The illustration above shows a simple demineralisation plant where anions are exchanged with hydroxyl ions and cations are exchanged with hydrogen ions (by the use of ion exchange resins) to produce pure, mineral-free water.

ABB conductivity monitors are used for continuous monitoring of conductivity at all stages in the treatment process. Regeneration of the ion exchange resins is a separate process using ABB multi-electrode systems; refer to AG/RBRWT for details of this procedure.
Low Level Conductivity Monitoring in Water Treatment Processes

Why monitor for conductivity in water treatment processes?

The customer needs:
- To detect resin exhaustion and to ensure the process water is pure.
- To ensure that the plant operates at the maximum efficiency.
- To allow the plant to be maintained to specific standards.

Why use ABB Instrumentation?

ABB offer greater security at a lower cost by having:
- a worldwide network of companies and agents to ensure backup in most areas,
- proven reliability – over 100 years of process instrumentation experience,
- over 40 years experience in on-line conductivity measurement,
- full installation, commissioning and routine servicing facilities available (in the UK and some other countries this is covered by the Assist™ Customer Support Programme).
- Comprehensive range of field-proven conductivity cells available.
- Our cells have been successfully used in kidney dialysis machines for more than 15 years with tens of thousands installed.
- Our transmitters are easily converted for use in high level/multi-electrode, conductivity applications and pH and dissolved oxygen applications.
- Transmitters and cell designed and manufactured by same company.

What ABB products are suitable?

Model 4620/25 Series Conductivity Transmitters and Type 2042/2078 Conductivity Cells:
- well proven electronics,
- IP66 enclosure suitable for installation in the most demanding environments,
- easy to read, backlit LCD display and customised display with user friendly software,
- user selectable 4-language display – English, German, French, Spanish,
- electronic sophistication permits 100m separation, even for the most sensitive ranges (0 to 0.1μS/cm),
- true multi-range flexibility without recalibration,
- unique, highly accurate/repeatable cell contacts (±1%) means that cells are interchangeable without recalibration,
- ultra-pure water temperature compensation corrects for changes in conductivity in both the impurities and the pure water,
- our universal transmitter, covers many applications from ultra-pure water to liquids with conductivity up to 10,000μS/cm.
Analytical Applications:
- Regeneration of the resin beds in both make-up Water Treatment and Condensate Polishing Plants using 4621/26 multi-electrode systems.
- pH monitoring using type 4630/35 transmitters and associated electrode systems.
- Sodium monitoring using type 8036 Sodium Monitors.
- Silica monitoring using type 8241 Silica Monitors.

Industrial Applications:
- Recorders and recorder/controllers (PR100, C1900, C100, C150, C200, C300).

Flow Applications:
- MagMaster flowmeters.
- Type 600T Smart pressure transmitters.

Installation
- ABB conductivity cells and transmitters are usually mounted near the sampling point (wall mounted version).
- Flow line cells are usually mounted vertically with the sample flow entering at the bottom – this minimises problems with air bubbles.
- It may be necessary to fit a needle valve upstream of the cell to ensure the sample flow remains within the required limits.

Other ABB monitoring capabilities suitable for Water Treatment processes?
The Company’s policy is one of continuous product improvement and the right is reserved to modify the information contained herein without notice.

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