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DESIGN OF CENTRAL AIR CONDITIONING SYSTEM FOR SURMAN MEDICINE FACULTY BUILDING

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ABSTRACT

In recent years, air-conditioning systems are widely used in residential, commercial and industry buildings. The purpose of the system involves comfortable environment of the occupants in terms of desired temperature, relative humidity, indoor air quality, airflow, air filtration, ventilation, maintain a certain level of noise, and other environmental for the occupants, equipments as well as to save energy. The aim of this study is to design a central air conditioning system for cooling purpose of Surman Medicine faculty Building. It has two floors; the building divided to three zones (A, B, and C). So the inlet and outlet designing temperature and the inside and outside relative humidity are selected. The main objective of this research is to calculate the total cooling loads that the building receives through walls, roofs, windows, occupants, and equipments using (CLTD) method. The calculation of the parameters such as supply air, flow rates, return air, and the capacity of the required cooling coil of each system are presented. The calculation is made to design air supply ducts, return air ducts, and pressure losses, so according to this the ducts are drawn in detail to every part of the system to demonstrate how the air distribution system delivers the proper amount of conditioned air to a space. The appropriate air-conditioning systems such as (Chillers and Pumps) can be selected according to the cooling coil loads and the air distribution design. For simplification of theoretical calculations an Excel program was developed which is useful for calculating the total cooling loads of the building and the other parameters.

Keywords: Central air-conditioning, cooling loads, air distribution, cooling coil, Chillers, Excel program.