



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



HANAA ALY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

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HANAA ALY



Cairo University

NUMERICAL INVESTIGATION EFFECT OF WATER SPRINKLERS SYSTEM ON SMOKE MANAGEMENT IN ROAD TUNNELS WITH AND WITHOUT VENTILATION.

By

Ashraf Mahmoud Abdo Mohamed

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

Prof. Dr. Mahmoud Ahmed Fouad

Dr. Ahmed Mahmoud Abu Zaid

.....
Professor , Mechanical Power Department
Faculty of Engineering,
Cairo University

.....
Lecture, Mechanical Power Department
Faculty of Engineering,
Cairo University

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Approved by the
Examining Committee

Prof. Dr. Mahmoud Ahmed Fouad

Thesis Main Advisor

Professor of Mechanical Power Engineering Faculty of Engineering Cairo University

Prof. Dr. Mustafa Abd el-Hamid Taha Rizk

Internal examiner

Professor of Mechanical Power Engineering Faculty of Engineering Cairo University

Prof. Dr. Mahmoud Abd El-Fattah El-Qadi

External examiner

Professor of Mechanical Power Engineering Faculty of Engineering AlAzhar University

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
GIZA, EGYPT
2021

Engineer: Ashraf Mahmoud Abdo Mohamed
Date of Birth: 18/03/1979
Nationality: Egyptian
E-mail: eng_ashraf_2005@hotmail.com
Phone: +201003180046
Address: 30 Mahmoud Qadous Street, Mansheyat
Al-Horreya, Shubra El-Kheima



Registration Date: 01/10/2017

Awarding Date: / / 2021

Degree: Master of Science

Department: Mechanical Power Engineering

Supervisors **Prof . Dr.**Mahmoud Ahmed Fouad
Dr.Ahmed Mahmoud Abu Zaid

Examiners **Prof. Dr.** Mahmoud Ahmed Fouad (Thesis main advisor)
Prof. Dr. Mustafa Abd el-Hamid Taha Rizk (Internal examiner)
Prof. Dr. Mahmoud Abd el-Fattah El-Qadi (External examiner)
Professor of Mechanical Power Engineering Faculty of Engineering
AlAzhar University

Title of Thesis: Numerical investigation effect of water sprinklers system on smoke management in road tunnels with and without ventilation

Key Words: (Firefighting of Tunnels ; Smoke Management ; Transverse Ventilation ; temperature ; Water sprinklers for tunnels)

Summary:

Car traffic tunnels have become very important because of the traffic congestion that increases from time to time, which facilitates traffic, especially in the roads with the most crowded cars, and the congestion of cars in the tunnels may cause accidents that lead to the possibility of big fires that may lead to disasters and to reduce these disasters, especially during the occurrence of a fire. Inside the tunnels, they are controlled by controlling the spread of smoke and removing it outside the tunnel, as smoke is one of the most important elements in the study of fires inside car tunnels, as it causes a decrease in the level of visibility, a rise in temperatures and a high level of carbon monoxide, which leads to death due to suffocation. The research was conducted with a numerical study of the effect of the use of a water sprinklers system on the behavior of smoke and its spread inside a cars tunnel with and without use the ventilation system. The occasional ventilation was used in the study using the FDS program 2019 edition.

DISCLAIMER

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

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

Name : Ashraf Mahmoud abdo mohamed

Date: 20/10/2021

Signature:

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With the name of GOD, this research has begun, to benefit all who are interested in this field .

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Finally, I dedicate this research to my home country, Egypt.Finally, I dedicate this research to my home country, Egypt.

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