CASE STUDY OF INVERTER AIR CONDITIONING LOGIC DURING OVERCHARGE REFRIGERANT

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Abstract

Preventative maintenance or also known as routine or scheduled maintenance is a work to do servicing or checking of equipment and assets to avoid from malfunction, corrective maintenance and worse is breakdown maintenance which will cause increasing of repairing cost, interruption of operation and disturbance. For residential air conditioning system, the routine maintenance must be performed for quarterly, half yearly or yearly and it completely depends on the usage time, where frequent use will be required frequent maintenance. Some of basic parameter need to be checked during servicing is refrigerant charge pressure (psi), operation current (amp), voltage (V), indoor unit supply and return temperature (°C). However, for inverter air conditioner, additional parameter must be observing as well such as compressor discharge temperature (°C) and expansion valve opening (pls). Overcharge refrigerant in air conditioning system will cause drop of cooling capacity, increasing energy consumption and short the lifespan of equipment. Main objective for this study is to observe the parameter change that occur for R32 inverter residential air conditioner unit which is compressor discharge temperature, expansion valve opening and operation current in case unit operate in overcharge refrigerant state. Finding the suitable air conditioner capacity to be installed must done first by calculating the cooling load requirements for the experiment area. Once cooling load was determined, the installation of air conditioner takes place and observation for overcharge refrigerant data is recorded. Based on the observations and recorded data, the compressor discharge temperature is reduced by about 12%, 32% of the refrigerant flow will be reduced due to the closure of the expansion valve and the compressor frequency drops by about 17% when 10% refrigerant is added into the system.

Keywords: Overcharge refrigerant, inverter air conditioning, maintenance
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