nyex™
An Arvia Solution

How the Nyex™ Treatment System helped a major Food and Beverage manufacturer remove colour from discharge water

Equipment Capacity/Flow Rate	Compounds of Concern	Influent Concentration	Treatment Targets	Unit Energy Consumption
Low Flow	COD & Colour	510 mg/L & 1550 Pt-Co (Apparent)	40 mg/L COD & no colour	tbc

Background

A major Food and Beverage manufacturer approached Arvia to help them to treat their process discharge water from a tea plant, which was based in an area of natural beauty. They were required to eliminate the colouration in the wastewater and reduce the Chemical Oxygen Demand (COD) of the water to an environmentally acceptable level.

The presence of colour in the discharge water is caused by dissolved organics and tannins which are created during the tea manufacturing process. This colouration effects not only the aesthetic appearance of the water, but when this wastewater is discharged into nature, photosynthesis activity becomes limited, which has detrimental effects on the aquatic ecosystem.

Moreover, releasing untreated wastewater into the ecosystem can result in:

- Bioaccumulation of chemicals in the food chain
- Population decreases in aquatic species

Manufacturers must also adhere to strict limits of Chemical Oxygen Demand (COD) for wastewater which is to be discharged into the environment. Failure to comply with regulation can result in a loss of permit, operational downtime, limited production volume and severe fines.

By adopting a wastewater treatment process which has the ability to remove trace levels of organics and reduce COD, manufacturers meet regulation and prove commitment to the protection of the environment.

The Objectives

As this tea wash wastewater was going to be discharged to an area of natural beauty, it was a strict requirement to ensure that contaminants were removed and also that the water was aesthetically acceptable. The objectives were to:

- Achieve the target discharge consent for the Chemical Oxygen Demand, which was set at 40mg/L.
- Ensure no visible colour remained in the wastewater after treatment. Colouration was measured in Platinum Cobalt Units which provide guidance on the safe level of colour in discharge water.

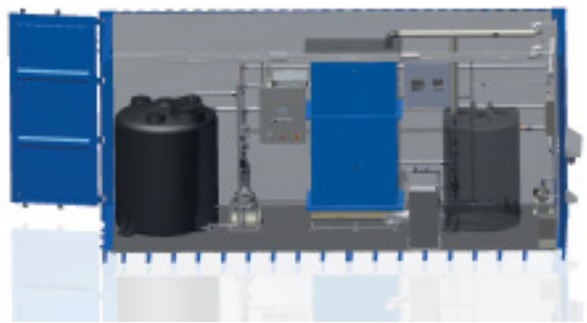
The Solution

Arvia's Nyex™ Treatment System combines adsorption with advanced oxidation in a single, scalable unit. The system provides a chemical free and environmentally sound solution, which comes in a modular design and can be bolted onto an existing treatment solution (Figure 1). It is also versatile and can be modified to suit a manufacturers specific requirements.

The aim of the trial was to demonstrate and evaluate the effectiveness of the Nyex™ Treatment System when removing colouration from the wastewater and reducing the trace level COD to an environmentally acceptable level, preventing the pollution of waterways.

The trial was carried out on a full-scale unit Nyex 7-100a treatment system, to enable the treatment of the effluent to be rigorously tested.

The Solution - Figure 1



Containerised Nyex 7-100a Treatment System

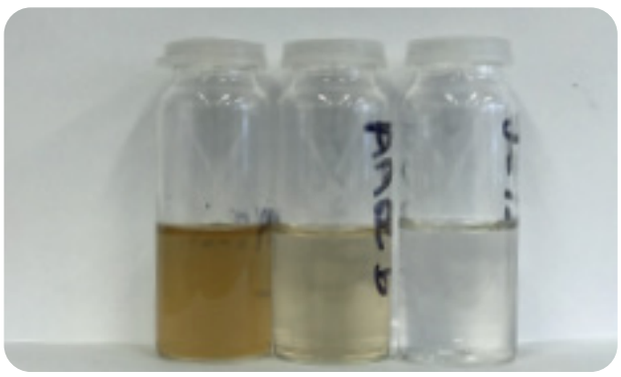
The Results

Figure 2 shows the reduction in colour and COD during the treatment process.

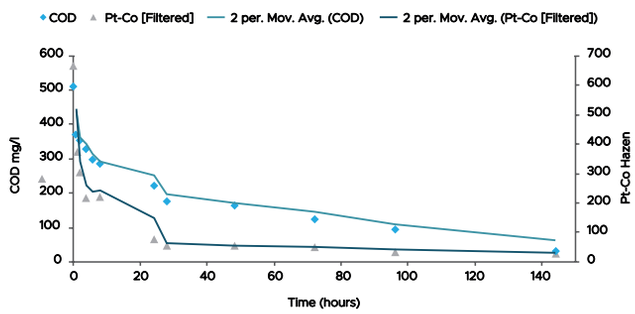
Prior to treatment, the inlet COD was 510mg/L, following treatment with the Nyex™ system, the water was compliant with the discharge consent of less than 40mg/L, achieving 31mg/L.

Colouration, measured in Platinum Cobalt Units, showed that the treated water was virtually colourless and was safe and acceptable for discharge (Figure 3).

The Results - Figure 2



The Results - Figure 3



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Get in touch to discuss your company's treatment challenges and arrange a treatability trial on your wastewater today.