AUTOMATED DOSING OF DRY TREATMENT CHEMICAL WITH FLEXIBLE CONVEYOR IMPROVES ACCURACY, SAFETY OF FILTRATION SYSTEM

US based Oberlin Filter Company is a global leader in high pressure flat-bed, liquid-solid filtration systems for demanding applications such as filtering heavy metals and resins from colloidal suspensions. The company's top-of-the-line DMax™ filtration system, which cleans "impregnation resin" wastewater, requires a dry chemical delivery system that provides more precise, cleaner, and safer dosing than that achieved by manual methods of delivery

Matching a conveyor to the process

Oberlin Filter looked at competing units and ***selected a flexible screw conveyor from Flexicon, knowing it would be the best answer*** for consistent delivery of a variety of large quantities of dry chemicals. It was robust and required little or no maintenance. It could reliably convey whatever quantities and kinds of dry chemicals that were needed. The system could also convey vertically as well as horizontally, was durable and able to accommodate small configurations.

Flexicon ran the DMax™ process in its test lab demonstrating that the conveyor would deliver the dry ingredients according to specifications and they did the same in their plant. Oberlin Filter knew exactly how the conveyor would perform before they bought anything.

Introducing chemicals precisely is key to filtration process

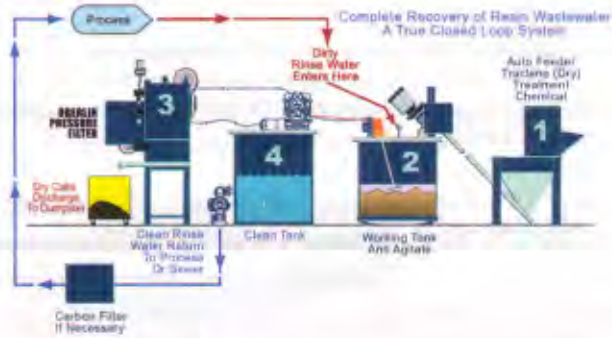
"The key to dropping out heavy metals and separating resins from colloidal suspensions is getting exactly the right dry ingredient into the waste water - consistently and in large volumes," explains Jeff Koepnick, Oberlin Filter's Project Manager, ***"which is precisely what Flexicon's flexible screw conveyor accomplishes."***

The DMax™ system integrates Oberlin pressure filter technology with a pre-treatment process that uses a flexible screw conveyor to introduce measured amounts of dry chemicals into the wastewater without the spillage or dust associated with manual dumping. The chemicals cause minute waste products to clump together as larger solids (flocculate) 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 cleaned and permitted water.

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

Enclosed, dust-free conveyor improves plant hygiene

The conveyor has only one moving part that contacts the dry chemicals - a durable, replaceable, flexible screw that is driven by an electric motor. As the screw rotates, the chemical is propelled forward and the screw self-centers within the conveyor tube. A removable, clean-out cap at the intake end of the conveyor tube allows the tube to be emptied, flushed, disassembled and washed - precluding cross contamination if multiple chemical agents are used.



The DMax™ filtration process:

A specific amount of dry treatment chemical is automatically transported by a Flexicon conveyor from the chemical hopper (#1) to the working tank (#2) that contains colloidal rinse water from a manufacturing process. The dirty water and chemical mixture is then agitated for a preset time, then automatically discharged into the pressure filter (#3) that removes the solids and discharges liquids into the clean tank (#4). An equal volume of clean rinse water is pumped from the clean tank to the process tank to maintain liquid levels.

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 while eliminating the need for manual dumping and the risk of spillage and 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, creating dust and spillage. The conveyor's hopper, with a dump height of less than 1.2m, averted the problem.

Although the treatment chemicals are non-toxic and non-hazardous, Koepnick says, ***"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," concludes Koepnick," but the addition of automated conveying to the DMax™ system enables our customers to re-use wastewater and/or discharge cleaner wastewater, reducing both cost and environmental impact."

Oberlin's DMax™ system has been used successfully to treat heavy metal, emulsified, vibratory and color dye wastewater. The company's basic line of filtration equipment has been an integral part of precision grinding coolant technology, automotive paint / zinc phosphate lines and power plant salt crystallization systems for over 35 years.

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