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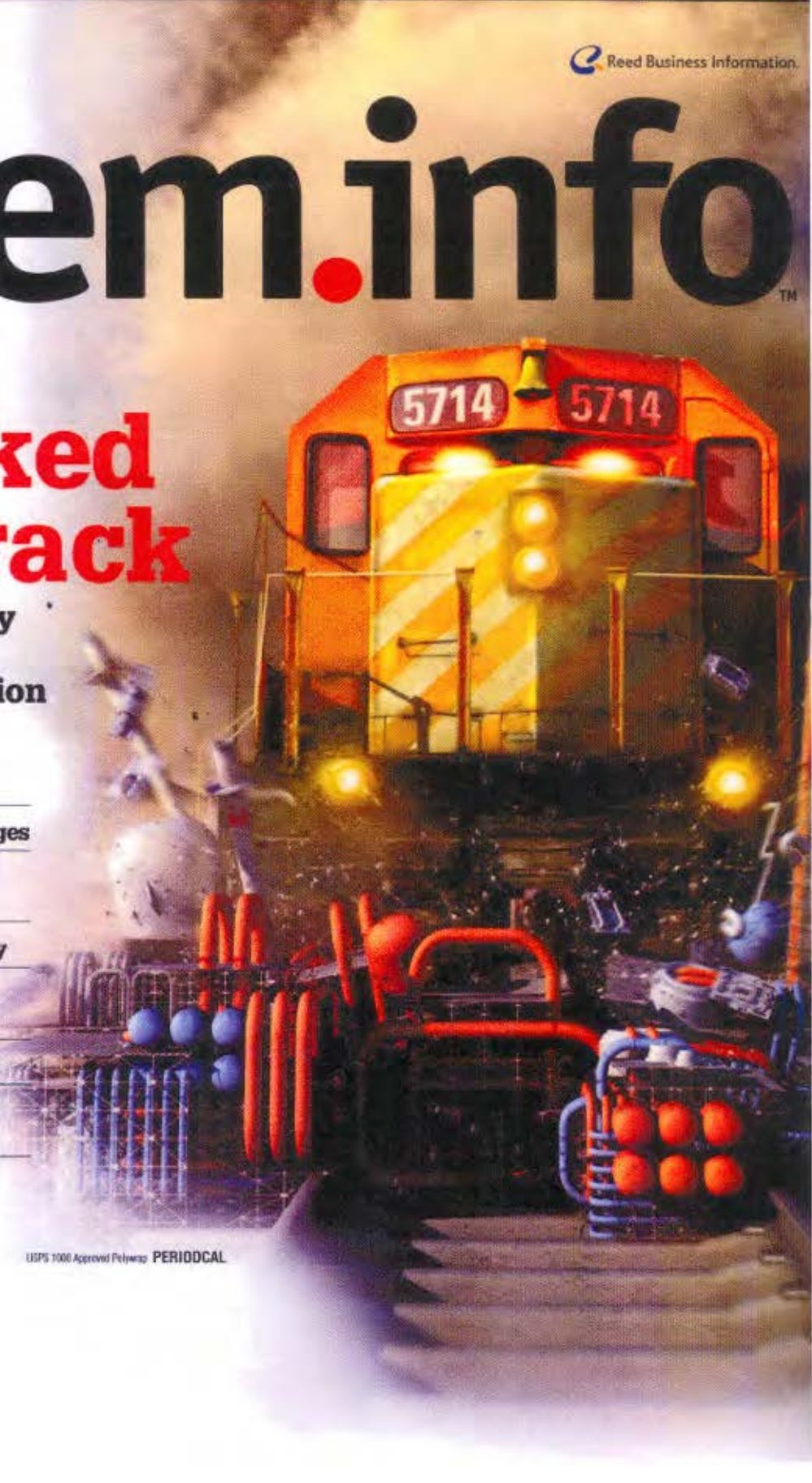
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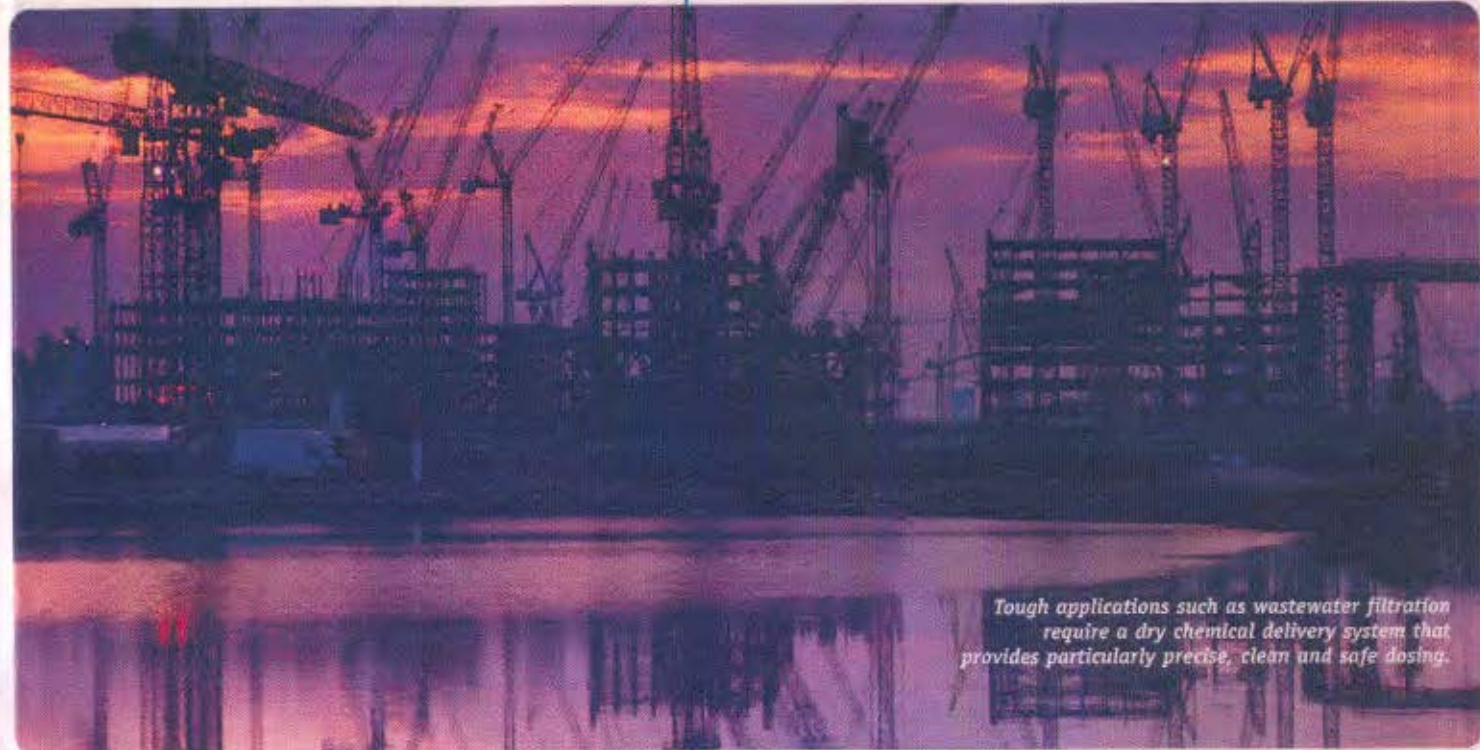
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*Tough applications such as wastewater filtration require a dry chemical delivery system that provides particularly precise, clean and safe dosing.*

## Guaranteeing Accuracy and Safety in Wastewater Filtration

Savvy team implements the automated dosing of dry treatment chemicals with a flexible screw conveyor to solve a tough filtration problem

*Editor's Note: Jeff Koepnick, the project manager at Oberlin Filter Co., says introducing chemicals precisely is key to a successful filtration process. In the following article, he shares how he and David Boger, a technical expert on flexible screw conveyor technology at Flexicon Corp., worked together on a tough wastewater filtration problem.*

*By Jeff Koepnick and David Boger*

**T**he key to dropping out heavy metals and separating resins from colloidal suspensions is to introduce exactly the right dry ingredient into the wastewater — consistently and in large volumes. This cannot be accomplished satisfactorily with a manual dry chemical delivery system.

Oberlin Filter Co., a global leader in high-pressure flatbed liquid-solid filtration systems for such demanding applications as filtering heavy metals and resins from colloidal suspensions, uses its DMax filtration system to clean "impregnation resin" wastewater. Such a tough application requires a dry chemical delivery system that provides particularly precise, clean and safe dosing.

To get the precision, cleanliness and safety it requires, Oberlin uses a flexible screw conveyor to introduce measured amounts of dry chemicals into wastewater. Its DMax system integrates pressure filter technology with a pre-treatment process that uses the flexible screw conveyor to deliver 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, called 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.

Oberlin's engineers researched numerous systems before determining that a flexible screw conveyor would be the best way to achieve consistent delivery of a variety of large quantities of dry chemicals. They chose this particular flexible screw conveyor because it conveys vertically as well as horizontally, can accommodate small configurations, requires little or no maintenance and is built tough. Flexicon Corp. in Bethlehem, PA, makes the unit, called the





**The DMax filtration system has an automated dry chemical delivery system for precise dosing.**

Model 1250. Flexicon, which specializes in the design and manufacture of bulk handling equipment, ran Oberlin's DMax process in its test lab to demonstrate that the conveyor would deliver dry ingredients according to specifications and then repeated the process at Oberlin's plant in Waukesha, WI. The conveyor has a 3-inch (76 mm) diameter, 10-foot (305 cm) long tube. Combined in-line with a very small filter and tanks, it results in a machine train that is 6 feet (1,829 mm) wide and 27 feet (823 cm) long. When treatment of large (8 feet or 244 cm) tanks of water is required, a bulk bag discharger is added to the DMax filter system to deliver large quantities of dry chemicals.

The conveyor has 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. This precludes cross contamination if multiple chemical agents are used. The working tank is equipped with high- 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 50 pounds of dry chemicals per day, which means workers have to lift heavy bags of material overhead for dumping into small hoppers atop large tanks, creating dust and spillage. The Model 1250's hopper, with

a dump height of less than 4 feet (122 cm), eliminates this problem.

Although Oberlin does not use treatment chemicals that are toxic or hazardous, the company is pleased its 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 to the DMax system, which is being used to treat heavy metal, emulsified, vibratory and color dye wastewater, enables the re-use of wastewater and the discharge of cleaner wastewater, reducing both cost and environmental impact. ●

*Additional information is available by contacting Flexicon Corp., 2400 Emrick Blvd., Bethlehem, PA 18020, at 888-353-9426 or by visiting [www.flexicon.com](http://www.flexicon.com) and [www.oberlinfilter.com](http://www.oberlinfilter.com).*

## Just the Facts

### About Filtration Process

- A specific amount of dry treatment chemical is automatically transported by the flexible screw conveyor from the chemical hopper to the working tank.
- The working tank contains colloidal rinse water from the manufacturing process.
- The dirty water and chemical mixture is agitated for a preset time and then automatically discharged into the pressure filter.
- The pressure filter removes the solids and discharges liquids into the clean tank.
- An equal volume of clean rinse water is pumped from the clean tank to the process tank to maintain liquid levels.