

## Aquamite\* EDR systems



The Aquamite Electro Dialysis Reversal (EDR) product is a proven and reliable desalination technology that has been in service in a variety of industrial and public infrastructure applications.

### EDR features

- Use of Carbon Electrodes for Aquamite models AQ10 and AQ15 results in no gas is produced and no separate electrode stream is required.
- High Water Recovery, up to 94%
- Salt Removal of 50 to 95%
- Polarity Reversal self-cleaning with electricity
- Free chlorine tolerance
- Tolerance to moderate suspended solids
- Adjustable product water performance without blending
- Ability to disassemble stacks for inspection
- Silica tolerance

### EDR benefits

- Efficient use of scarce water resources
- Low pretreatment requirements and costs
- Low chemical consumption costs
- Long membrane life, typically 10+ years
- Strong ability to recover from less than ideal feed water quality

### standard design and scope of supply

- MkIV-2 EDR stacks with SUEZ Carbon Electrodes
- Cartridge filter and pressure regulating valve on the inlet of system
- Concentrate Recirculation pump
- Basic and Premium Models available for the Aquamite 5, Aquamite 10, and Aquamite 15.
- GE Fanuc Micro PLC & 6" color Quick Panel HMI
- Full Owners Operation & Maintenance Manual, Factory Acceptance Test results, and Stack Performance Test results

### instrumentation

Flow .....Product Outlet, Concentrate Outlet  
Pressure .....Cartridge Filter Inlet & Outlet,  
Concentrate Recirculation, Pump, Outlet, Product Outlet  
Conductivity ..... Inlet & Product Outlet

### typical operating parameters

Water Recovery ..... Up to 94%  
Salt Removal ..... 50 to 95%  
Silica Removal ..... none  
Temperature ..... 40 to 100°F (4 to 38°C)  
Input Voltage ..... 480VAC/3/60Hz

### feed water guidelines

Typical Feed TDS ..... 100 to 3,000 ppm (mg/l)  
Maximum Feed TDS ..... 6,000 ppm (mg/l)  
Silica (Reactive) ..... unlimited  
pH ..... 2 to 10  
Turbidity ..... 5 NTU  
Free Chlorine (continuous) ..... 0.5 ppm (mg/l)  
TOC ..... < 60 ppm (mg/l)  
COD ..... < 200 ppm (mg/l) as O<sub>2</sub>  
Iron ..... < 0.3 ppm (mg/l)  
Manganese, Aluminum ..... < 0.1 ppm (mg/l)  
H<sub>2</sub>S ..... < 0.1 ppm (mg/l)

### Allowable Intermittent Levels:

Turbidity ..... 10 NTU  
Free Chlorine ..... 30 mg/l

### material of construction

Welded Frame ..... Painted Carbon Steel  
Dilute and Concentrate Piping ..... Sch. 80 PVC  
Flanges ..... ANSI  
Concentrate Pump ..... Single-stage Centrifugal  
Rectifier ..... NEMA 3R  
Control Panel ..... NEMA 4

### quality assurance

Certification ..... UL  
Facility ..... ISO 9001:2000

## Aquamite 3 & 5 standard systems

| MODEL                                                                                                                                                                                                                                                                                              | Aquamite 3<br>AQ 3-1-2-40                | Aquamite 3<br>AQ 3-1-50/35         | Aquamite 5<br>AQ 5-1-2-150        | Aquamite 5<br>AQ 5-1-2-200         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------|-----------------------------------|------------------------------------|
| Flow Rates                                                                                                                                                                                                                                                                                         |                                          |                                    |                                   |                                    |
| Product Flow Nominal                                                                                                                                                                                                                                                                               | 7.0 gpm<br>26.5 lpm                      | 7.0 gpm<br>26.5 lpm                | 36.5 gpm<br>138.1 lpm             | 36.5 gpm<br>138.1 lpm              |
| Product Flow Range                                                                                                                                                                                                                                                                                 | 6.0 to 11 gpm<br>22.7 to 41.6 lpm        | 7.0 to 8.0 gpm<br>26.5 to 30.3 lpm | 21 to 41 gpm<br>79.5 to 155.2 lpm | 27 to 54 gpm<br>102.2 to 204.4 lpm |
| Concentrate Outlet Flow                                                                                                                                                                                                                                                                            | Depends on recovery and product          |                                    |                                   |                                    |
| Electrode Outlet Flow                                                                                                                                                                                                                                                                              | 0.8 gpm<br>3.0 lpm                       | 1.1 gpm<br>4.2 lpm                 | 1.1 gpm<br>4.2 lpm                | 0.7 gpm<br>2.7 lpm                 |
| General Information                                                                                                                                                                                                                                                                                |                                          |                                    |                                   |                                    |
| Number of Stacks                                                                                                                                                                                                                                                                                   | 1                                        | 1                                  | 1                                 | 1                                  |
| Number of Hydraulic Stages                                                                                                                                                                                                                                                                         | 2                                        | 4                                  | 2                                 | 2                                  |
| Number of Cell Pairs per Stage                                                                                                                                                                                                                                                                     | 40                                       | 2 x 50 and 2 x 35                  | 150                               | 200                                |
| Type of Stack                                                                                                                                                                                                                                                                                      | MkIV-2                                   | MkIV-2                             | MkIV-2                            | MkIV-2                             |
| Dimensions                                                                                                                                                                                                                                                                                         |                                          |                                    |                                   |                                    |
| System Dimensions<br>Width x Length                                                                                                                                                                                                                                                                | 40" x 181"<br>(1.0 x 4.6 m)              | 40" x 181"<br>(1.0 x 4.6 m)        | 51" x 213"<br>(1.3 x 5.4 m)       | 51" x 213"<br>(1.3 x 5.4 m)        |
| Inlet Piping                                                                                                                                                                                                                                                                                       | ¾" (1.9 cm)                              | ¾" (1.9 cm)                        | 1 ½" (3.8 cm)                     | 1 ½" (3.8 cm)                      |
| Product Outlet Piping                                                                                                                                                                                                                                                                              | ¾" (1.9 cm)                              | ¾" (1.9 cm)                        | 1 ½" (3.8 cm)                     | 1 ½" (3.8 cm)                      |
| Off-Spec Outlet Piping                                                                                                                                                                                                                                                                             | ¾" (1.9 cm)                              | ¾" (1.9 cm)                        | 1 ½" (3.8 cm)                     | 1 ½" (3.8 cm)                      |
| Electrode Outlet Piping                                                                                                                                                                                                                                                                            | 1" (2.5 cm)                              | 1" (2.5 cm)                        | 1" (2.5 cm)                       | 1" (2.5 cm)                        |
| Concentrate Outlet Piping                                                                                                                                                                                                                                                                          | ½" (1.3 cm)                              | ½" (1.3 cm)                        | ½" (1.3 cm)                       | ½" (1.3 cm)                        |
| Note: all piping sizes are provided for nominal flow rates at 85% recovery.                                                                                                                                                                                                                        |                                          |                                    |                                   |                                    |
| Electrical                                                                                                                                                                                                                                                                                         |                                          |                                    |                                   |                                    |
| Maximum Rectifier Output                                                                                                                                                                                                                                                                           |                                          |                                    |                                   |                                    |
| Electrical Stage 1                                                                                                                                                                                                                                                                                 | 165V @ 24A                               | 165V @ 24V                         | 240V @43A                         | 240V @ 43V                         |
| Electrical Stage 2                                                                                                                                                                                                                                                                                 | 165 @ 12A                                | 165V @ 12A                         | 240V @ 18A                        | 240V @ 18A                         |
| Connection Requirement<br>(KVA connection includes feed pump, which may be supplied by others)                                                                                                                                                                                                     | 9.4 KVA<br>230 VAC, 1-Phase<br>41A       | 9.4 KVA<br>230 VAC, 1-Phase<br>41A | 34.5 KVA                          | 34.5 KVA                           |
| Typical Power consumption                                                                                                                                                                                                                                                                          | 2 – 4 kWh/1,000 gallons of product water |                                    |                                   |                                    |
| Performance, number of stages and cell pairs, recovery and power consumption are dependent on inlet feed water quality and temperature. A Watsys projection must be completed by an authorized SUEZ design representative for proper system design & for any performance guarantee to be provided. |                                          |                                    |                                   |                                    |

## Aquamite 10 & 15 standard systems

| MODEL                                                                                                                                                                                                                                                                                              | Aquamite 10<br>AQ 10-2-2-150             | Aquamite 10<br>AQ 10-2-2-200    | Aquamite 15<br>AQ 15-1-2-600    | Aquamite 15<br>AQ 15-1-3-600    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Flow Rates                                                                                                                                                                                                                                                                                         |                                          |                                 |                                 |                                 |
| Product Flow Nominal                                                                                                                                                                                                                                                                               | 73 gpm<br>267 lpm                        | 73 gpm<br>267 lpm               | 140 gpm<br>530 lpm              | 130 gpm<br>492 lpm              |
| Product Flow Range                                                                                                                                                                                                                                                                                 | 41 to 81 gpm<br>150 to 307 lpm           | 54 to 109 gpm<br>204 to 413 lpm | 85 to 160 gpm<br>322 to 606 lpm | 85 to 135 gpm<br>322 to 511 lpm |
| Concentrate Outlet Flow                                                                                                                                                                                                                                                                            | Depends on recovery and product          |                                 |                                 |                                 |
| General Information                                                                                                                                                                                                                                                                                |                                          |                                 |                                 |                                 |
| Number of Stacks                                                                                                                                                                                                                                                                                   | 2                                        | 2                               | 2                               | 3                               |
| Number of Hydraulic Stages                                                                                                                                                                                                                                                                         | 2                                        | 2                               | 2                               | 3                               |
| Number of Cell Pairs per Stage                                                                                                                                                                                                                                                                     | 150                                      | 200                             | 600                             | 600                             |
| Type of Stack                                                                                                                                                                                                                                                                                      | MkIV-2                                   | MkIV-2                          | MkIV-2                          | MkIV-2                          |
| Dimensions                                                                                                                                                                                                                                                                                         |                                          |                                 |                                 |                                 |
| System Dimensions<br>Width x Length                                                                                                                                                                                                                                                                | 66" 240"<br>(1.7 x 6.1 m)                | 66" 240"<br>(1.7 x 6.1 m)       | 90" 196"<br>(2.3 x 5.0 m)       | 90" x 242"<br>(2.3 x 6.2 m)     |
| Inlet Piping                                                                                                                                                                                                                                                                                       | 3" (7.6 cm)                              | 3" (7.6 cm)                     | 3" (7.6 cm)                     | 3" (7.6 cm)                     |
| Product Outlet Piping                                                                                                                                                                                                                                                                              | 3" (7.6 cm)                              | 3" (7.6 cm)                     | 3" (7.6 cm)                     | 3" (7.6 cm)                     |
| Off-Spec Outlet Piping                                                                                                                                                                                                                                                                             | 3" (7.6 cm)                              | 3" (7.6 cm)                     | 3" (7.6 cm)                     | 3" (7.6 cm)                     |
| Electrode Outlet Piping                                                                                                                                                                                                                                                                            | 1" (2.5 cm)                              | 1" (2.5 cm)                     | 1" (2.5 cm)                     | 1" (2.5 cm)                     |
| Concentrate Outlet Piping                                                                                                                                                                                                                                                                          | 1" (2.5 cm)                              | 1" (2.5 cm)                     | 1" (2.5 cm)                     | 1" (2.5 cm)                     |
| Note: all piping sizes are provided for nominal flow rates at 85% recovery.                                                                                                                                                                                                                        |                                          |                                 |                                 |                                 |
| Electrical                                                                                                                                                                                                                                                                                         |                                          |                                 |                                 |                                 |
| Maximum Rectifier Output                                                                                                                                                                                                                                                                           |                                          |                                 |                                 |                                 |
| Electrical Stage 1                                                                                                                                                                                                                                                                                 | 240V @ 39A                               | 240V @ 39A                      | 590V @ 46A                      | 590V @ 26A                      |
| Electrical Stage 2                                                                                                                                                                                                                                                                                 | 240V @ 18A                               | 240V @ 18A                      | 530V @ 18A                      | 520V @ 14A                      |
| Electrical Stage 3                                                                                                                                                                                                                                                                                 |                                          |                                 |                                 | 420V @ 7.5A                     |
| Connection Requirement<br>(KVA connection includes feed pump, which may be supplied by others)                                                                                                                                                                                                     | 60KVA                                    | 60 KVA                          | 88.8 KVA                        | 76.4 KVA                        |
| Typical Power consumption                                                                                                                                                                                                                                                                          | 2 – 4 kWh/1,000 gallons of product water |                                 |                                 |                                 |
| Performance, number of stages and cell pairs, recovery and power consumption are dependent on inlet feed water quality and temperature. A Watsys projection must be completed by an authorized SUEZ design representative for proper system design & for any performance guarantee to be provided. |                                          |                                 |                                 |                                 |



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