

CASE STUDY

Aqua Guard® Screen



Industrial Plastic pellets are no longer a problem after storms

A Southwestern chemical company manufactures various grades of polyethylene at their Texas plant. The finished product takes the forms of small plastic pellets. The pellets are inert, do not degrade easily and they float. The plastic product is shipped from the plant in rail cars. Inevitably, pellets are lost during the rail car loading process.

Under normal operating conditions, this company is able to capture most of the waste pellets in the storm sewer system. During rain events, the stray pellets are collected in drainage ditches located around the loading site. The drainage ditches flow to three sumps. After the solids are removed from the sump, the flow is directed to a settling pond. Following the settling pond the flow goes to a county ditch that eventually flows into a nearby ship channel. While this makes for a cumbersome solids handling situation, it is effective in preventing solids from being released into the environment.

Problem

However, during storm events, the plastic pellets get swept past the underflow weirs in the sumps because of the higher flows. These floatable plastics go directly to the settling pond and into the county ditch. When the county discovers pellets in their ditch, fines are levied on the plant. Fines were averaging \$100,000 per year. Added to this was the maintenance costs of cleaning solids out of the three sumps.

Solution

The chemical company hired CDM to evaluate the problem and provide a solution. CDM recommended screening the flow from the drainage ditches as it entered the sumps. Four pilot screens were brought in for testing. Three of the screens were channel screen and the fourth was to be used as a polishing screen to remove finer plastic material that might pass through the channel screens.

Results

The Parkson Aqua Guard Bar/Filter Screen with a 0.40" screen opening provided the best performance during the testing. The operation of the screen was controlled by a ultrasonic level sensor. By minimizing the run time of the unit, a good precoat was maintained which enhanced the capture of very fine particles. Since the Aqua Guard® screen was capturing particles much smaller than the screen opening, the polishing screen proved to be unnecessary. The Aqua Guard screen removed 100% of the pellets and a large percentage of the fines that normally would have gone to the settling pond.

The chemical company purchased three Aqua Guard screens, one for each sump. In the two years since the screens went into operation, the plant has received no fines for discharging pellets.



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