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**DIPLOMA PROJECT**

**“DESIGN OF A SMALL BIO DIESEL  
PRODUCTION UNIT”**

**BY**

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# DESIGN OF A SMALL BIO DIESEL PRODUCTION UNIT

by

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# ABSTRACT

Design of a Small Bio Diesel Production Unit. (June 2008)

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This project investigates the issue of bio fuels and, more specifically, the existing bio diesel production. At first, it explains what we mean by saying bio fuel and goes back in the past to show how people have come up with bio diesel production. Then, it talks about bio fuels' use in the European Union and, it further points out the advantages and disadvantages of using bio diesel and looks at it from the perspective of economics. In addition, the project refers to different methods through which bio diesel can be produced and different feed stocks that can be used for it.

At last, the most important part of the project is when it comes to propose a possible design of a small bio diesel production unit that produces bio diesel from used cooking oil from restaurants. In this part, there will be also reference to equipment used, safety measures, the cost of designing such a unit and suggestions for improvement.

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# CHAPTER 1

## INTRODUCTION

### 1.1 BIO FUELS IN THE 21st CENTURY

Bio fuel production is an ancient endeavor to solve economic and environmental problems associated with fossil fuels. Except from being environmentally friendly, bio fuel is a renewable source of energy and can be made even from waste vegetable oil. It also reduces health risks and helps engines last longer.

But although their production increases over years, they still account for only 5% of the global transportation fuel market. The major reason for this is the cost. Even though bio fuels solve problems that petroleum diesel causes, they are thought to lead to social troubles like the increase of food prices.

At this moment, bio diesel is used by millions of car owners in Europe, especially in Germany. But its future is uncertain since it depends on the price of oils, government policies and technological development.

### 1.2 AIMS AND OBJECTIVES OF THE PROJECT

My project's main objective is to design a small production unit that will be able to produce bio diesel from used cooking oil coming from restaurants.

This objective will be accomplished through some essential steps. First, I will carry out a survey on existing bio fuel production units, listing their characteristics with regard to their productivity, cost of operation per liter of fuel produced and the cost of construction or purchase such a unit. I will also research on methods of production and different feed stocks used for producing bio diesel. Then, I will attempt to design the bio fuel production unit which will be capable of producing 100 to 150 liters of diesel per day, using waste cooking oil.