

# Notes on Routine Maintenance and other Tasks

## About Serck Como Evaporator

- Full production should be 600 metric tons per day, or 25 m<sup>3</sup> per hour, 100 m<sup>3</sup> per watch
- Full production is rated at 85°C, we usually run maximum 83°C
- "New style" (Jan 2006) gaskets exist for the booster heater and stage covers, that deal with persistent leaking – not the same part # found in parts manual though
- Complete manual and parts book can be found on CD Rom, and in Boiler folder on "G drive" (Jan 2006)
- On "G drive" under 2<sup>nd</sup> – Boilers, a spreadsheet is used to track Serck Performance
- Scaling in the brine area of the stages (accessed through lower manholes) is not necessarily bad. Anything in excess of 3mm should be chipped off manually as Saf Acid will not be effective in removing it.
- Spare – cleaned demisters are stored by FW upper loop heaters, Pump Room 3
- Spare demister can be cleaned and re-used as long as they are pliable, thick and pillow-like. Thin, hard (compacted) demister should be disposed of.
- Anodes last about one year and are made, in house, from "Soft Iron" and to measurements found in manual
- Salinity measuring cells are made of plastic and very easy to break. Leakage from them should be fixed by installing new oring around base, not by tightening as they will break
- Each stage has one metering cell, one on the condensate discharge, and two on the distillate discharge – one for NorControl and one for local panel controlling dumping
- Salinity unit of measure is the "micro siemens / centimeter", 2 ms/cm = ~ 1 ppm
- Serck designed to produced ~3 ms/cm quality distillate

## Acid cleaning

- Cleaning is determined by observing "whitish" buildup on tube stack when anodes are removed
- Saf Acid solution should be circulated for 8 – 10 hrs
- Colour of the solution will determine its life span
- The volume of the piping, booster heater and heat exchangers, between the inlet and outlet connections for Saf-acid is 3.6 m<sup>3</sup>

## Chemicals

- Chemical addition is critical to proper function and quality.
- No foaming should be visible in sight glasses (especially stage 1), foaming will "carry over" into condenser and will cause intermittent spikes in salinity
- Dosing tank holds 250 liters of solution. Evaporator should use 10 l/hr = 1 tank / day
- In one 240 l. dosing tank, there should be 10 l. of Ameroyal CF/HG, 2 l. of Drewplus (extra Anti-foaming) and 228 l. of water (10 + 2 + 228 = 240)
- Injection pump should be checked / primed using designated screw on pump body, not discharge piping
- Inlet is just before seawater pump and it is not uncommon for it to be plugged. Should be checked when daily chemical consumption falls off.

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## Starting Rhapsody's Serck Como Evaporator

1. Switch Main "Power On", on control panel
2. Put all controllers on "Manual Operation"
3. Open SW inlet, call ECR to open SW Inlet and Overboard Valve
4. Start Ejector pump
5. Start Brine pump
6. Close Stages Vacuum Vent line
7. Open Booster Heater vacuum valve
8. Open steam supply line drain valve at Serck #1
9. Open air vent valve for Condenser and aerate, fill Stage 1 with air
10. Keep SW pump discharge valve close, and start SW Pump, then slowly open discharge valve to 20% (to local mark)
11. Start Chemical Dosing Pump, ensure enough chemical is in the tank and that the pump is pumping
12. Open Feed Water valve slowly to 55 m<sup>3</sup>/hr
13. When assured of SW flow, open Steam Supply valve
14. Start warming up, slowly, by opening Steam Valve controller to 15%
15. Close steam drain valve on supply line
16. Start / Put in Auto, Steam Condensate pump
17. Put Brine Recirculation Controller on automatic; 32° C set point
18. When Sea water temperature reaches 70° C, start desired HT Circulation Pump, and close DE HT Bypass at engine slowly
19. Start Distillate Water pump
20. Manually adjust flow and temperature to 80° C, then put HT recirculation and steam controller on Automatic

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	SW Flow	Temperature
"Full Production"	350 m <sup>3</sup> /hr	83° C
"Half Production"	200 m <sup>3</sup> /hr	81° C
"Low Production"	250 m <sup>3</sup> /hr	79° C

- Chemical Flow should be **10 l/hr**
- Chemical used per day is 10 l. **Ameroyal CF / HG** and 2l. **Drewplus**
- Distillate production should be **22-25 m<sup>3</sup>/hr** at full production
- If production is reduced because of low steam pressure, make sure the unit is actually using steam, before reducing its production!

## Stopping Rhapsody's Serck Como Evaporator

1. Put all controllers on "Manual Operation"
2. Open HT Bypass at engine, and stop circulation pump
3. Close steam heating valve(s)
4. Reduce SW water feed flow to 150 m<sup>3</sup>/hr
5. Let Serck run without heat, to cool down to 50° C
6. Close Feed valve fully
7. Stop chemical dosing pump
8. Stop Ejector pump
9. Stop SW pump
10. Stop Brine and Condensate pumps
11. Call ECR to close SW Inlet and Overboard Valve, Close SW Pump discharge valve
12. Open stage's vacuum vent valve
13. Close Booster Heater vacuum valve
14. Switch Main "Power Off" on control panel