

# Portacel<sup>®</sup> Disinfection Systems

## Series 200E Evaporator

### Introduction

The Portacel<sup>®</sup> Series 200E Liquid Chlorine Evaporator is a self contained, large capacity heat exchange system for the conversion of liquid chlorine, sulphur dioxide or ammonia into gas.

The evaporator converts up to 250 kg/hr (13,200 ppd) (maximum capacity for chlorine) of liquid to gas within the totally submerged evaporator coil. The Series 200E is fully insulated and provides alarms from a dedicated control panel mounted on the evaporator. The operation of the evaporator is completely automatic, requires no supervision and is designed for use in installations where large quantities of gas are required.

### Design and Operation

Vaporization is achieved by passing the liquid through a heat exchange coil within an unpressurized water bath. This bath is heated by temperature controlled electric immersion heaters. Efficient insulation of the water bath prevents heat loss from the system and maximizes the proportion of energy used for the liquid to gas conversion.

The use of the evaporator coil is such that the liquid chlorine level rises or falls during operation dependent on demand. This minimizes the accumulation of residual deposits, a common issue with other types of evaporators. This results in minimal down time for cleaning and gives low maintenance costs as well as prolonged operational life.

### Key Benefits

- Low maintenance - reduced deposits in coil
- Coil rated to ASME 8 DIVN.1
- High efficiency heat transfer
- All critical parameters monitored via volt free contacts
- Integral control panel
- Fully insulated water bath



## Product Sheet

Water Technologies

**SIEMENS**

The Series 200E is designed to be integrated into a complete Portacel® chlorination system. This system must include a suitably sized dosing unit and other necessary equipment between the Evaporator and the supply to be treated.

### Greater Efficiency

The Portacel® coil type heat exchange system has up to 1.5 times more surface area in contact with the water bath than most traditional evaporator systems. The large surface area of the coil also aids efficiency by increasing the thermal movement of the water within the bath, ensuring an even water temperature.

### Excellent Corrosion Resistance

The coil is totally submerged in the water bath so reducing corrosion caused by any air/water interface. The coil is further protected by means of a sacrificial magnesium anode suspended in the center of the coil.



Installed Series 200E Evaporator

### Increased Super Heat

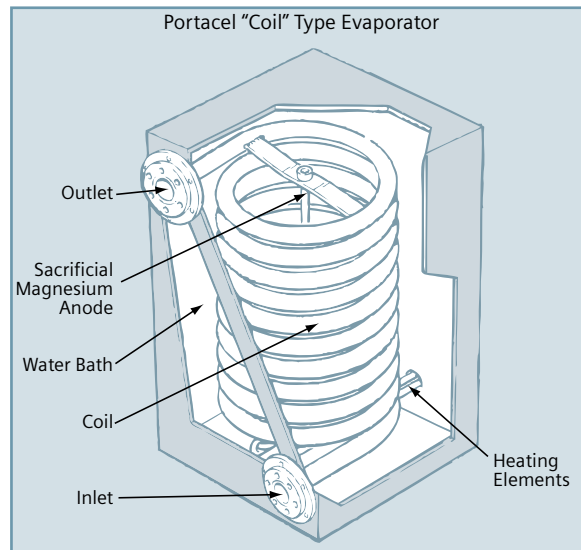
The coil of the Evaporator generates up to 20% superheat. This ensures that the generated gas vapor does not re-liquify.

### Minimum Maintenance

The coil is self cleaning with any contamination within the liquid chlorine being carried up through the coil, initially by the chlorine liquid and then, after vaporization, by the chlorine gas. Any such contaminants are then deposited in the large capacity filter. The design of the Portacel® Evaporator also allows direct access to all components making any necessary maintenance an easy procedure.

### Liquid Displacement

When evaporator is shut down total liquid displacement will transfer all liquid in the evaporator coils back to the source.

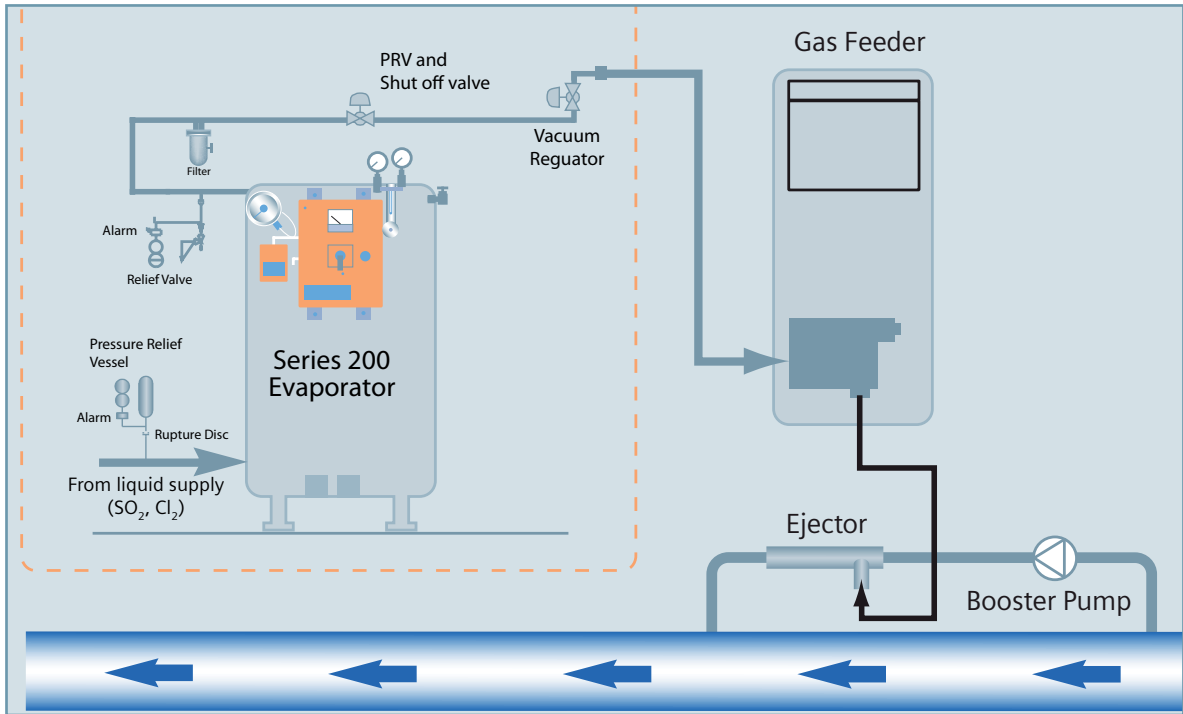


Series 200E Evaporator coil

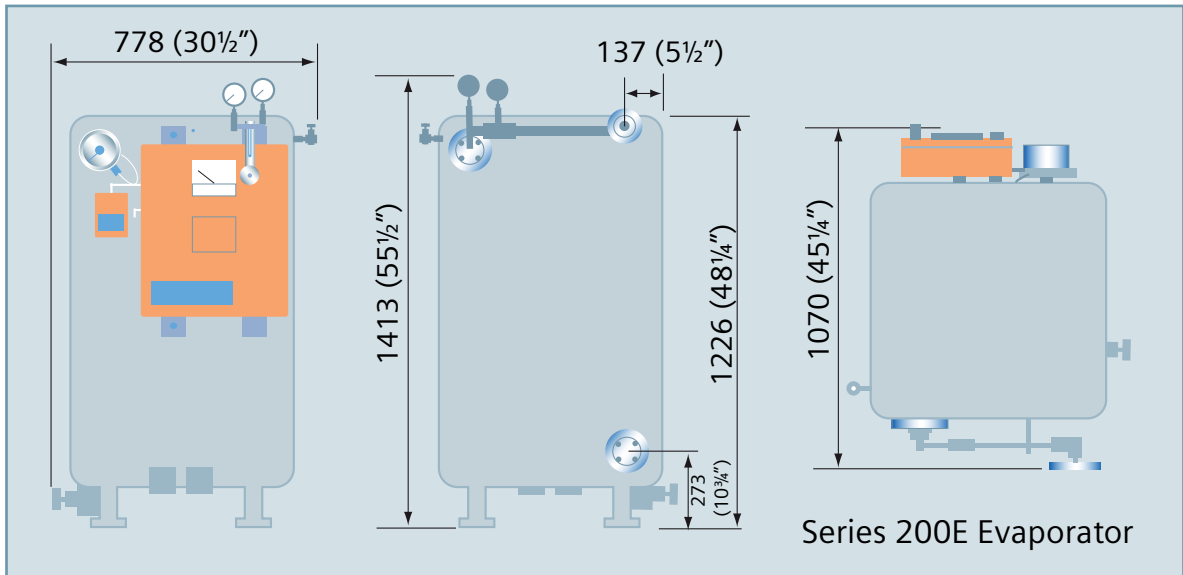
## Technical Data

Capacity	Series 200E - Dry Gas - 250 kg/hr (13,200 ppd) Cl <sub>2</sub> , 180 kg/hr (9,504ppd) SO <sub>2</sub> . Water bath 0.37m <sup>3</sup> (1.2ft <sup>3</sup> ) (for NH <sub>3</sub> capacities consult factory)
Overall Dimensions (h x w x d)	1600mm x 750mm x 890mm (36" x 29½" x 35")
Weight	Empty: 210 kg (462 lbs) Full: 580 kg (1,276 lbs)
Service requirements	380/440v, 3-phase, 50/60 Hz separate supply to immersion heaters (4 wire star connected 24kw) 110 or 200/240v single phase, 50/60 Hz separate supply to indicator/controller derived from internal transformer. All control contacts 24V Supply CPRV voltage via transformer 110V or 230V 50/60Hz
Connections	
Liquid inlet	38mm (1½") NB ANSI 300lb raised face flange, Blank flange supplied for customer use
Gas outlet	25mm (1") NB ANSI 300lb raised face flange
Water inlet	20mm (¾") BSP gate valve to BS 5154, screwed to BS 21
Water drain	20mm (¾") BSP gate valve to BS 5154, screwed to BS 21
Water overflow	20mm (¾") BSP, screwed to BS 21
Electrical connections	20mm (¾") conduit holes in contactor. 3-phase supply; 4mm
Environmental temperature	50°C (122°F) max (est.)
Storage temperature	50°C (122°F) max (est.)
Design pressure	12.5 bar (181 psi) Tested hydraulically to 55bar (787psi)
Power consumption	24kw
Initial heat-up time	1.25 hours. Assuming an initial water temperature of 4°C (39°F)
Cathodic protection	Active type magnesium alloy anode suspended in water bath with integral ammeter
Coil construction code	Dye penetrant and radiographed welded construction Sch.80 steel tube, hot dip galvanized externally. Design code ASME 8 DIVN.1
Immersion heaters	2 x 12kw 3 element 610mm (24") immersed length suitable for 380v/440v 3ph 50/60Hz supply
Water bath construction	Hot dipped galvanized steel tank with 20mm(1/4") external insulation.
Water consumption	Automatic level control via solenoid operated demand valve
Indicator panel	Heater on lamp, power on lamp and anode current meter
Water temperature / Indicator/ Alarm	100mm (4") diameter dial, bi-metallic type, 0-100°C (0°F - 212°F) with adjustable high and low setting pointers energizing two internal 3 amp relays, each fitted with a change-over contact. Accuracy ± 1% of span
Gas temperature gauge	69mm (2¾") diameter dial, bi-metallic type, 0-120°C (0°F - 240°F). Accuracy ± 1% of span
Gas pressure gauge	63mm (2½") diameter dial, diaphragm protected, 0-25bar (360psi). Accuracy ± 1% of span

## Typical Application Drawing



## Product Weights and Dimensions



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Literature Number: WT.050.210.000.IE.PS.0409  
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