بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

شبكة المعلومات الجامعية
التوثيق الالكتروني والميكروفيلم

HANAA ALY

شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

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

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HANAA ALY

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
GIZA, EGYPT
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Under the Supervision of

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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.

TABLE OF CONTENTS

LIST OF TABLES