CLEANING AUTOMOTIVE PART USING FLUIDIZED BED REACTOR.

MUHAMMAD AIZUDDIN BIN IBRAHIM

(2000127697)

A thesis submitted in partial fulfillment of the requirement for the awards of Bachelor Engineering (Hons) (Mechanical)

Faculty of Mechanical Engineering

Universiti Teknologi MARA (UiTM)

OCTOBER 2004

ACKNOWLEDGEMENT

In the name of Allah S.W.T , the Most Gracious who has given me the strength and ability to complete this project and report. All perfect prices belong to Allah S.W.T Lord of the Universe. May his blessing belong upon the prophet Muhammad S.A.W and members of his family and companions.

I would like to express my deepest gratitude and thank you to our advisor Mr. Wan Ahmad Najmi bin Wan Mohamed. We are very appreciate for the guidance, ideas, support and patient in advising and assisting the project. During the project, I made a lot of mistake and I had learn from my mistake. Insyaallah, the understanding and learning from this project can guide me in my future job and lifetime.

My appreciation also goes to our partner who his working together with to fullfil this work, to Mr Jais, Mr. Ayob, Mr. Reduen and Mr. Adam the UiTM technision and also my family, and classmate for their support. Lastly not forgotten to my housemate for the patient and contribution, understanding, support and also ideas throughout this project.

Thank You.

ABSTRACT

Cleanliness of a machinery component is an important consideration to avoid machinery breakdown and application failures. Currently, industries are turning away from using chemical compounds and solvent for cleaning purpose due to its adverse effect on health and the environment. Efficiency and cleaning are two parameter that are demanded by the industry. Thermal cleaning using fluidized bed is an attractive, offering higher cleaning efficiency and flexibility in process control. Before fabricate this fluidized bed heat – cleaning system, there are some investigations to determine the parameter that involved in fluidized bed process. The experiment is done by using the Fluidization & Fluid Bed Heat Transfer Unit H 692 in the thermodynamics Laboratory. From that experiment, we observe that the parameters that give influence for that process are size and mass of solid particles, Bed Height of particles, distributor design, air flow rate, and pressure drop across the bed. After that experiment, a new design of bed rector for fluidized bed heat – cleaning process is fabricate. The design of this is base on the Fluidization & Fluid Bed Heat Transfer Unit H 692 with 90 cm in their height and 50 cm for their diameter. Then, continue that fabricate until the fluidized bed heat – cleaning process can exists. But, our project is only to make the fluidized process in the bed. The future fabricate will be continue to the other students in completing this project.

TABLE OF CONTENTS

CONTENTS		PAGE
PAGE TITLE		i
ACKNOLEDGEMENT		ii
ABSTRACT		iii
TABLE OF CONTENTS		iv
LIST OF TABLES		ix
LIST OF FIGURE		x
LIST OF ABBREVIATIONS		xii
CHAPTER I	**INTRODUCTION**	
1.1	Introduction	1
1.2	Mechanical Part Cleaning Technology.	2
1.3	Objectives.	4
1.4	Significant Of The Project.	4
1.5	Scope Of Project.	5
1.6	Thesis Outline.	5
CHAPTER II	**LITERATURE REVIEW**	
2.1	Fundamental of Fluidized Bed.	6
2.2	The Basic Component	10

CHAPTER I

INTRODUCTION

1.1 Introduction.

Machineries consist of components subjected to various modes of operation. Industry depends heavily on their process machineries, where profit and losses are mainly subjected to the efficiency of the industrial machineries to work as they as supposed to. However, machine life and efficiency depends on many inter related factor. Some of that are material, design, productivities and cleanliness of the machineries.

One of the factor which is the subjected of interest of this report is the cleanliness of the machineries components. Nowadays, almost any industries get involved with organic substances like oil, grist, organic soil, scale, plastic, rubber and rust at some stage during the machine is operate. Rotating components require lubricants such as grease and oil for smooth operation, but due to design failure, process condition and other factor, the greases and oils is transferred to other part of the machineries, therefore contaminating them with unwanted organic substances. A working environment with dust, dirt, tar, resins, carbonized matter, and chemical substances also contributes to contamination.

Failure to properly address the problem of unwanted contaminates, especially on critical machinery part, is a major cause for machinery breakdown and reduced the efficiency. Removing these contaminants in metal component is a pervasive problem for many companies. The most problem of this situation is the decide technique of cleaning,