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ADVANCED DIPLOMA IN MECHANICAL ENGINEERING
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# THE DESIGN OF ABSORPTION AIR CONDITIONING SYSTEM FOR CAR

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## ABSTRACT

Air conditioning system is based on the principle of body comfort. This principle has to consider the factors that affect body comfort. The operation cycle is due to the principle of absorption heat from ambience and suit the temperature to the body comfort requirement. The refrigerant is used as a media of absorbing the heat. A conventional air conditioner usually consist of four basic equipment i.e. evaporator, condenser, compressor or generator and expansion valve. The compressor is used in vapor compression air conditioning system whilst the generator which includes an absorber is used in absorption air conditioning system.

Absorption air conditioning system is using the principle of absorbing the low pressure vapor into an appropriate absorbing liquid. Embodied in the absorption process is the conversion of vapor into liquid; since this process is similar to condensation, heat must be rejected during the process. The next step is to elevate the pressure of the liquid with a pump, and the final step releases the vapor from the absorbing liquid by adding heat. This is occurred in the generator.

In the analysis of the absorption air conditioning system, the objective is to produce a required low temperature of 50°*F* in the evaporator. The saturation vapor pressure of an hydrous ammonia at this temperature is 30 *psia*. The temperature of the absorber is the atmospheric temperature which is assumed to be 86°*F*. Thus in the absorber there is an aqua ammonia mixture at temperature of 86°*F* with the partial pressure of ammonia vapor at 45 *psia*.

The using of British Standard Imperial unit is because most of our references are in that unit.

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