

# MONITORING THE EFFICIENCY OF CATION EXCHANGERS

## Monitoring with a 2-channel conductivity transmitter increases efficiency and profitability of ion exchangers

### Application description

In a cation exchanger, all mineral cations are exchanged for hydrogen ions which are much more conductive.

Therefore, when the ratio between inlet and outlet conductivity is high, it shows a good mineral cation removal. However, a decreasing ratio of close to 1 could mean an exhaustion of the cation exchange bed or ammonia breakthrough in power plants. A low ratio alarm can be used to initiate regeneration.

The most important application of ion exchange is in the monitoring of feedwater and ultra-pure water for thermal or nuclear power plants.

### Installation recommendations

There are two possibilities concerning probe installations:

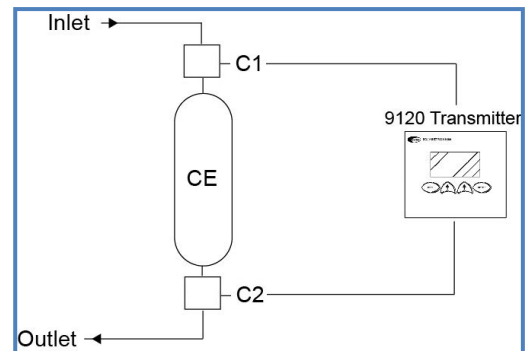
- When the two cells are classically installed at inlet and outlet
- To start an early regeneration

#### 1. When the two cells are classically installed at inlet and outlet

Normally  $C2 > C1$

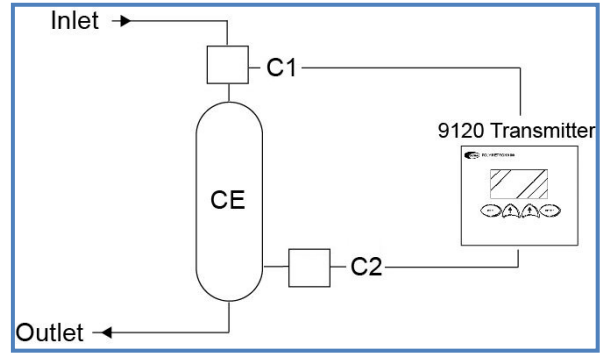
Conductivity ratio

$C2/C1 = 1$  to 4



**2. To start an early regeneration the two cells must be located as follows:**

Normally  $C2 > C1$

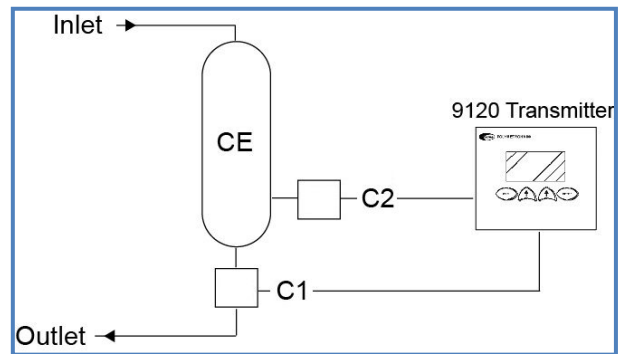


**3. Alternate to the above:**

Normally  $C1 = C2$

$C1/C2 = 1$

If the ratio  $C1/C2$  decreases, this indicates the need to regenerate.



**Recommended system components**

Model	Description
9523.99.09P2	Dual conductivity transmitter
8315=A=0000	2 electrodes conductivity sensor k=0,1 3/4 NPT Thread with test Certificate (8320 can also be used)
9120=A=8010	10m cable and IP65 connector for conductivity probe and 9120/23 (5m and 20m also available)
8318=A=0001	Stainless Steel flow chamber with 1 x 3/4 FNPT bore + 2 X 1/4 FNPT bores

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