بسم الله الرحمن الرحيم

Palestine Polytechnic University

College of Engineering and Technology

Mechanical Engineering Department

Graduation Project

Waste Plastic To Energy "WPTE"

Using Pyrolysis Technology

Project Team

Jameel Hmoud **Moneer Abu Saiba'a** **Musa'b Qasiyyah**

Project Supervisor

Eng. Zuhier Wazwaz

Hebron-Palestine

2014

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According to the project supervisor and according to the agreement of the Testing Committee Members, this project is submitted to the Department of Mechanical Engineering at College of Engineering and Technology in partial fulfillments of the requirements of the bachelor's degree.

Supervisor Signature

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Examine Community Signature

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Department Head Signature

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December - 2014

Dedication

To our wonderful parents

Who have raised us to be the persons we are today…

To our teachers for their advices…

To all students, and our friends…

To any person working hard, and

Looking for the new

In this world…

To our country Palestine…

Acknowledgement

First, thanks and praise to god, for patronizing us to work on this project .And we would like to thank Palestine polytechnic university for the effort they had done in order to facilitate our work.

We would like to thank our supervisor Eng. Zuhier Wazwaz

for this help and continuous encouragement to the team work ,and everyone who helped us.

Thanks for our wonderful parents, who have raised us to be the persons we are today. You have been with us every step of the way, through good times and bad. Thank you for all the unconditional love, guidance, and support that you have always given us, helping us to succeed and instilling in us the confidence that we are capable of doing anything we put our mind to. Thank you for everything. Thank for our families for their continued support, encouragement and patience from the first step until the end, and their best wishes to us. To our teachers for their advices and to our friends.

Abstract

The project address is to resolve the one of dangerous pollutants on the environment, which are the waste plastic like waste ABS plastic and waste oil(used engine oil).This project primarily depend on two phases, which are design and build a pyrolysis system in order to convert waste plastic into useful energy, where the pyrolysis process is done in several stages: The first stage , is heating pyrolysis furnace into a temperature ranging between (400-600) ° C by burning "used motor oil" by oil burner ,which designed to work on the waste oil(used engine oil). In the second stage the plastic will be heated, which is located in a special tank called "plastic boiling tank", which located inside the furnace, these temperatures melt the plastic, and turns it to a liquid state with a high viscosity .Then, begins turns into flammable gas, this gas passes directly through gas condenser , in order to condense this gas into a liquid. The sample that had been taken in this project is an ABS plastic and the resulting from it is a : liquid fuel, and also output flammable gas can be used as a source of energy to run generator, for example.

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