

## Title: NO LOAD AIR-CONDITIONING SYSTEM

### Team Details:

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### Abstract:

Now-a-days due to global warming, the temperature in the atmosphere is increasing rapidly, as a result usage of Air-Conditioners in automobile has turn out to be essential. Basically all the Air-Conditioning unit present in the automobiles follow Vapour Compression Refrigeration System (VCRS). In this system, compressor acts as the heart of the system and runs with the help of engine. Almost every single automobile has this AC unit installed in it and are facing so many problems.

So as to overcome all these problems we have come up with an idea of using Vapour Absorption Refrigeration system(VARS). The basic objective of developing a vapour absorption refrigerant system for buses is to cool the space inside the car by utilizing waste heat and exhaust gases from engine. The Air Conditioning system of buses in today's world uses "Vapour Compression Refrigerant System" (VCRS). Now to increase an efficiency of automobile beyond a certain limit VCRS resists it as it cannot make use of the exhaust gases from the engine. In VCRS, the system utilizes power from engine shaft as the input power to drive the compressor of the refrigerant system, hence the engine has to produce extra work to run the compressor of the refrigerating unit utilizing extra amount of fuel. this loss of power of the vehicle for refrigeration can be neglected by utilizing another refrigeration system i.e. a "Vapour Absorption Refrigerant System" (VARS). It is well known that an Internal Combustion (IC) engine has an efficiency of about 35-40%, which means that only one-third of the energy in the fuel is converted into useful work and about 60-65% is wasted to environment. In which 28-30% is lost by cooling water and lubrication losses, around 30-32% is lost in the form of exhaust gases and remainder by radiation, etc. In a Vapour Absorption Refrigerant System, a physicochemical process replaces the mechanical process of the VCRS by using energy in the form of heat rather than mechanical work. The heat required for running the VARS can be obtained from that which is wasted into the atmosphere from IC engine. Hence to utilize the exhaust gases and waste heat from an engine the vapour absorption refrigerant system can be put into practice which increases the overall efficiency of automobiles in our case which is a bus.

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