated vibrating trough conveyors



Fig. 5 Partial view of a vibrating conveyor plant with a length of 100 m used to convey cornflakes at a rate of 100 m<sup>3</sup>/h



Fig. 6 Feeding the multiple-head balances and the packaging machines

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Fig. 7 Electromagnetic bin discharging troughs for transporting steamed rice between the steaming bins and the natural-frequency trough conveyors



Fig. 8 Natural-frequency trough conveyors with a length of 20 m used to convey steamed rice at a rate of 40 t/h

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