

# Vibratory Screener Solves Water-Recycling Problem

Catoctin Mountain Growers had a contamination problem with the up to 500,000 gals. of water the grower recycles each day for its crops. A new separator helped solve the problem.

By Henry Alamzad



This 9-acre greenhouse recycles up to 500,000 gals. of water daily, which is screened to remove leaves, peat moss and other debris. (Photos: Kason Corporation)

The water recycling process is an integral part of many growing operations due to water's rising cost and increasing scarcity in many parts of the world. In many cases, an important feature of the recycling system is that it does an efficient job of cleaning up the water to avoid contamination problems.

Catoctin Mountain Growers, Detour, Md., a wholesale grower that recycles up to 500,000 gals. per day, had a contamination problem. Catoctin grows 600,000-700,000 chrysanthemum and 200,000 poinsettia plants annually plus a variety of bedding plants that the company sells to big box stores, such as Wal-Mart and Sam's Club. The company grows this huge quantity of plants in a 9-acre greenhouse and 3 acres of outdoor space.

Chrysanthemums and poinsettias are grown in pots on a concrete floor, which is divided into 54 bays, each of 4,500 or 9,000 sq.ft. The plants are watered by flooding the bays sequentially to a depth of about 4 inches for a total of approximately 10,000 gals. in a smaller bay. Water is pumped continuously from storage to the floor then back to storage at a rate of 1,000 gals. per minute. At the 10,000-gal. main storage tank, the water is filtered to remove leaves, peat moss and other debris before being recycled.

## Filtering Material

The company was using a cascading filter (a sloped screen) to remove this material, but it did not work well, said Robert VanWingerden, Catoctin's owner. "It was a pretty fine screen, but it let debris fall into the tank and this became a source of disease that caused problems with the flowers."

VanWingerden had the filter replaced by an electrically driven circular vibratory screener that solved the problem. The Flo-Thru Vibroscreen separator, made by Kason Corp., uses a 72-inch-diameter vibrating screen to remove debris before the water goes into the tank. "It does a good job — the water is clean," said VanWingerden.

## Catoctin's Water Usage

For about eight hours a day, Catoctin cycles water from storage, through the greenhouse and back through the vibratory screener. The company does not discharge water to the sewer and supplies water from a well or a pond to make up what is used by the plants. Make-up water accounts for about 10 percent of the volume.

Catoctin has enough storage to fill two bays and part of a third at one time, so the usual situation is that the first bay in the sequence is being drained while the second is full and the



Top: The separator's stainless-steel screen is supported on a stainless-steel frame that has radial arms for structural strength. Bottom: Oversize particles migrate to the periphery of the screen where they exit through a discharge spout.



The 72-inch-diameter Kason Flo-Thru Vibroscreen separator screens up to 500,000 gals. of water per day. Side-mounted motors reduce height of the screener, allowing it to fit between the ceiling and top of the storage tank.

third is being filled. Valves control the flow in and out of each bay. Water is retained in a bay for a few minutes then is drained to one of two 2,000-gal. sump tanks.

From there, the water is pumped up to the Flo-Thru Vibroscreen separator mounted atop the main storage tank, which is about 10-ft. tall. Water recycled through the tank is retained in two 30,000-gal. tanks, for a total storage capacity of 70,000 gals.

The volume of water recycled ranges from zero up to 500,000 gals. per day, and an individual bay may be flooded once a day or only once every few days. "It all depends on the type of crop, the size of the flowers and the ambient temperature," VanWingerden said. The entire operation is computer controlled.

### Separator Features

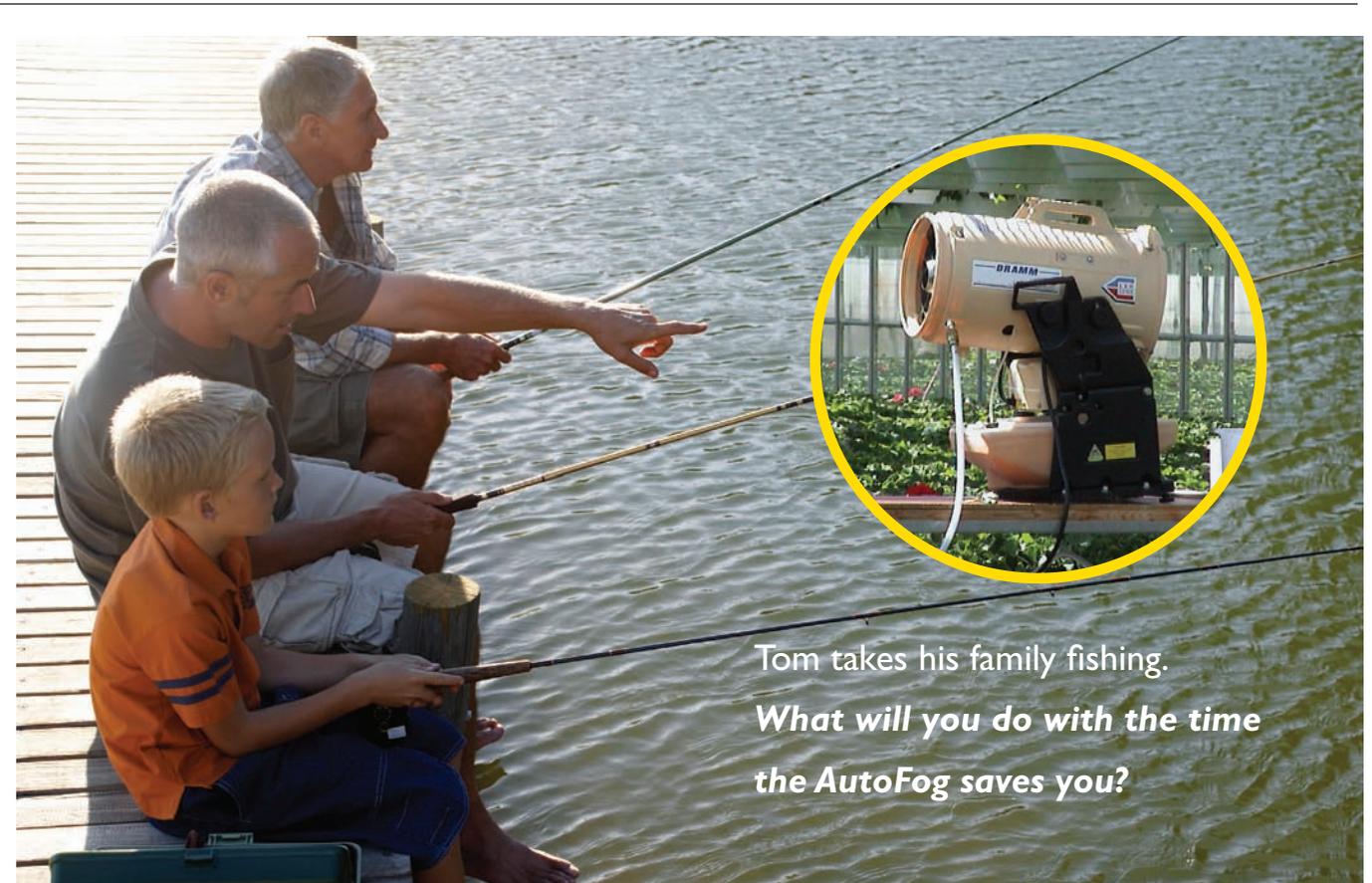
Catoctin's separator has a single screen deck of 145-mesh tensile bolting cloth (TBC), with a 16-mesh TBC backing screen for reinforcement. The stainless-steel screen is supported on a stainless-steel frame that has radial arms for structural

strength. The machine is powered by two unbalanced-weight gyratory motors (0.75 horsepower each), mounted opposite each other on the unit's exterior wall. Wastewater is fed onto the middle

of the screen and the vibratory motion imparted by the motors causes oversized particles to migrate to the periphery, where they are removed through a discharge spout. Water falls directly

through the screen and through a funnel into the main tank.

The side-mounted motors differentiate the Flo-Thru machine from Kason's standard Vibroscreen separators, which have a ▶



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## lessons learned



Greenhouse water flows through the screener into a 10,000-gal. main storage tank while debris falls into a tote.

single gyratory motor mounted under the screening chamber. The Flo-Thru design has a bottom outlet that can be located directly below the inlet, allowing a much higher flow rate. This was important for Catocin's needs, said Kason representative Christopher Dugan of Separator Technology Co., who installed the machine.

Another feature of the separator is it has a much lower profile since the motors are side mounted. This was important because of the limited space between the top of the tank and the ceiling. The separator, which is only 47 inches tall, fits into the restricted space with little room to spare.

### Easy To Clean, Maintain

Prior to installing the machine, VanWingerden considered a textile cloth filter in which water is pumped over a section of cloth that is pulled from a large spool. Periodically, a clean length of cloth is pulled off the roll. VanWingerden opted for the Flo-Thru machine with a stainless steel screen because, "I liked how it took the debris off and you don't have to keep putting in new cloth."

On the other hand, silt left on the Kason machine's screen at the end of the day dries overnight and slowly builds up over time, he said. "Material would not build up if we operated 24 hours a day, but the screen is relatively easy

to remove, so we take it out about once a month to flush it with water. **GPN**

**Henry Alamzad is president of Kason Corp. He can be reached at (973) 467-8140.**

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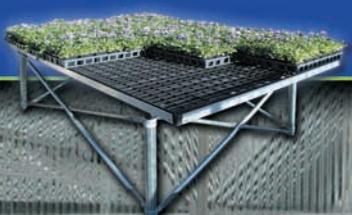
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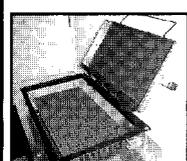
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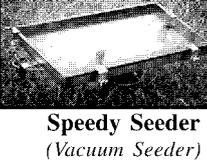
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