



## ***AQUABIO REVERSE OSMOSIS PLANT ENABLES HIGH QUALITY DEMINERALISED BOILER FEED WATER AT PREMIER INTERNATIONAL FOODS***

Aquabio Limited has designed, built and commissioned another Reverse Osmosis plant for high quality water treatment. This plant at a UK food manufacturer is designed to demineralise incoming mains water before feeding the site boilers, which then has a significant impact on the boiler blow down frequency and the amount of softening and antiscalant chemicals previously used to treat the normal towns water supply. The energy savings and reduced chemical cost provides a rapid return on capital invested.



The reverse osmosis (RO) system includes all the necessary pre-filtration, feed tanks, automation and control systems and is configured in two parallel banks each capable of producing up to 20m<sup>3</sup>/hr of softened water. Therefore, a total of nearly 1,000m<sup>3</sup>/day can be produced with the capability of on line cleaning with 50% duty still available. The operation is fully automated with PLC control and data logging of key process parameters (e.g. conductivity, pH, temperature etc.) with touchscreen operator interface and link to the site SCADA.

The twin plants are fed by a common feed and filtration system with chemical conditioning of the feed water provided by in-line dosing systems. The water after the membranes has an ultra clean permeate stream with very low conductivity, <20µS/cm (low TDS content) and a reject stream containing the concentrated salts. Each of the RO units comprises of two stages: the first stage of 3 No. RO vessels and a second stage of 2 No. vessels. The second stage receives the reject stream from the first stage to increase the overall 'recovery' of the system to approximately 70-80% permeate with 20-30% 'reject'. Each pressurised RO vessel contains 6 No. spiral wound membrane modules. The process starts with the RO feed tank which is kept topped up with town water via an actuated valve. This water is then pumped by duty/standby pumps through a 20, then 5, micron pre-filtration system, antiscalant is added and pH adjusted down to reduce scaling of the RO modules (due to the concentrated salt levels). Bisulphate is also added prior to the RO units to eliminate potentially damaging free chlorine. High pressure pumps then feed the water to main RO system with the speed of these pumps automatically adjusted to achieve the required permeate flow. The reject stream is controlled using a valve on the reject piping.



Following RO treatment the water flows to a nearby collection tank before being transferred by duty/standby centrifugal pumps to the boiler make-up inside the factory. The demand for permeate controlled by maintaining a constant pressure in the permeate transfer pipeline.

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

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