= 3760.374kW.

- **COP** =(Qe/Qg)
  = (3500/4366)
  = 0.8016.

THERMODYNAMIC CALCULATIONS

S.NO	STEP POINTS	TEMP in ºC	POSITION	PRESSURE mm of Hg	ENTHALPHY	CONCENTRATION
1	2	100	Cond inlet	70	2676	-
2	3	70	EV inlet/cond outlet	70	293	-
3	4	70	Evap intel/EV outlet	6.525	293	-
4	5	5	Evap outlet/absorber inlet	6.525	2510.6	-
5	6	55	Absorber outlet/solution pump inlet	6.525	-101	1.2
6	7	55	Solution pump outlet/HE inlet	70	-55	1.2
7	8	65	HE outlet/RC inlet	70	-78/-69.3	1.2
8	1	75	RC outlet	70	-69	1.2
9	9	80-85	Generator outlet/ HE inlet	70	-62	1.6
10	10	65	HE outlet/ absorber inlet			

3.5.2 Practical COP:

Tg= generator temperature Tc= condenser temperature Te=evaporator temperature
Tg=84.2ºC =357.2K Tc=40.6ºC= 313.6K Te=5.6ºC = 28.6K

COP =(Tg-Tc/Tg)*(Te/Tc -Te)
= [(357.2-313.6)/357.2]*[28.6/(313.6-28.6)]
= 0.12 *7.96
= 0.796

3.6 Steam Control System

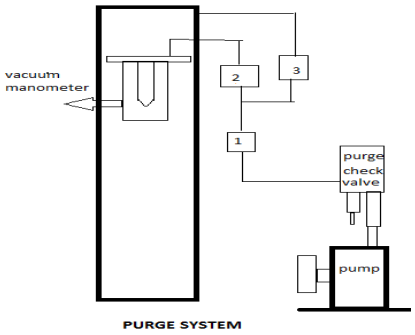
Steam input can be controlled in two ways:

- Steam inlet control system
- Drain control system.

Here in this chiller plant we are using steam inlet control system where in which we are controlling steam at the input unlike in old chiller plant where the control system is at drain control system. Due to control system fixed at outlet (drain) the chance of contact of Li Br with the high temp steam increases as a result of which thermal hammering occurs and also Li Br solution crystallizes when exposed to higher temperature, the chances of crystallization also increased. Steam control system increases the control over the steam inlet by decreasing the above mentioned problems.

3.7 Purge Tank:

Non-condensable gases in the shell are collected in the absorber where the pressure is lowest. The outlet pipe is provided in the absorber at the top of solution level, and the non-condensable gases are led out to the purge receiver and extracted to outside atmosphere by a vacuum pump. The Smart Purge system automatically and continuously removes non-condensable gases from the absorber section and collects them in a cylindrical tank mounted on the outside of the upper shell. The transport of non-condensable to the purge tank is accomplished through the use of an educator along with a gas separator. This process is virtually infallible and continuous during chiller operation. The undissolved gases may be due to the leak from outer atmosphere or due to corrosion of walls. The only moving part required for this process is the use of the solution pump, where a small amount of solution is taken from the discharge line to drive the educator. The quantity of non condensable gases in the purge tank is continuously monitored with the help of manometer fixed on the purge tank and when a specific level is reached these gases are expelled by the automatic activation of an electric motor driven vacuum pump. Kinds of purging: The two types of purging are Purging from the storage tank, and Purging from the shell.



PURGE SYSTEM

3.8 Heat Reclaimer

It acts as an economizer. The input given to the generator is decreased. As LiBr temperature increases the affinity increases. High affinity leads to increase in absorption capacity of the absorber. Therefore heat reclaimer helps in increase the affinity leading to increase in absorption capacity.

3.9. Solution Pump

The removal of a solution pump added for increase in conservation of energy. It decreased the power consumption of almost 6.6 kW.

4. Result

Due to the changes made in the design COP increased by 0.3.The power supply for a plant decreased from 22kW to

8kW and cooling water or service water requirement is decreased from 1050 Cu.M/Hr/Chiller to 900 Cu.M/Hr/Chiller.

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