Salt Separation Services

Project Case Study

Heathrow Terminal 5

Client: Laing Utilities Ltd

End User: BAA

Capacity: 3 x 27m³/hr

Contract Value: circa £0.6M

Scope: Detailed design, manufacture, procurement, works testing, delivery, off-loading, temporary storage, installation, testing and commissioning.

Contract Completion: August 2003 to July 2006

General

The water supply system for T5 was developed around the key objectives of achieving a 70% reduction in potable water demand, meeting the effluent discharge consent negotiated with Thames Water plc and guaranteeing supply providing a sufficient level of redundancy and back-up.

Potable water is only used for usages requiring potable water quality and as back-up supply to usages supplied by non-potable water. Borehole water is treated by RO to supply the make-up water demand of the cooling towers. Toilet flushing, external washdown and irrigation are supplied in priority order by recycled concentrate from the RO's, rainwater and borehole water.

Project Details

Salt Separation Services were asked to provide a detailed tender for the supply of RO plants c/w pre-treatment, CIP system, chemical dosing, etc…

After a fairly lengthy competitive tendering process, Salt Separation Services were awarded a design contract in August 2003 for the detailed design of the equipment as well as on-site sampling of the boreholes for subsequent analysis. This also included attendance at HAZOP meetings and regular design review meetings. From August 2003 until December 2003 the design was continually evolved in conjunction with client.

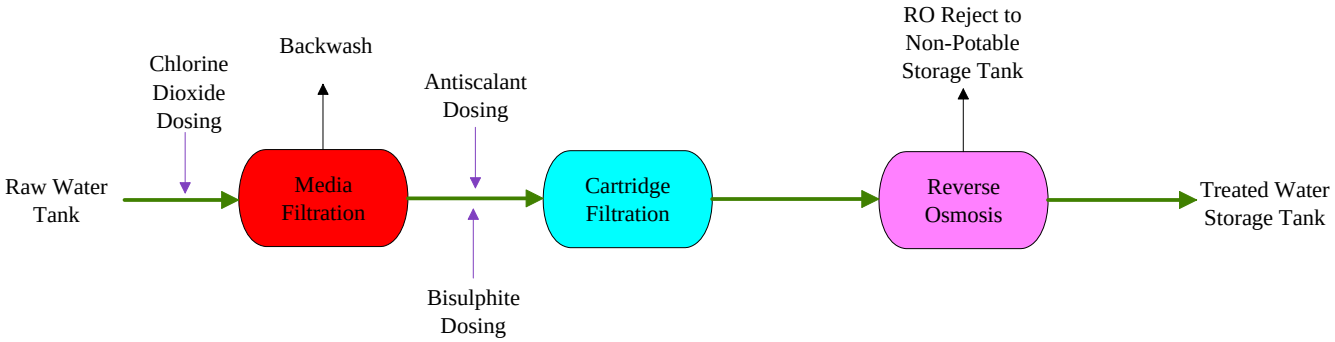
In July 2004, Salt Separation Services were awarded a contract for the manufacture, works testing, procurement and delivery of the equipment.

The work also involved the development of the control and monitoring interfaces with the Heathrow Automation and Remote Telemetry (HEART) system.

Three 27m³/hr RO streams were provided, with each being completely autonomous with their own PLC and HMI (for operator interface, alarm history monitoring and operating parameter recording).

Each stream comprises of oxidation filtration, antiscalant dosing, bisulphite dosing, cartridge filtration and RO. A CIP system is fitted on each RO skid to enable off-line RO membrane cleaning with warm water being supplied from a common hot water heater tank installed on the central RO skid.

Process Flow



Performance Characteristics

Parameter	Design	Actual
Feed TDS	472 to 734 mg/l	468 mg/l
Feed Temperature	12 to 21ºC	12.3ºC
Feed pH	8.2	8
Feed Flow	36 m³/hr	36 m³/hr
Permeate TDS	15 to 23 mg/l	14 mg/l
Permeate Flow	27 m³/hr	27 m³/hr

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