customer reference

ADVANCED EFFLUENT TREATMENT FOR FINE CHEMICAL MANUFACTURING

Loprox unit at Hickson and Welch

In January 2000, BOC commissioned a unique advanced effluent treatment facility for Hickson and Welch in Castleford, West Yorkshire. The plant incorporates Loprox and Vitox technology to ensure destruction of hard organic wastes to enable discharge directly to the River Aire.

Previously, Hickson and Welch only carried out a limited amount of pre-treatment of waste on-site and then either pumped it to treatment works or removed it for off-site disposal. The costs of this were high and likely to increase in the future. Furthermore, the company was under pressure from the Environment Agency to review their effluent disposal policy. By installing a facility on site they were able to operate independently of the town's sewage works and discharge directly into the river beside the plant.

Several systems were looked at for the site before the Loprox and Vitox combination was selected. The main reasons for this choice were the ability of the combined system to treat all effluent (both biodegradable and non-biodegradable) and the fact that the Vitox plant is compact and could be located on a congested site.

The technology combination is not the only unique part of this partnership. BOC also owns and maintains this £10 million plant over a 15-year period. This means that Hickson and Welch do not tie up any capital in non-core activities. BOC managed the plant for an initial 12 month proving period and then the day to day control was handed over to Hickson and Welch.

The first discharge took place in January 2000 and fell well within the Environment Agency's consent levels, despite having a variable effluent stream from many different processes. The COD destruction levels far exceeded the 75% target and reductions of greater than 83% were achieved.

This plant has enabled Hickson and Welch to considerably reduce costs and they now have the flexibility to treat an even greater range of wastes on site. They also have peace of mind provided by – BOC's maintenance support and can produce non-toxic effluent which falls within their environmental consent.

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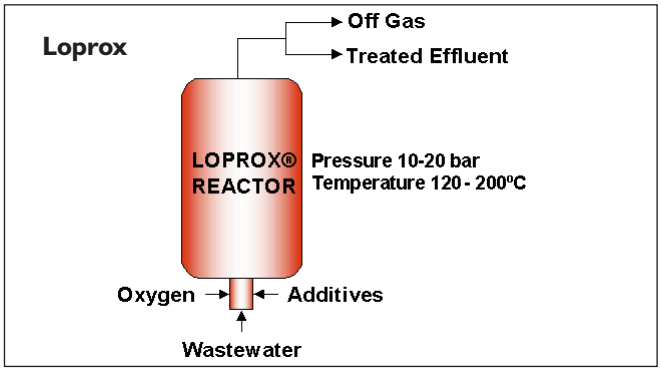
Oxygen Vessels, amonia stripping columns and Loprox unit

Vitox biological plant

The LOPROX process

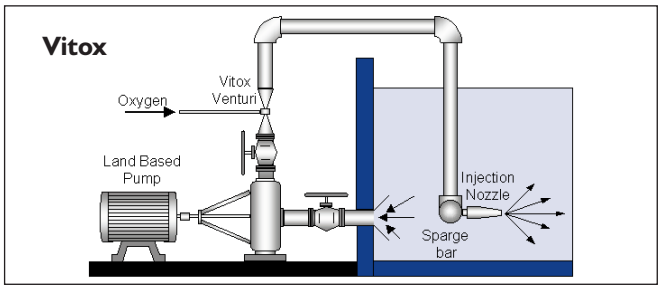
The Loprox wet oxidation process can treat a wide range of complex and toxic wastes. When the wastewater enters the plant, additives and pure oxygen are introduced. The mixture remains in the reactor for between two and four hours at a pressure of 10 to 20 bar and at a temperature of 120 to 200°C. Under these conditions, the organic compounds are almost completely oxidised.



Any residual organics are converted into easily biodegradable compounds which can then be removed in a biological wastewater treatment plant. The system is licensed by Bertrams and BOC is the sole UK licensee.

The VITOX system

The Vitox system replaces air with oxygen in the activated sludge process for treating wastewater. Conventionally, the required oxygen is supplied by mixing air into the water with various types of mechanical aerators. By using pure oxygen injected into a side stream instead of air through diffuser blocks or surface agitators, a greater population of micro-organisms can be maintained, thereby allowing a greater amount of wastewater to be processed in a given hydraulic volume. Vitox can be used as a retrofit on existing plants or as the basic process for new green-field installations.



The process eliminates the surface agitation caused by mechanical aerators, thus reducing airborne organic compounds and odours caused by the stripping action of large volumes of air passing through the wastewater. Surface foaming generation is also reduced.

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