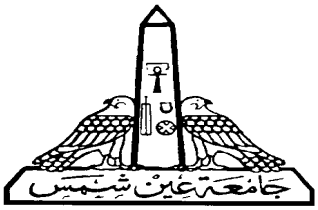

Faculty of Engineering
Public Works Department

OPTIMIZATION of DESIGN and OPERATION WASTEWATER TREATMENT PLANTS CRITERIA

A Thesis For

Submitted to the Faculty of Engineering Ain Sham University for the Fulfillment of the Requirement of M.Sc. Degree
In Civil Engineering

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2014

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(SANITARY ENGINEERING)

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B.Sc. in Civil Engineering, June 2005

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Date: - 19 /7 / 2014

STATEMENT

This dissertation is submitted to Ain Shams University, Faculty of Engineering for the degree of M.Sc. in Civil Engineering.

The work included in this thesis was carried out by the author in the department of Public Works, Faculty of Engineering, Ain Shams University, from August …… to April ……..

No part of the thesis has been submitted for a degree or a qualification at any other University or Institution.

Date: - ……/……. / 2014

Signature: - ……..

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DEDICATION

This work consumed quite a reasonable duration. It is dedicated to who educated, prepared, build capacity and helped the researcher all through her lifetime.

MY MOTHER, MY FATHER and MY BROTHERS

Deep appreciation is due to their support, encouragement and patience.

MY GRANDMOTHER

Thanks are to be extended to her support.
God bless her.

ACKNOWLEDGMANT

Gratitude is due to all who helped in accomplishing this thesis.

Thanks are due to **Prof. Dr.Hamdy Ibrahim, Prof. Dr.Mohamed Shaban Negm, and Prof. Dr. Mahmoud Abd Azim** for their guidance during executing the research and for providing the needed facilities to carry out the research.

Gratefulness is due to **Prof. Dr. Ahmed Kamal Maud** and **Eng.Mamdouh Raslan** for for their assistance and the approval of the implemented data.

Thanks are also due to **Prof. Dr. Gamal Abd Moaty, Dr.Mohamed Hassan** and **Prof. Dr.Moustafa Mousa** for their permanent advice during producing and presenting the thesis manuscript.

In particular, thanks are also extended to the master plan, operational and maintenance sectors in HCWW, Assuite, Menoufia, Damietta and GIZ for their cooperation by providing the researcher with data and adequate information.

In addition, appreciation is forwarded to **Dr. Motaz Shalaby Eng. Mohamed salah, Eng. Mohamed assal** and **Eng. Maged**.

Finally, deep appreciation is dedicated to my colleagues for their co-operation and encouragement

Eng. Ahmed Mousa, Eng. Mohamed Elnagar, Eng. Moustafa Gamal, Eng. Amany Abdelmgeid, Eng. Mai Afify, Eng. Amr Mahdy, Eng. Heba Mamdouh, Mrs. Shimaa Abdelhafiz, Eng. Nahla Abdsalam, Eng. Gamal Elhosiny, Eng. Medhat Amin, Eng. Abd Mohsin, Eng. Sahar Gomaa

ABSTRACT

Name : - Amany Mohamed Zaid Mohamed
Thesis Title: - "Optimization of Design and Operation Wastewater Treatment Plants Criteria"
Faculty : - Faculty of Engineer, Ain Shams University.
Specialty : - Civil Engineering, Public Works, Sanitary Engineering.

Summary :-

Of this research has been thinking of a way to arrange technologies sewage treatment according to specific criteria established by the decision-makers using a mathematical method. Therefore, the goal of the research is to design a matrix using (AHP) Analytic Hierarchy method, to help decision-makers to choose the appropriate technology for wastewater treatment in Egypt according to specific criteria (such as cost - environmental - energy consumption and the number of employment.

Has been compiled data on operational and technical performance of the treatment plants in Egypt, and that showed a discrepancy between the different technologies in terms of cost ,performance , energy consumption and the number of employment... etc. It has been shown that the technology, which consume less energy may need to large areas of the establishment, which can be built on small areas may need to skilled labor for operation. from search AHP method was used to compared between different technologies, with the development of this method is that we can apply in this area by adding new scale called AHPm, Which showed the following: -

In Upper Egypt prefers to use oxidation ponds, extended aeration, activated sludge or primary treatment

In Delta preferred to use primary treatment , extended aeration or activated sludge, and prefers to stay away from technology oxidation ponds, by review of our findings on the nature of the application during the same way on the provinces (Assiut - Menoufia) and comparison, has notes match the order in these provinces with different grades.

Finally, is recommending that the way AHP suitable to be used to compare between the technologies of wastewater treatment according to specific criteria and access to the results can be applied.

Key Words:

Wastewater treatment; ranking of wastewater technologies; Analytical hierarchy process (AHP).

Who Are These Supervisors

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