

## Case Study: Osborne Concrete Company

There are thousands of ready mixed concrete companies nationwide that cater to both the public and private sector. Concrete is a perishable product making long-distance shipping cost-prohibitive, resulting in numerous ready-mixed facilities. Many of these facilities are facing challenges related to water, due to rising cost per gallon as well as ever-evolving environmental regulation of wash water discharge.

Water is a key element to the ready mix concrete manufacturing process. From mixing new concrete to cleaning out trucks, high volumes of water are in demand. To stay ahead, many operations, large and small, are prepared to re-evaluate their process to find opportunities for water re-use.

Osborne Concrete Co. is a family-owned company that has manufactured ready mixed concrete in Romulus, Michigan since 1965. In 2010 they transitioned to become 100% recyclable, building and implementing a new system for cleaning their fleet of trucks. **Their main concern was wastewater and the financial and environmental implications of its disposal. At the time, only 25% of the wash water was able to be re-used and wash water disposal had become an ongoing problem.**



### *The Problem*

Osborne Concrete generates roughly 50 gallons of wash water per truck. In order to separate solids from liquids they had to use a very large setting pit, a less than desirable solution:

Issue 1: The solids settle slowly.

Issue 2: The pit takes up a large amount of space. If the pit fills with water and the solids have not settled, they were unable to continue their washing cycle, which slowed production.

Issue 3: In order to dispose of the wash water, they were required by the State of Michigan to apply for a water discharge permit through the Department of Environmental Quality (DEQ). There is a cost associated with this permit as well as quarterly water testing and therefore a potential for fines.

It was clear they needed to further improve their process to save time, space, and money. Wash water was in abundance and they needed a solution that allowed them to recycle and, when necessary, dispose of the excess wash water.

While researching potential solutions for solid-liquid separation, Osborne contacted M.W. Watermark to inquire about a filter press. M.W. Watermark tested a sample of the slurry in their dewaterability testing lab and recommended an 800mm, 20 cubic foot filter press with a semi-automatic plate shifter to fit into their current recycling system.



The filter press provides Osborne multiple benefits. By removing the solids from the wash water, they are able to re-use a significant amount of the filtrate to make new concrete, or, with a filter bag to wash trucks.

***“The filter press allows us to run everything through our recycler system.”***

They are also able to reduce the waste output from washing out the inside of the drums on the concrete mixers. Frequently they produce more grey water (wash water) than they can re-use. **Now, the solids can be efficiently removed from the water and they may discharge the filtrate without a water permit.** This creates room in an agitated tank for more clean outs each day and has eliminated the use of an unsightly settling pond outdoors.



## The Solution

Incoming truck drums are cleaned and water is sluiced out to rotary drum – the sand and stones are separated by a screen in the drum. The concrete is washed to separate the cementitious material from the filler sand, aggregate and other solids. Filler sand and aggregate is sent through a trommel screen that separates the material by size. This material can be re-used for non-critical applications.

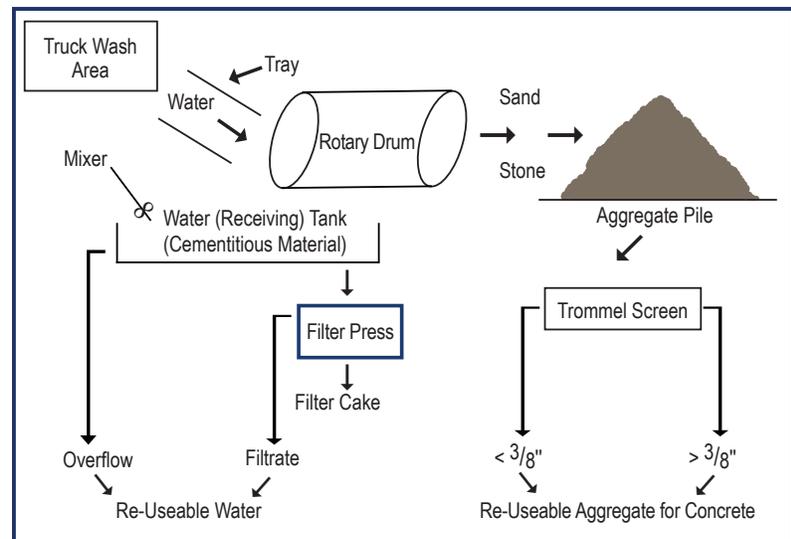


Most of the water empties into a 20,000 gallon receiving tank that includes a mixer. The water in the tank must be agitated to avoid solids settling at the bottom of the tank.

Slurry from the agitated tank is pumped into the filter press where the water is filtered through a series of recessed chamber plates that are covered with filter cloth.

Solids form a “cake” on the cloth further filtering the liquid. Once the press is full, it is opened and the plates are separated by a pneumatically operated plate shifter. If necessary, an operator can use a spatula tool to dislodge the cake.

The filter press separates the liquid from the fine particles of cement. As stated previously, instead of fresh water, Osborne Concrete is able to use the clean filtrate as discharged from the filter press to mix new cement or to wash trucks.



The solids discharged from the filter press are dried in the sun. Eventually, Osborne would like to grind up these solids, which are primarily lime, to sell to farmers as soil amendment.

Prior to implementing their M.W. Watermark filter press, Osborne was able to re-use only 25% of the processed wash water. **With the installation of the filter press, 100% is available for re-use. They can now safely dispose of excess recycled water and they estimate that the disposal volume was cut at least in half by using a filter press.** They are able to better keep up with the wash water generation as the filter press can run multiple cycles each day.



**There is also more recovered aggregate which can be re-used.**

**Now that their system is 100% recyclable,** Osborne is looking forward to partnering with commercial companies who require vendors to have earned LEED credits. LEED credits demonstrate how much new product vs. recycled product is being used at a facility. Currently, their product ranges from 60-80% high quality recycled material.

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**An M.W. Watermark filter press is a proven, cost-effective method for water re-use in the ready mix concrete industry. Contact the M.W. Watermark Sales and Service team with questions: 616.399.8850 • service@mwwatermark.com**