

Chlorine Dioxide Circulation Pump Safety

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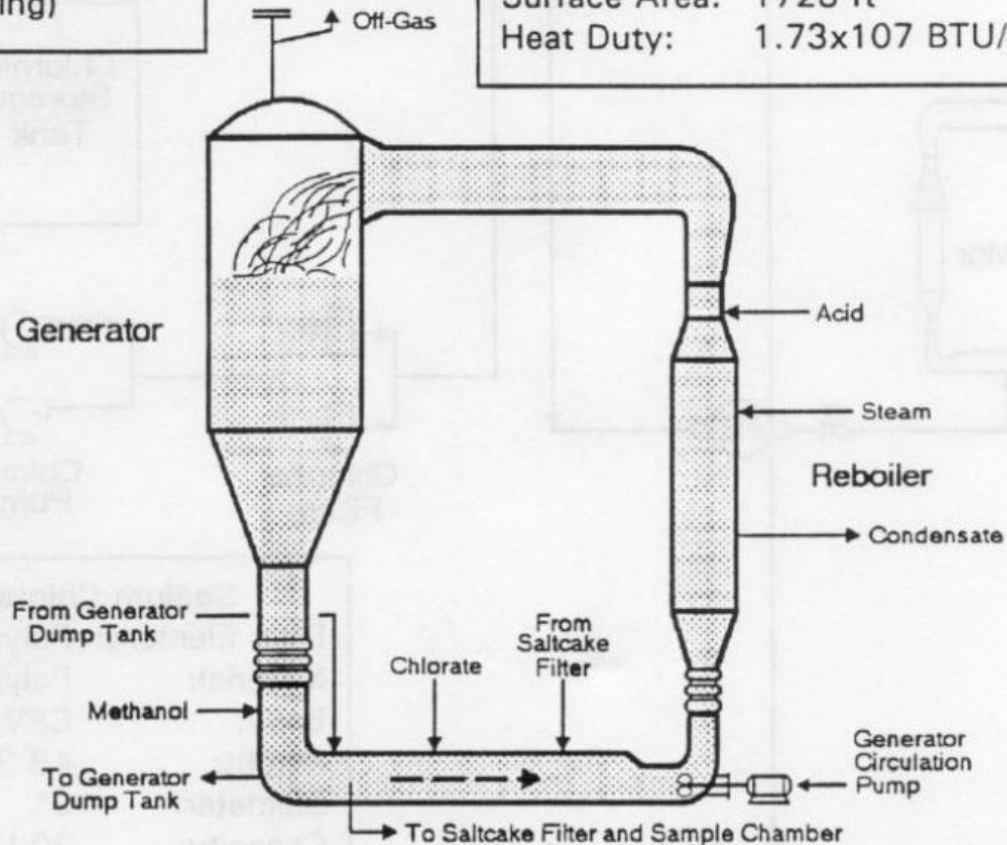
2. GENERATOR

Generator

Material: Titanium
Height: 25' (overall)
Diameter: 9'0"
Capacity: 4070 USG
(operating)

Reboiler

Material: Tubes & Tubesheet Titanium
Shell Carbon Steel
Height: 16'0"
Diameter: 3'0"
Surface Area: 1728 ft²
Heat Duty: 1.73x10⁷ BTU/hr



Chlorine Dioxide Generator Information

- Chemistry (12 Generators)
 - 11 Methanol Based
 - 4 – R-8
 - 5 – R-10
 - 2 – SVP Lite
 - 1 Peroxide Based
- Recirc. Pump Interest
 - Lubricant
 - Pump Seal

Recirculation Pump Information

- Lubrication
 - Organic
 - Inorganic
- Petroleum Oil
- Non-Hydrocarbon Oil
- Mineral Oil
- Silicone Fluid
- Synthetic
- Pump Seal
 - 1 - Packing
 - 9 - Mech. Seal Ti Face

Recirculation Pump

Initial Survey Information

Chemistry	Unit Typical Operating Rate (Tons/Day) Avg	Pump OEM	Pump Size	Lubricant Supplier	Lubricant in Use	Lubricant Type
		Lawrence Pump			<i>Neutral mineral oil having a viscosity similar to SAE 30, but resulting in a viscosity of no less than 100 SSU at the actual oil temperature during pump operation. The oil should be rust-inhibited, oxidation-inhibited and anti-foaming.</i>	Neutral Mineral Oil
R-8	47.2	Lawrence Pump	20x20x19 Serise 9000	ExxonMobil	DTE Medium	Mineral Oil
R-8	36.9	Lawrence Pump	20 x 20 x 19 HEC Series 9000	Petro-Canada	Synduro SHB68	PAO (Polyalphaolefin) Most common synthetic industrial oil
R-8	12.3	Lawrence Pump		Dupont	Dupont Krytox GPL-104 Non-hydrocarbon oil	Fluorinated Synthetic Oil
R-8 (R-10 filter in place)	28.5	Lawrence Pump	16x16	Petro-Canada	Hydrex AW-68	Mineral Oil (Hydraulic Oil)
R-10	48.2	Lawrence Pump	20x20x19.34	Petro-Canada	Petro-Canada AW68	Mineral Oil (Hydraulic Oil)
R-10	32.3	Lawrence Pump	18x18	Petro-Canada	Hydrex AW68	Mineral Oil (Hydraulic Oil)
R-10	28.2	Lawrence Pump		Dupont	Dupont Krytox GPL-104 Non-hydrocarbon oil	Fluorosilicone polymer (defoamant)
R-10	27.3	Lawrence Pump		Dow Corning	Dow Corning FS 1265 300CST	Fluorosilicone polymer (defoamant)
R-10	20.5	Lawrence Pump	20X20	ExxonMobil	DTE Heavy	Mineral Oil
SVP-Lite	19.4	Lawrence Pump	18x18 H Horizontal	ExxonMobil	DTE Medium	Mineral Oil
SVP-Lite	14.9	Goulds MPAF	10x10x10	ExxonMobil	SHC 626 Mobil	PAO (Polyalphaolefin)
Peroxide	21.1	Goulds MPAF	10x10	Dow Corning	Dow Corning 710R	Polyphenylmethylsiloxane

Recirculation Pump

Initial Survey Information

Chemistry	Unit Typical Operating Rate (Tons/Day) Avg	Pump OEM	Seal Type
R-8	47.2	Lawrence Pump	Mechanical Ti Faces
R-8	36.9	Lawrence Pump	Mechanical
R-8	12.3	Lawrence Pump	
R-8 (R-10 filter in place)	28.5	Lawrence Pump	Cartridge mount double mech seal
R-10	48.2	Lawrence Pump	Mec seal TI double
R-10	32.3	Lawrence Pump	Pack-Ryt packing DX37543AAXX
R-10	28.2	Lawrence Pump	Ti - Mechanical Pioneer
R-10	27.3	Lawrence Pump	
R-10	20.5	Lawrence Pump	AES #CDSA-28,(TITANIUM), TI/SC/SC/SC/CB/KALREZ/VITON
SVP-Lite	19.4	Lawrence Pump	Mechanical Ti Faces
SVP-Lite	14.9	Goulds MPAF	SEAL,TITANIUM, 180-15 1-7/8" W/SC/SC FACES
Peroxide	21.1	Goulds MPAF	Chesterton 155-15 Titanium