M.O.M.

Date: 03.09.2022

M/s Vital Laboratories Pvt Ltd, Unit II
Mr. Rohit Singh
Mr. Sanvarjeet Sharma
Mr. Kelvin Patel
Mr. Shankar Bajaj

M/s Everest Blower System Pvt. Ltd.
Mr. Prerak Bhatt

Process details

Reactor cap – 5 KL in SS 316

Condenser -8 m2 single pass shell and tube type

Receiver – 500 L, Vacuum catch pot – 500 L

Batch process, 60 Hrs total batch time

Up to 30 deg C vacuum applies (cooling is done by means of recovering hot water vapours)

95 deg C to 50 deg C,– working on only water jet with 12.5 HP motor with or without air bleed

50 deg C to 30 deg C, working on water jet with 12.5 HP motor + two stage steam ejector

Product – Cinchonce, Reactor No. 12304, Capacity – 5 kL, MOC – SS

Parameters	
Total System Volume (m3):	8 KL
pH of carry overload	Neutral
Number / size of pre-condensers & utility used in them:	1 no. 8 m2 having chilled/cooling water utility available
Vacuum required in process:	Initially very low 500 torr abs with some air bleed and at final stage 750-755 torr abs
Air leakage (kg/h): optional	Max 4 kg/hr
Condensable vapour load at pump suction (kg/h) [vapours escaping condenser]:	Max 20 kg/hr
Name, and molecular weight of solvents /resin used:	Water
Any Chances of solid particles coming inside the pump	No
Temperature of vapor entering the pump after pre-condensers:	Max 50 deg C

Batch trial done for BARK process at Plot 2208 on 02-09-2022 & observations are as follows: -

1. Achieved 51.2 deg C using water jet of 12.5 HP motor.
2. From 51.2 deg C started Everest dry vacuum pump with 7 HP consumed power at 1:33 pm
3. Achieved 30 deg C at 8:00 pm after that vacuum system shut down.
4. Achieved 21 deg C temperature decrease in 6:30 hours.

Conclusion: -

Achieved required temperature in time less than or equal to time taken by steam ejector

Below is direct and indirect savings

PLEASE FILL THE GREEN HIGHLIGHTED CELLS.			
Parameters	**UoM**	**Steam Ejectors**	**Everest 300 m3/hr Dry Screw Pump**
Operating Hours	Hours/Day	24	24
	Days/Month	25	25
	Months/Year	12	12
	Hours/Year	7,200	7,200
Gas consumtion to generate Steam Consumption			
Flow Rate	kg/h	58	0
Steam Cost	Rs./kg	₹ 2.5	₹ 2.5
	Rs./h	₹ 145	₹ 0
	Rs./Year	₹ 10,44,000	₹ 0
Power Consumed			
Consumed Units	kW	9.30	5.25
Power Cost	Rs./kWh	₹ 7.5	₹ 7.5
	Rs./h	₹ 69.8	₹ 39.38
	Rs./Year	₹ 5,02,200	₹ 2,83,500
Overall Costs			
Total Operating Cost	Rs./h	₹ 214.8	₹ 39.4
	Rs./Year	₹ 15,46,200	₹ 2,83,500
Maintenance Cost	Rs./Year	₹ 20,000	₹ 30,000
Annual Operating Cost	Rs./Year	₹ 15,66,200	₹ 3,13,500
Annual Savings	**Rs./Year**	**₹ 12,52,700**	
INDIRECT SAVINGS			
No pollution.			
Consistent vacuum levels.			

03/09/2022

03/09/2022

03/09/2022