



**AIR FLOW REGIMES AND THERMAL
COMFORT IN COMPUTERS
LABORATORY**

By

Eng. Ahmed Saber Abdel-Aziz Galal

**A Thesis Submitted to the Faculty of
Engineering at Cairo University in Partial
Fulfilment of the Requirements for the Degree of
MASTER OF SCIENCE**

In

MECHANICAL POWER ENGINEERING

**FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

AIR FLOW REGIMES AND THERMAL COMFORT IN COMPUTERS LABORATORY

Key Words: (Thermal Comfort – Displacement ventilation – ACH)

Summary:

The present study devoted to numerically investigate the indoor air quality and thermal comfort inside an air-conditioned computer laboratory. Two different types of air-conditioning systems are examined; commercial floor (free) mounted air conditioning units and a central air conditioning unit. In both systems, the effect of varying the conditioned air flow rate and the location of the air conditioning units are investigated. Moreover, the results from the different systems are compared in order to achieve the best IAQ and comfort condition for the students inside the computer laboratory. The performance of the air conditioning system is characterized by air flow patterns, temperature, and relative humidity contours as well as the most commonly used comfort parameters PMV and PPD based on Fanger model.

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