



Iron Foundry

The foundry recycles engine blocks to make iron pipe. They have a 350-gpm closed loop water reuse system that is used to cool the molds as part of the manufacturing process. The facility was using a coagulant and a flocculant to try and reduce the solids carryover from their clarifier. The solids in the reuse water were building up in their system filters causing intermittent downtime (downtime in a foundry of this size is in the range of \$10,000/hour in lost production, salaries, etc.). The coagulant/flocculant program was costing \$3,600.00/month and was not capable of generating a sludge that could be dewatered on their belt press. This caused the solids to be returned to the main sump and back to the reuse loop.

The operation of the reuse system required full time attendance on both shifts to keep the solids carryover to a minimum. The reuse process included a cooling tower after the clarifier to cool the water prior to reuse in the plant. The cooling tower builds up with solids that carryover from the clarifier requiring 8 man-hours/week to clean every Friday.

Solution:

The objective of the trial was to reduce the solids carryover in the clarifier and from the belt press. To do this, the solids needed to settle in the clarifier and the sludge needed to have the consistency to dewater on the belt press. This would provide clear water for cooling of the molds with no downtime.

The trial involved the use of Floccin-D to replace the coagulant and flocculant. The water cleared up within 30 minutes and the belt press started generating a sludge cake as the solids were removed from the system. The effluent water from the clarifier was very clear (low solids, see picture right) with turbidity similar to tap water (see the photo). The usage rate of the Floccin-D was 15 lbs/hour or 15 lbs/21,000 gallons (0.71 lbs/1,000 gallons).



Benefit:



The facility now makes a sludge that can dewater on their press reducing the solids in the system. The Floccin-D eliminated the need for the coagulant and the flocculant. The cooling tower no longer needs to be cleaned on Fridays. The pre-filters need a minimal of cleaning and there has been no production downtime due to solids buildup in the water reuse system. The operators now spend 20% of the time watching over the system. The Floccin-D has proven to save this facility an average of \$15,000/month in labor, chemical costs, and plant downtime (lost production) due to water reuse quality.