

Automated dosing improves accuracy and safety

During construction of its DMax filtration system, Oberlin Filter was on the hunt for a dry chemical delivery system capable of providing precise dry chemical dosing. The answer was found in the form of a flexible screw conveyor from Flexicon.

Oberlin Filter specialises in producing high pressure flat-bed, liquid-solid filtration systems for demanding applications such as filtering heavy metals and resins from colloidal suspensions. The company's DMax filtration system, for example, is designed to clean impregnation resin wastewater.

During the design of this product, Oberlin Filter realised it would need to automate the dry chemical delivery process. Specifying a modern delivery system provides more precise, cleaner and safer dosing than that achieved by manual delivery methods.

After examining a variety of units, Oberlin Filter selected a

flexible screw conveyor from Flexicon to provide consistent delivery of large quantities of dry chemicals.

Designed for robust operation with little or no maintenance, the Flexicon system was able to convey the quantities and kinds of dry chemicals required. The system could also convey vertically as well as horizontally.

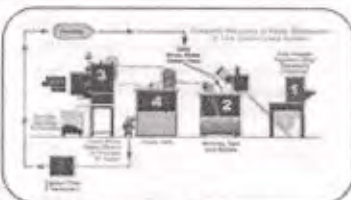
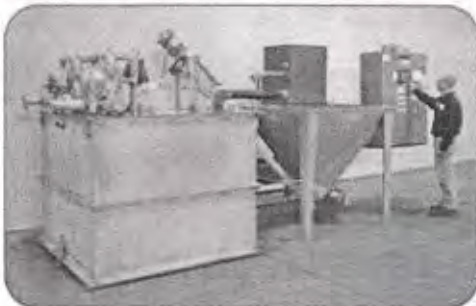
Consistent delivery

To demonstrate that the conveyor would deliver the dry ingredients according to specifications, Flexicon ran the DMax process in its test lab and in its plant before the equipment was purchased.

Oberlin Filter's project

manager, Jeff Kosprick, explained: "The key to dropping out heavy metals and separating resins from colloidal suspensions is getting exactly the right dry ingredient into the waste water - consistently and in large volumes, which is what Flexicon's flexible screw conveyor accomplishes."

The DMax system integrates Oberlin pressure filter technology with a pre-treatment process using a flexible screw conveyor to introduce measured amounts of dry chemicals into the wastewater without the spillage or dust associated with manual dumping.



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The chemicals cause minute waste products to clump together as larger solids, which can be filtered out for discharge or disposal as dry cake. The cleaned wastewater can be continuously re-used in the original application or discharged as normal water.

The system comprises a Flexicon Model 1250 conveyor with a 67mm diameter, 3m long tube, contained in-line with Oberlin's smallest filter and tanks. The result is a machine train that is 1.8m wide and 8.2m long. When treatment of large, 2.4m tanks of water is required, Oberlin adds a Flexicon bulk bag discharger to the DMax system to deliver large quantities of dry chemicals.

Improved plant hygiene

As an added benefit, specifying the Flexicon conveyor has also improved plant hygiene. This is because only one moving part is in contact with the chemicals, which are also enclosed for added safety. The system works using a replaceable, flexible screw driven by an electric motor. As the screw rotates, the chemical is propelled forward and the screw self-centres within the conveyor tube. A removable, clean-out cap at the intake end of the conveyor tube allows it to be emptied, flushed, disassembled and washed, which helps prevent cross contamination if multiple chemical agents are used.

The working tank is equipped with high level and low level sensors that signal a PLC to automatically control the material feed, thereby delivering the correct amount of dry chemicals with no spillage or dust. Some cleaning systems require up to 20kgs of dry chemicals per day, which previously required workers to lift heavy bags of material overhead for dumping into small hoppers above large tanks, however the conveyor's hopper, with a dump height of less than 1.2m, averted this problem.

Koopnick added: "Although the treatment chemicals are non-toxic and non-hazardous, customers are happy that their wastewater clarification system does not incur a dust problem. Most companies discharge cleaning water at the end of the day, but the addition of automated conveying enables customers to re-use wastewater and/or discharge cleaner wastewater, reducing both the cost and environmental impact."



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