

Experimental Investigation of Energy Performance of Split Type Air Conditioning for Building under Various Indoor Set Point Temperatures and Different Air Flowrates through Cooling Coil

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Abstract : An experimental study was carried out to investigate the energy performance of a 1.5 Tr commercial split type air conditioner operating at different indoor set points and different air flowrate circulating through the cooling coil. The refrigerant R-22 was used as working fluid. In this paper, the test conditions considered were varied as follows: The room temperature varied from 23, 24, 25, 26, and 27 C, the air velocity passing through the evaporator was varied from 1.9, 2.1 and 2.4 m/s. The air velocity passing through the condenser was kept constant at 5 m/s. The results showed that when the indoor temperature was high, 27 C, and air velocity was 1.9 m/s, the coefficient of performance (COP) of the system was 3.74. The electrical power consumption of compressor was 1.64 kW, the rate of heat transfer in the condenser and evaporator were 7.79 and 6.10 kW, respectively. The amount corresponding amount of condensed water coming out of evaporator was 8.20 liter. The system can applied to commercial building.

Keywords : condensed water, coefficient of performance, air velocity

Conference Title : ICCA 2014 : International Conference on Control and Automation

Conference Location : Kyoto, Japan

Conference Dates : November 13-14, 2014