

Project Case Study

CVF – Future Aircraft Carrier Project

Client:	BVT Surface Fleet
End User:	Royal Navy
Capacity (per ship):	3 x 175 m ³ /d SWRO, 1 x 50 m ³ /h Embarkation Filter, 2 x 5 m ³ /d TWRO & 4 x Hypochlorite Dosing Units
Contract Value:	circa £1.3M
Scope:	Design, manufacture, procurement, works testing, delivery, installation inspection and commissioning.



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Contract Completion: February 2008 to TBC

General

The two largest and most powerful surface warships ever constructed for the Royal Navy are to be fitted with Reverse Osmosis plants manufactured by Salt Separation Services.

The two new Aircraft Carriers, HMS Queen Elizabeth and HMS Prince of Wales, are due to enter service in 2014 and 2016 respectively.

The contract with BVT Surface Fleet Solutions, one of the Aircraft Carrier Alliance participants, covers the design, manufacture and commissioning of Reverse Osmosis plants for both fresh water production and for the production of technical water. In addition, the scope of supply also includes chlorine dosing equipment and embarked fresh water filtration.

The contract, worth approximately £1.3 million was awarded following a competitive tendering process.

Project Details

After a lengthy competitive tendering exercise and having been afforded preferred supplier status, Salt Separation Services provided the Aircraft Carrier Alliance with detailed information to enable certain aspects of the ship design to be completed.

In February 2008, Salt Separation Services were contracted by BVT Surface Fleet to design, manufacture and set to work (during HATs and SATs) 3 x 175 m³/d seawater RO desalination plants, 2 x 5 m³/d technical water RO plants, 1 x 50 m³/h fresh water embarkation filtration package and 4 x hypochlorite dosing units for each aircraft carrier.



Desalination Plant

High pressure pumps are axial piston (swashplate) pumps with wetted parts in Duplex and Super Duplex Stainless Steel. These pumps have an 8,000 hour maintenance interval, require no lubrication and have a small footprint. In addition, no (nitrogen charged) discharge pulsation damper is required.

Each technical water RO plant is a fully automatic self-contained package with its own pre-treatment capable of producing 5 m³/d of permeate with a TDS of <10 mg/l from domestic fresh water.



Desalination Plant Being Shipped



Technical Water RO Plant

In all cases, plant operation is fully automatic requiring minimal operator intervention.

In the case of the 175 m³/d plants, RO membrane flushing and cleaning is fully automatic – all the operator has to do is add chemicals when instructed to do so!

The RO plants are also configured to allow automatic 24 hour flushing to prevent microbiological fouling.

The fresh water embarkation filtration unit and the hypochlorite dosing units are for treating bunkered shore water. In the case of the filtration unit, this is used when the shore supplied water is of dubious quality. Fitted with 1µm absolute rated filters, the unit is capable of filtering out gut parasites such as cryptosporidium.



Hypochlorite Dosing Unit



Fresh Water Embarkation Filter Unit