

Transport and dosing of lime to mixing screw conveyor

Client: VÁPENKA VITOŠOV, s. r. o.

Realization: January 2010

Z 5113



Prime condition

New condition

Customer's requirement

Lime plant Vitošov is running the mixing of lime mixture. This project was realized in 2005. Dosing was ensured via side discharge spout from silo cone to weighing screw conveyor, by screw conveyor placed under slope, without axis, with frequency converter. This combination didn't give sufficient solution. Screw conveyor without axis wasn't able to suitably regulate flow of lime to weighing conveyor. From this reason the prescriptions of lime mixture wasn't kept. On the base of lime plant Vitošov request was made examination of correct conditions. The study confirmed unfitness of current solution, DSD Dostál company offered to lime plant Vitošov elaboration of various solutions.

Task, final formulation of the design

To offer the transport from silo 01 and 05 to mixing screw conveyor (\varnothing 500 mm, 90 t/h), which will be connected to prepared discharges with flanges from silos on floor level +5,5 m and continue to mixing screw conveyor on floor level +8,5 m. To use 2 current weighing screw conveyors placed now on floor +8,5 m, where distance between inlet and outlet of screw conveyors is 4 and 5 m. Transport quantity from outlet of each silo is 6-70 t/h for each weighing screw conveyor.

Required function

Mixing screw conveyor mixes transported material from silos 01 and 05 along with additions. Maximum of required transport quantity of mixing screw conveyor is 90 t/h, which can be reached, in case of additions vision, only by sum of both silos flows. Each weighing screw conveyor has transport capacity 6-70 t/h. Collecting and all following screw conveyors must be able to transport maximum 90 t/h. The request is to manage different ratio of material flow from both lines.



Description of the final design discussed and approved by the customer

DSD Dostál designed 3 various solutions. The first two are designed with vertical screw conveyor and third with inclined screw conveyor.

As the most suitable solution was chosen following transport:

Transport will be conducted on floor level +5,5 from both silos to 2 lines to vertical screw conveyor and from vertical screw conveyor to mixing screw conveyor, placed on floor level +8,5 m.

Each line will be composed from following equipment:

- cut off gate
- aeration box
- rotary feeder
- discharge spout
- weighing screw conveyor 6-70 t/h
- outlets to vertical screw conveyor
- vertical screw conveyor

One line is equipped by weighing screw conveyor and one line is equipped by weighing screw conveyor under the slope app. 5 °.

Vertical screw conveyor \varnothing 300mm, 90 t/h will transport material to necessary high and by short chute to mixing screw conveyor 90 t/h. This is the most suitable solution, from transport and space point of view. Only intervention to current situation in building is replacing of staircase, which is now placed under considered vertical screw conveyor. Advantage of this solution is direct filling of vertical screw conveyor from two weighing screw conveyors and shortening of connection weighing-regulation member. The cut off gate will be placed on each discharge spout on silos 01 and 05. This cut off gate may separate following transport line. Behind cut off gate is placed aeration box, across which is material transported to rotary feeder. The flow volume will be operated and controlled by following weighing screw conveyor with outlet to vertical screw conveyor. Both line will join each other in this point. Then the material will be transported to floor level + 8,5 m with outlet to mixing screw conveyor.

