TUBE CHAIN CONVEYORS SOLVE THE PROBLEM OF THE SEGREGATION OF BULK MATERIALS DURING SILO FILLING

For many companies, the transportation and storage of mixed bulk material poses a huge challenge. The segregation of bulk material occurs whenever the material mix is moved by different means of transportation, e.g. upon delivery it is poured into an interim container (silo) as storage or buffer and thus moved from A to B.

This is particularly the case when filling containers or silos. The reason for this is to be found in the processes of transportation, filling, and discharging. This is where large amounts of bulk material meet, but within this large quantity, finer particles, for example, are distributed unevenly. In most cases, this can be attributed to different grain sizes, shapes, and specific weights, so that the heavy particles tend to fall and the material will be segregated into different product layers.


Homogeneous silo filling without segregation

High conveyor capacities, low energy consumption, durability, flexible layouts, dust, gas and pressure tightness, low grain destruction, high degrees of residual emptying, and low maintenance are other demands that customers also have on the materials handling equipment.

The segregation of bulk materials has consequences on the quality of the final product. Wherever such variations in quality are prohibited, solutions without segregation are required. Complex machinery, such as silo agitators, screw mixers, etc. is often needed.

However, there is a successful solution to the problem: Tube chain conveyors fulfill all of the demands on bulk materials handling and allow for the filling of silos from bottom to top without altering the product. This process of “homogeneous silo filling” is already being used successfully. With homogeneous silo filling, the material is drawn directly from the inlet area into the silo without a chance of segregation. Depending on the individual conditions, the tube chain conveyor is placed inside the silo vertically or at an incline. The product separates from the chain at the top of the product level and is then placed on top of the product column. This will prevent segregation that is caused by different heights and weights.

With this principle, the flow behavior of the individual bulk material plays an important role. The dew point must not be underrun because then the product would be too sticky and would separate from the chain not at the bottom silo entry but rather in the upper part near the deflection. Auxiliary components such as temperature and moisture meters, tappers, vibrators, or filling level meters are possible remedies.

The patented process of “homogeneous filling” is a perfect solution for the problem. However, we always recommend a test run including taking samples at different levels inside the silo. That way, the flow behavior of the bulk material can be tested in advance to ensure that the system is actually suitable for the corresponding product.

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