

# E-Cell Standard Systems

## MK-3, 1 to 12 Stacks

With the combination of E-Cell and Ionics EDI technology, GE Water & Process Technologies is leading the way for Electrodeionization (EDI). Our E-Cell Standard Systems with MK-3 stacks are designed for reliable, long-term trouble free operation, with straightforward control.

### Standard Features

- MK-3 E-Cell stacks allow for a simplified system design, removing the need for concentrate recirculation as well as brine injection.
- MK-3 E-Cell stack's low energy design reduces electrical requirements and operating costs.
- MK-3 E-Cell stacks are hard piped directly to the system.
- Concentrate flow is in the opposite direction to the dilute flow, thus allowing systems to operate at higher hardness concentrations for longer periods of time.
- Basic and Premium models available
- GE Fanuc Micro PLC & 6" color Quick Panel HMI
- Automatic Outlet Divert Valve
- Full Owners Operation & Maintenance Manual, Factory Acceptance Test results and Stack Performance Test results

### Quality Assurance

Certification:.....UL, CSA  
 Facility:.....ISO 9001:2000  
 Full Factory Acceptance Test (FAT) completed on each system before shipment.

### Instrumentation

Flow ..... Dilute (Product) Outlet

..... Concentrate Outlet  
 ..... Electrode Outlet  
 Pressure ..... Dilute Inlet, Dilute Outlet  
 ..... Concentrate Inlet, Concentrate Outlet

### Feed Water Requirements

Total Exchangeable Anions..... < 25.0 ppm  
 (as CaCO<sub>3</sub>) (TEA) Including CO<sub>2</sub> as calculated by E-Calc  
 pH ..... 5 – 9  
 Hardness ..... < 1.0 ppm (as CaCO<sub>3</sub>)  
 Silica (Reactive)..... < 1.0 ppm  
 SDI (15 min) ..... < 1  
 TOC..... < 0.5 ppm  
 Total Chlorine..... < 0.05 ppm  
 Fe, Mn, H<sub>2</sub>S..... < 0.01 ppm

### Operating Parameters

Outlet (Dilute) Product Quality..... > 16 MOhm-cm  
 Outlet Product Silica Guarantee ..... Down to < 5ppb  
 Recovery: ..... Up to 95%  
 Temperature: ..... 40 to 100°F (4.4 to 38°C)  
 Feed Pressure: ..... 70 to 100 psi (4.7 to 6.9 bar)  
 Dilute Pressure Drop:..... 20 to 35 psi (1.4 to 2.4 bar)  
 Input Voltage:..... 480VAC/3/60Hz

### Material of Construction

Welded Frame: ..... Painted Carbon Steel  
 Dilute Piping: ..... 150lbs PP  
 Concentrate Piping:..... Sch. 80 PVC  
 Flanges:..... ANSI  
 Rectifier:..... NEMA 3R  
 Control Panel:..... NEMA 4  
 Control Panel Power:..... 24VDC  
 ..... Electrode Outlet  
 Resistivity ..... Dilute (Product) Outlet

## E-Cell Standard Systems

Model	GEMK3-1	GEMK3-3	GEMK3-6	GEMK3-9	GEMK3-12
<b>General Information:</b>					
Number of Stacks	1	2 - 3	4 - 6	6 - 9	10 - 12
Type of stack	MK-3	MK-3	MK-3	MK-3	MK-3
<b>Flow Rates:</b>					
Product Flow Nominal	15gpm	45gpm	90gpm	135gpm	180gpm
Range	10-20gpm 2.3-4.5m <sup>3</sup> /h	30-60gpm 6.8-13.6m <sup>3</sup> /h	60-120gpm 13.6-27.3m <sup>3</sup> /h	90-180gpm 20.4-40.9m <sup>3</sup> /h	120-240gpm 27.3-54.5m <sup>3</sup> /h
Concentrate Outlet Flow	0.91-1.5gpm	2.9-4.7gpm	5.8-9.4gpm	8.8-14.1gpm	11.7-18.8gpm
(Depends on Recovery & Product Flow)	3.4-5.7lpm	11.0-17.8lpm	22.0-35.6lpm	33.3-53.4lpm	44.3-71.2lpm
Electrode Outlet Flow	0.35gpm 1.3lpm	1.05gpm 4.0lpm	2.10gpm 7.9lpm	3.15gpm 11.9lpm	4.2gpm 15.9lpm
<b>Dimensions:</b>					
Overall System Dimensions (Width x Length x Height)	36"x54"x72" 0.9m x 1.4m x 1.8 m	46"x86"x84" 1.2m x 2.2m x 2.1 m	46"x107"x84" 1.2m x 2.7m x 2.1 m	46"x132"x84" 1.2m x 3.4m x 2.1 m	46"x146"x84" 1.2m x 3.7m x 2.1 m
Inlet Piping	1"	2"	3"	4"	4"
Product Outlet Piping	1"	2"	3"	4"	4"
Rinse Outlet Piping	1"	2"	3"	4"	4"
Electrode Outlet Piping	0.5"	0.5"	0.5"	0.5"	0.75"
Concentrate Outlet Piping	0.5"	0.5"	0.75"	1"	1.5"
All piping sizes are provided for nominal flow rates at 90% recovery.					
Shipping Weight	1000lbs 454kg	2500lbs 1134kg	3500lbs 1588kg	4300lbs 1950kg	5000lbs 2268kg
<b>Electrical:</b>					
Maximum Rectifier Output (@ 300VDC)	5.2Amps	15.6Amps	31.2Amps	46.8Amps	62.4Amps
Connection Requirement	3.5 KVA	8 KVA	15 KVA	22 KVA	29 KVA
Typical Power Consumption	0.5 – 1.0 kWh/1000gal (0.13 – 0.26 kWh/m <sup>3</sup> )				

### Standard Options:

1. Premium Model – flow & pressure transmitters, ability to connect to SCADA system.
2. Premium Model Option – Allen Bradley Micrologix PLC
3. Premium Model Option – removal of PLC & HMI, all wiring terminated at a NEMA 4 Junction Box

Performance, flow rate per stack, recovery and power consumption are dependent on inlet feed water quality and temperature. An E-Calcul projection must be completed for proper system design & for any performance guarantee to be provided. Patents Pending.

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