

# GE Aquamite\* EDR Systems

The Aquamite\* Electrodesalination 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

- 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

- MK-IV-2 EDR stack
- Cartridge filter and pressure regulating valve on the inlet of system
- Feed and 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 Recirc. Pump, Outlet, Product Outlet  
 Conductivity..... Inlet & Product Outlet

## Operating Parameters

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

## Feed Water Requirements

Typical Feed TDS ..... 100 to 3,000 ppm (mg/l)  
 Maximum Feed TDS ..... 12,000 ppm (mg/l)  
 Silica (Reactive) ..... unlimited  
 pH ..... 2 - 10  
 SDI (5 min. test) ..... 10  
 Turbidity ..... < 0.5 NTU  
 Free Chlorine (continuous) ..... 0.5 ppm (mg/l)  
 TOC ..... < 15 ppm (mg/l)  
 COD ..... < 50 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:

SDI (5 min. test) ..... 15  
 Turbidity ..... 2.0 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



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## Aquamite 3 & 5 Standard Systems

MODEL	Aquamite 3 AQ 3-1-2-40	Aquamite 3 AQ 3-1-50/35	Aquamite 5 AQ 5-1-2-150	Aquamite 5 AQ 5-1-2-200
<b>Flow Rates</b>				
Product Flow Nominal	7.0 gpm 26.5 lpm	7.0 gpm 26.5 lpm	36.5 gpm 138.1 lpm	36.5 gpm 138.1 lpm
Product Flow Range	6.0 to 11 gpm 22.7 to 41.6 lpm	7.0 to 8.0 gpm 26.5 to 30.3 lpm	21 to 41 gpm 79.5 to 155.2 lpm	27 to 54 gpm 102.2 to 204.4 lpm
Concentrate Outlet Flow	Depends on recovery and product			
Electrode Outlet Flow	0.8 gpm 3.0 lpm	1.1 gpm 4.2 lpm	1.1 gpm 4.2 lpm	0.7 gpm 2.7 lpm
<b>General Information</b>				
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	MK-IV-2	MK-IV-2	MK-IV-2	MK-IV-2
<b>Dimensions</b>				
System Dimensions Width x Length	40" x 181" (1.0 x 4.6 m)	40" x 181" (1.0 x 4.6 m)	51" x 213" (1.3 x 5.4 m)	51" x 213" (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.				
<b>Electrical</b>				
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 (KVA connection includes feed pump, which may be supplied by others)	9.4 KVA 230 VAC, 1-Phase 41A	9.4 KVA 230 VAC, 1-Phase 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 GE design representative for proper system design & for any performance guarantee to be provided.				

## Aquamite 10 & 15 Standard Systems

MODEL	Aquamite 10 AQ 10-2-2-150	Aquamite 10 AQ 10-2-2-200	Aquamite 15 AQ 15-1-2-600	Aquamite 15 AQ 15-1-3-600
<b>Flow Rates</b>				
Product Flow Nominal	73 gpm 267 lpm	73 gpm 267 lpm	140 gpm 530 lpm	130 gpm 492 lpm
Product Flow Range	41 to 81 gpm 150 to 307 lpm	54 to 109 gpm 204 to 413 lpm	85 to 160 gpm 322 to 606 lpm	85 to 135 gpm 322 to 511 lpm
Concentrate Outlet Flow	Depends on recovery and product			
Electrode Outlet Flow	2.3 gpm 8.7 lpm	1.7 gpm 6.4 lpm	1.1 gpm 4.2 lpm	1.3 gpm 4.9 lpm
<b>General Information</b>				
Number of Stacks	2	2	2	3
Number of Hydraulic Stages	2	2	2	3
Number of Cell Pairs per Stage	150	200	600	60
Type of Stack	MK-IV-2	MK-IV-2	MK-IV-2	MK-IV-2
<b>Dimensions</b>				
System Dimensions Width x Length	66" 240" (1.7 x 6.1 m)	66" 240" (1.7 x 6.1 m)	90" 196" (2.3 x 5.0 m)	90" x 242" (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.				
<b>Electrical</b>				
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 (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 GE design representative for proper system design & for any performance guarantee to be provided.				