Pentair Water Demin Water Treatment Plant

**Stock Code:** TS018S  
**Manufacturer:** Pentair Water  
**Model:** P6  
**Year of Manufacture:** 2007  
**Serial:** PO 266  
**New or Used:** Used (Second Hand)  
**Work Envelope (WxDxH):** 6 x 1000ltr anion / cation vessels  
**Process Stages:** 2 stage water treatment  
**Other Info:** Ultra efficient high quality water set  
**Weight:** Est 7000kg total  
**External Dimensions (WxDxH):** approx 8000 x 4000 x 3000 mm

The Pentair Water recycling Ion exchange System is designed to operate at peak efficiency by utilising packed resin beds in conjunction with counter current regeneration's.

Originally designed and developed to offer very high water quality whilst operating within an alkaline incoming water supply environment with a high TDC contamination level.

A Demineralisation Plant consists of two types of pressure vessels containing cation and anion exchange resins. Various types of ion exchange resins can be used for both the cation and the anion process, depending on the type of impurities in the water and what the final water is used for.

Typically, the cation resin operates in the hydrogen cycle. The cations in the water (i.e. calcium, magnesium and sodium) pass through the cation exchange resin where they are chemically exchanged for hydrogen ions.

The water then passes through the anion exchange resin where the anions (i.e. chloride, sulphate, nitrate and bicarbonate) are chemically exchanged for hydroxide ions.

The final water from this process consists essentially of hydrogen ions and hydroxide ions, which is the chemical composition of pure water.
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Composite resin vessels with charge of strong cation and anion resin; control-panel encompassing a conductivity measurement and alarms, etc; acid and caustic injection facility from semi-bulk containers.

The high-purity water from a demineralised plant is typically used for high pressure boiler feed, wash water for computer chip manufacture, pharmaceutical process water, micro-electronics and any process where high-purity water is a requirement.

With counter-flow regeneration, the regenerant acid and caustic passes in the opposite direction to the service flow water.

With counter-flow regeneration, the regenerant passes through the resin near to the outlet of the unit and, hence, counter-current flow regeneration has lower leakage to service than the co-current method.

Water quality specification:

Original incoming water supply specification at > 800µS (micro siemens), outgoing water supply of < 4 µS

General principles of the system:

Packed resin beds optimise performance by increasing the operating capacity of the resin. Since the resin kinetics are more efficient, smaller resin vessels are utilised.

The ion exchange system is designed to be used as a complete water recycling system.

The ion exchange system consist of several fiberglass reinforced plastic (FRP) pressure vessels that are filled with the appropriate amount and type of ion exchange resin.

The systems are skid-mounted with the valve manifold being pre-piped.

A control system, based on an Siemens S7 PLC, controls all of the functions of the ion exchange system and its associated equipment. The system is enhanced with a graphic UNIOP HMI touch screen interface.

This custom system was built to the highest of specifications and installed in 2007, yet only ran for a total of 2 years before the process was decommissioned and mothballed.

The original purchase and installation cost where in excess of £100,000

Features:

- Fully assembled at the factory and factory tested
- PLC controls for rugged and reliable performance
- Units are skid-mounted and are system integrated
- Units are match marked for ease of reassembly
- Rapid installation assured by skidded assemblies and mistake proof electrical connections
- All components are specifically chosen for there matching characteristics.
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Technical specifications:

- Service Flow Rate
  15 m3/hr
- Number of pre-filter tanks
  Two
- Tank Diameter
  42” / 1065 mm
- Column Height
  76” / 1933 mm
- Tank Material
  FRP
- Type
  Vertical Cylindrical
- Number of Cation Tanks
  Three
- Tank Diameter
  36” / 914 mm
- Column Height
  76” / 1933 mm
- Tank Material
  FRP
- Type
  Vertical Cylindrical
- Number of Anion Tanks
  Three
- Tank Diameter
  36” / 914 mm
- Column Height
  76” / 1933 mm
- Tank Material
  Composite/FRP with Polyethylene Liner
- Type
  Vertical Cylindrical
- Method of Construction
  Skidded
- Valve Type
  Air Automatic Ball Valve
- Piping Manifold
  PVC
- Volume of Cation & Anion Resin:
  Per Column/Total
  1 m3 / 6 m3
- Water storage
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9000ltr Polyethylene day storage break tank
- Treatment tanks
2 x 500ltr acid and caustic dosing tanks
- Associated equipment
All dosing and distribution pumps
- Electrical panel components
  Siemens S7 control with UNIOP eTOP50B-0050 HMI touch screen
  GF Signet 2820 series conductivity resistivity control
  SMC delta soft start unit.

Originally installed, serviced and maintained by Allwater Technologies Ltd who will gladly be able to offer support and a re-installation service. Tel 01934 751333.
View Pentair Water Demin Water Treatment Plant on our web site at http://www.rileysurfaceworld.co.uk/machines/24728.htm

PHOTOGRAPHS TAKEN PRIOR TO REFURBISHMENT.