NUMERICAL ANALYSIS OF INDOOR AIR QUALITY IN CLINICAL PHARMACIES

By

Eng.Rana Essam El-Din Khalil Hassan Khalil

A Thesis Submitted to the

Faculty of Engineering at Cairo University

in Partial Fulfilment of the

Requirements for the Degree of

DOCTOR of PHILOSOPHY

In

MECHANICAL POWER ENGINEERING

FACULTY OF ENGINEERING, CAIROUNIVERSITY

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Title

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Summary

The present work describes and analyses the flow and heat transfer regimes inside Clinical Pharmacies through investigating a typical pharmacy. Five different design configurations of Clinical Pharmacies HVAC systems have been compared numerically to assess their agreement with international standards of clean room ventilation and airflow pattern requirements. It was concluded that the third configuration is the best in contaminant control. Numerical approach was utilized to adequately identify the airflow patterns, temperatures, relative humidity distributions and particle concentrations.

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