



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



MONA MAGHRABY



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التوثيق الإلكتروني والميكروفيلم



شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



يجب أن

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MONA MAGHRABY



INVESTIGATION ON AIRFLOW CHARACTERISTICS AND THERMAL COMFORT IN METRO CABIN

By

Khaled Afify Abd El-Aziz Afify

A Thesis Submitted to the
Faculty of Engineering at Cairo University
In Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
In
MECHANICAL POWER ENGINEERING

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Under the Supervision of

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Title of Thesis:

“Investigation on Airflow Characteristics and Thermal Comfort in Metro Cabin”

Key Words:

Air flow regimes, Thermal Comfort, Metro Cabin, Ventilation, Computational Fluid Dynamic (CFD).

Summary:

The main objective of the research conducted in the thesis is to study the airflow regimes and thermal comfort in metro cabin using computational fluid dynamics (CFD) software, FLUENT 17.2. The study is carried out through seven modelling configurations of air terminals to find the best location and shape of air terminal. Another study is presented to find the effect of different supply air temperature, and finally study the effect of different ventilation rate. Configuration 7, rectangular inlets at ceiling sides with rectangular outlets at sides under passengers seats, with supply air temperature 12°C and ventilation rate 30 L/s per person achieves a good agreement with the ASHRAE comfort conditions within the occupied zones.

Disclaimer

I hereby declare that this thesis is my original work and that no part of it been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and had cited them in the references section.

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Date: / /2021

Signature:

Dedication

My thanks and gratitude

To my family,
for their great and continuous help and support, they provided me to finish this work in a
suitable form.

