

Palestine Polytechnic University



College of Engineering

Electrical Engineering Department

Graduation Project

Gas Burner Upgrading.

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Project Name

Convert gas burner from two stage mode to modulation mode with auto calibration and monitoring of gas flue combustion.

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According to the orientation of the Supervisor of the project and the examined committee is by the agreement of the staffers all, sending in this project to the Electrical & Computer Engineering Department are in the collage in the Engineering & Technology by the requirements of the department for the step of the Bachelor's Degree.

Project Supervisor Signature

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Committee Signature

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Department Head Signature

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Dedication

We dedicate this Project to

To our Parents

To our Friends

To our Families

Acknowledgment

To all the one whom teach me and help me, to whom that support me to achieve this scientific degree, to the supervisor of the project Prof. Abdel-Karim Daud, to all faculty members in the Electrical and Computer Engineering Department, we dedicate this project that may support other research in the future.

Abstract

Factories are working on two stages – high & low flame- Liquified Petroleum Gas (LPG) burners. The two stages system works on two pressure values high & low. The project aims to work on modulating mode which means that the burner controller will select the needed capacity according to the real load by installing pressure transducer. Working on modulating mode will reduce the running cost since the burner will not operate directly on the high capacity as two stages system.

During running of the burner on modulating mode; the ratio between air and gas will change according to the burner capacity and though there is a necessity to check that combustion is complete. In order to check if the combustion is complete; O₂ sensor will be installed at the chimney.

The project proposes to change the servo motor that control the air and gas cams together, to separate stepper motor for each cam to get the required angle Vs capacity. This change will give the ability to increase or decrease quantity of air and gas separately. A new controller will be added to the main control box of the burner to connect and control the new installed devices.

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