



AMBR MEMBRANE BIOREACTOR

Aquabio containerised AMBR for 'Red List' Removal and Water reuse - chemical runoff wastewater at Simon Storage (ISCo), Immingham Docks

Aquabio has designed and built a modular membrane bioreactor plant (AMBR) at the Immingham Storage Company (ISCo) at Immingham. The plant efficiently removes a broad range of trace organics, notably Red List substances, from a complex blend contained in ISCo's chemical storage run off water to meet the stringent EA discharge. Containerising the key elements of the system also illustrates the modular design capability of Aquabio's advanced membrane bioreactor plants. A 10m³/hr reverse osmosis treatment plant has now been added after the AMBR for softened water reuse in boilers to produce steam for Greenergy biodiesel.



ISCo commissioned Aquabio to carry out pilot trial studies between December 2004 and February 2005 which consisted of a physico-chemical treatment followed by an AMBR membrane bioreactor. The trials proved very successful, with final effluent analysis after the AMBR plant showing all consent parameters (including red list metals, VOCs and phenol) well below the minimum expected consent limits. This high performance was achieved primarily by the biological treatment carried out in the AMBR plant. However, the pre-treatment provided pH correction, primary removal of solids and oily material to protect the downstream biological process.

The complete plant is designed to treat up to 480m³/day of wastewater. The system includes pH control and ASTRASEPARATOR lamella, proprietary JETOX aeration and mixing technology in the bioreactor, which can operate at mixed liquor levels in excess of 15,000mg/l. The AMBR crossflow ultrafiltration biomass separation system includes two 'containerised' banks of membrane modules which are fully automated for start/stop, flushing and cleaning.

EA Consent Compliance for:-

Styrene, Toluene, Total Xylene, Phenol, Benzene
Tetrachloroethylene, Trichloroethylene, Mercury
Chloroform, 1,2, Dichloroethane, Chromium,
Carbon tetrachloride, Copper, Iron, Nickel,
Zinc, Lead, BOD, pH, Ammonia

Also:-

TSS Reduction : >99.9%

Membrane flux range : 150 to 220 litres/m².h



The installation also includes Siemens PLC and SCADA with ASI communications network. The system also enables remote monitoring and operation in 'real time' from Aquabio offices in Worcester. The Form 4 MCC was designed and installed by Aquabio's electrical specialist, Automation and Control Limited in Worcester.

For further information about this, and other, AMBR systems and other products and processes, please contact us at Aquabio Limited, Worcester, UK, either by e-mail or fax.

Tel : +44 (0) 1905 641966
e-mail : info@aquabio.co.uk

Fax : +44 (0) 1905 641977
Web : www.aquabio.co.uk