

Technical Training

A Southeastern petrochemical plant has a dual-bed demineralizer followed by a mixed bed unit. Operators are responsible for monitoring the operation of two parallel trains of demineralizers. The system lacks excess production capacity and has no storage tank, increasing the importance of operator expertise.

Understanding the theory of ion exchange, the sequence of steps during service and regeneration and the vessel configuration (Figure 1) are critical to operator effectiveness.

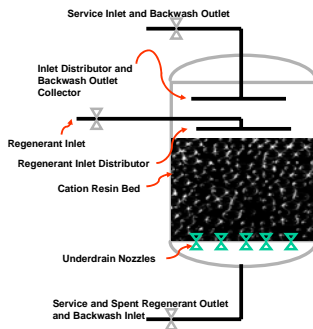


Figure 1 – Cation exchange unit

Our training confirms participants' understanding by using quizzes and group problem solving sessions. (Figure 2)

Our training also reviewed methods to study system efficiencies. Figure 3 shows the results of an elution study.

Quiz #2

True or False

- 1. Ions can change charges (e.g. + to -).
- 2. Ion exchange resin should always be wet.
- 3. Ions are exchanged only on the outside of the resin bead.
- 4. A regenerant is a material that restores the beads to a new condition.
- 5. Gellular and macroreticular describe the manufacturing process for the bead.
- 6. Ion exchange remove only insoluble compounds.

Figure 2 – Sample Quiz

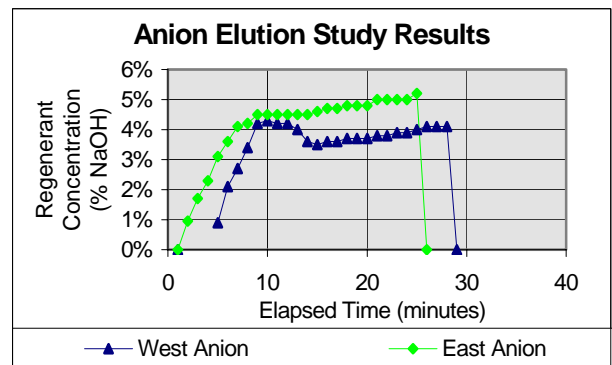


Figure 3 – Elution Study Results

MarTech trained facility personnel from all four shifts. The operators have demonstrated an ability to troubleshoot non-conforming operating conditions and produced high quality demineralized water, resulting in no lost opportunity costs for the boiler system for the last five years.