The co-efficient of performance (C.O.P.) of this system is given by :

$$\text{C.O.P.} = \frac{\text{Heat extracted from the evaporator}}{\text{Heat supplied in the generator + Work done by the liquid pump}}$$

$$= \frac{Q_E}{W_p + Q_G} = \frac{Q_E}{Q_G}$$

VCRS Vs VARS

S.NO.	VCRS	VARS
1	Compressor is used	Compressor is replaced by absorber, pump and generator
2	It is a Work operated unit , Or run on high grade energy	It is a Heat operated unit , Or run on low grade energy
3	Heat Rejection occurs in Condenser only	Heat Rejection occurs in Condenser and absorber
4	Moisture related problems is having more serious impact or dangerous	Relatively lesser problem
5	Chances for the leakage of refrigerant are high	Relatively lesser Chances
6	High COP (3-5)	Lower COP (0.3-0.5)
7	Create more noise pollution	Relatively less noisy

Electrolux Refrigerator

The main aim, of using this refrigerator system is to create noiseless operation i.e. No use of Pump

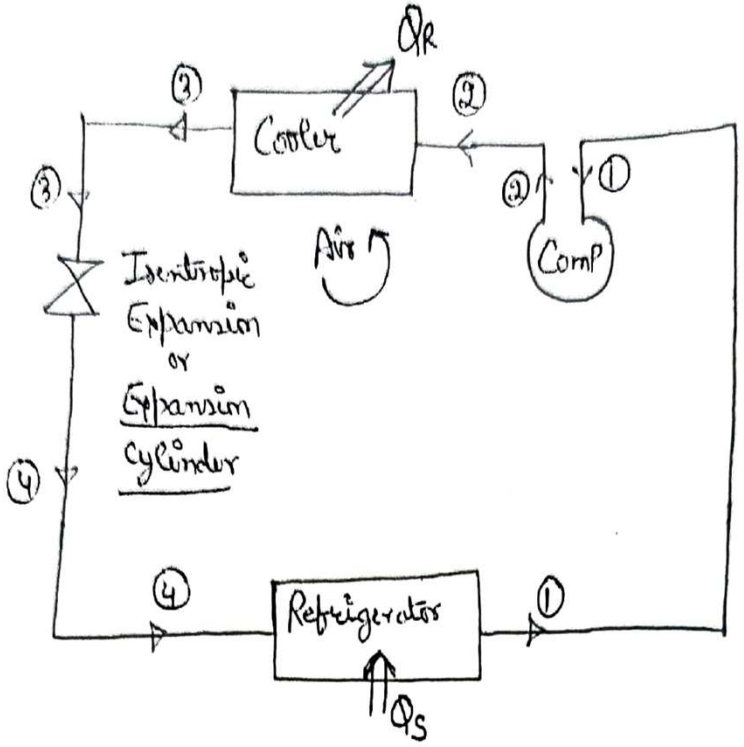
It is a three fluid system i.e. Ammonia ,water and hydrogen.

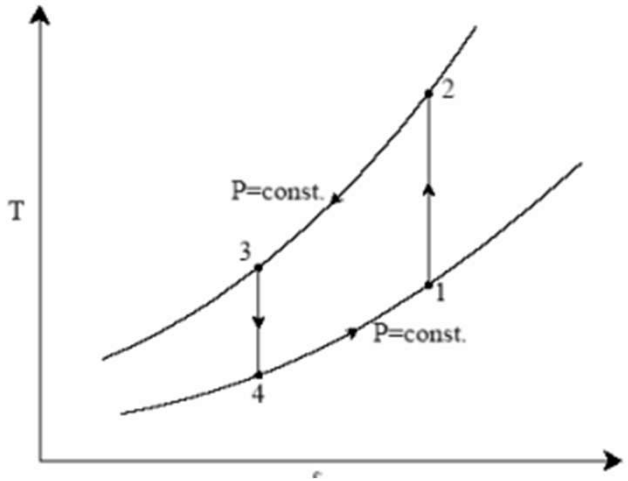
NH_3 = used as the Refrigerant

H_2O = used as the Absorber

H_2 = used to create low partial pressure of NH_3 vapour

Reverse-Brayton Cycles





Process 1-2: Reversible, adiabatic compression in a compressor

Process 2-3: Reversible, isobaric heat rejection in a heat exchanger OR COOLER

Process 3-4: Reversible, adiabatic expansion

Process 4-1: Reversible, isobaric heat absorption in a heat exchanger

References

Refrigeration and Air conditioning – CP Arora (TMH)
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