

CASE STUDY

Aqua Guard® Plastic Pellet Removal



Aqua Guard® Screens Reduce Plastic Pellet Discharge for Plastics Manufacturer, Improve Water Quality Flow to Gulf of Mexico

Background

A large Texas plastics manufacturer located close to the Gulf of Mexico manufactures various plastics including PE, PP, and HDPE at their complex. The finished products take the form of small plastic pellets which are inert, do not degrade easily, and float. The plastic product is shipped from the plant in rail cars. Inevitably, pellets are lost during production, transportation, and during the rail car loading process.

Under normal operating conditions, the company can 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 plant and loading site. The drainage ditches flow to different sumps around the complex. In some areas the flow is directed to settling ponds.

In all these areas, the flow goes to a county ditch that eventually flows into a nearby ship channel and then the Gulf of Mexico. While this made for a cumbersome solids handling situation, it

was effective in preventing solids from being released into the environment, until it wasn't.

The Challenge

During storm events (common and frequent in the area), higher flows caused the plastic pellets to sweep past the underflow weirs in the sumps and ponds. These floatable plastics went directly into the county ditch and ended in the Gulf's waters, making these events environmentally sensitive.

The Solution

The company approached Parkson to help evaluate the problem and provide possible solutions. Due to the existence of drainage ditches, screening the flow before they discharge into sumps or ponds made the most sense. They were able to run a pilot test using a Parkson Aqua Guard Self-Cleaning In-Channel Screen with an opening of just 1mm (plastic pellets are commonly larger than 1mm).

Parkson Case Study: Aqua Guard® Plastic Pellet Removal

The Aqua Guard's filter belt surface consists of individual elements with integral fingers that aid in solids removal. Microplastics and other fine solids captured on the screen surface form a mat. The system collects, conveys and discharges these solids to provide exceptional capture rates with low headloss.



Typical plastic pellet discharge setup using a lined dumpster

The Results

The Aqua Guard pilot test was successful, and the results convinced personnel this was the solution they needed. The screens removed 99%+ of the pellets and many fine solids that would have normally gone to the settling pond. Due to the excellent results, the company purchased a total of eight different size Aqua Guard screens for various locations around their complex. In the two to three years since the screens were in operation, the plant has received no complaints about discharging pellets.

This successful story was also implemented at another plastics manufacturer in Iowa. Parkson is ready to help other plastic pellet producers reduce or even eliminate any environmental impact their pellets may have on the surrounding area, rivers, and oceans as the final destination.



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