



BOD Reduction in Beverage Waste Discharge

Executive Summary

Beverage manufacturers have long struggled to find effective, economical and environmentally friendly ways to dispose of out-of-date and off spec product. Municipality sewer systems are often unable to handle the high BOD found in such products. Pre-treatment systems can be expensive.

Custom Environmental Technology has developed a system that is economical and environmentally friendly. CET system recycles virtually all of the recoverable sugars in the stream while keeping all discharges within acceptable limits of municipal sewer systems.

Custom Environmental System involves a Reverse Osmosis treatment system located at the customer's site. This treatment system produces two streams; a clean effluent stream with virtually no BOD and a second stream of concentrated sugars that can be used as a feedstock to a bio-refinery operated by CET.

Reverse Osmosis Treatment System

The Reverse Osmosis Treatment System is the adaptation of well developed RO technology similar to water purification that is found in most bottling operations. From the picture below, you can see the clean discharge from the RO module. The concentrated solution is collected for transportation to the bio-refinery.



Overview of System

The discharge stream is collected for treatment. It is filtered and then pumped through a Reverse Osmosis module where the separation occurs. The clean filtrate that is discharged to the municipal sewer system is within the discharge limits, eliminating surcharges due to excessive BOD.

The Reverse Osmosis Treatment System is designed to be an easy to operate system that reliable service with minimal maintenance.

Custom Environmental Technology Facilities

Custom Environmental Technology currently operates a Waste Water Treatment Facility at its Statesville location. The facility is permitted to handle Petroleum Contact Water, Oily Water Waste, High Organic waste, and other industrial wastes. All of CET's water discharge is randomly sampled for discharge compliance analysis.

CET is expanding its operation to include Ethanol Production from food and paper waste streams.

CET is accepting organic wastes immediately and treating with its current facility until the bio-refinery is complete.

CET has developed a small scale bio-refinery to produce ethanol, other bio-products and animal protein supplements.

The bio-refinery will be designed to accept three main types of feed stocks: sugars, starches, and paper/cellulose.

The production of ethanol from sugars is very straight forward. The sugar solution is reduced to the proper concentration. The pH is adjusted and the optimal temperature is maintained. The solution is pumped to a fermenter where yeast converts the sugars to ethanol. The ethanol is then distilled and dehydrated to produce motor fuel grade ethanol.

The unique design of the CET/BPI bio-refinery also allows for the harvest of excess yeast. The yeast can be used as a high protein additive to animal feed.

Production of ethanol from starches and paper/cellulose is very similar except that this feedstock requires a pretreatment process. Enzymes act on the starches and cellulose to break these components into sugars. Once this is done, the process continues as described above.