BMM & BMA Industrial Training Report Format

**Note:**

**You have to submit the softcopy of the report to the UMP supervisor a week after you have finished your internship.**

1. Cover page (see **APPENDIX**)
	1. Programme Faculty
	2. Student’s name
	3. Student ID
	4. Start date of industrial training
	5. End date of industrial training
	6. Industrial name and address
2. Acknowledgement
3. Abstract
4. Table of Contents
5. List of figures (if any)
6. List of tables (if any)
7. List of abbreviations (if any)

# Introduction and Company background (max. 10 pages)

* Main purpose of the report, the job title and outline the major areas of responsibility
* Training schedule (Gantt chart)
* Company background (Company name, address,)
* Company organization structure

- Company activities related to Mechanical Engineering

- Company customer, company achievement

# Student self-activity (40 ~ 50 pages)

Summary of students’ activities based on the project / Job / Task given by the industrial supervisor. **(\*Do it by project / Job / Task**)

1. **Detail explanation** of technical work duty based on the project / Job / Task given by the industrial supervisor
	* Detail explanation inclusive of the project / Job / Task ***objectives, scopes, theories, practical and methods of execution*** that are only related to **mechanical engineering (**i.e. planning, designing, process improvement, maintenance, fabrications and etc.) and the project / Job / Task ***Gantt chart***.
2. Analysis and comments of technical work duty based on the project / Job / Task
	* Analysis inclusive of **tools & techniques** used that is related to **mechanical engineering** i.e. software, programming, mathematical equation, engineering equation and etc.
	* Technical comments inclusive of **comments that is related to mechanical engineering taken from the industry’s engineers, managers.** i.e. advantages and disadvantages, suitability, reliability of the design or process and etc.
3. Aspect of **United Nation Sustainable Development Goals (environment and sustainability) in the task**
4. Values and Career Plans **(2-3 Pages)**

**-** Provides a description between experiences and shaped self-value

**-** Provides a description of student career directions

1. Conclusion **(2-4 Pages)**

- Summarize the Benefit of the Project that student gain, Contribution of the Project towards the organization, Problems and Issues (current system if any), Suggestions / Solutions (new system)

1. Recommendations for Future works **(1~2 pages)**
2. References

# Appendices – Only student activity that is related to engineering work

**APPENDIX SAMPLE OF COVER PAGE**

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INDUSTRIAL TRAINING REPORT N0. 4 JALAN IPOH, BATU 18

RAWANG INDUSTRIAL & HOUSING ESTATE TAMAN RAWANG PERDANA, RAWANG SELANGOR DARUL EHSAN

X

NASHRUN ABDUL GHANI MH 05040

FACULTY OF MECHANICAL ENGINEERING UNIVERSITI MALAYSIA PAHANG

X

04 JANUARY 2010 – 18 JUNE 2010

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**APPENDIX B**

**SAMPLE OF THE SPINE**

SAMPLE OF TABLE OF CONTENTS

TABLE OF CONTENTS

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| ABSTRACT | ii |
| TABLE OF CONTENTS | iii |
| LIST OF TABLES | iv |
| LIST OF FIGURES | v |

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# CHAPTER 1 COMPANY PROFILE

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Title case

|  |  |
| --- | --- |
| 1.1 | Introduction |
| 1.3 | Company Background |
| 1.3 | Company Organization |
| 1.4 | Training Schedule |

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# CHAPTER 2 COMPANY ACTIVITIES

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* 1. Introduction
	2. Related to Mechanical Engineering

Single line spacing

* + 1. xxx
		2. xxx
		3. xxx
	1. xxx
	2. xxx

# CHAPTER 3 STUDENT SELF ACTIVITY

|  |  |
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| 3.2 | xxx |

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| --- | --- |
|  | 3.2.1 xxx |
|  | 3.2.2 xxx |
| 3.4 | xxx |
| 3.5 | xxx |
| 3.6 | xxx |

**CHAPTER 4 VALUES AND CAREER PLANS**

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**CHAPTER 5 CONCLUSION & RECOMMENDATION FOR FUTURE WORKS**

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approaches for the SAETRN loading conditions

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# UPPERCASE, BOLD

**CHAPTER 2**

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# LITERATURE REVIEW

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# INTRODUCTION

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The purpose of this chapter is to provide a review of past research efforts related to internal combustion engine, free piston engine, finite element analysis, durability assessment models and surface treatment on the fatigue life. A review of other relevant research studies is also provided. Substantial literature has been studied on stress history computation, fatigue life prediction, and durability analysis of components of two-stroke free piston engine. The review is organized chronologically to offer insight to how past research efforts have laid the groundwork for subsequent studies, including the present research effort. The review is detailed so that the present research effort can be properly

tailored to add to the present body of literature as well as to justly the scope and direction

of the present research effort.

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# INTERNAL COMBUSTION ENGINE (Main title: Upper case and bold)

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# Historical Perspective (sub-title: Title case and bold )

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The IC engine was first realized in its modern form by Nikolaus Otto in 1867 (Heywood, 1988; Stone, 1999). The technology spread quickly, and by World War I, the internal combustion engine was ubiquitous in both the mobile and stationary applications.

With the advent of mass production, automobiles actuated by the chemical power plant entered the garages of middle class America. Around the world, fortunes were made and lost by those who made automobiles, fuels, tires, and all the other things necessary for peoples’ new found mobility. In the manufacturing and power generation, these sources of mechanical energy were also common. Such uses include air compressors, power equipment, electrical generators, and, of course, all types of transport vehicles. The remarkable versatility of the IC engine has been due to its inherent simplicity, favorable power-to-weight ratio, and exceptional ruggedness (Heywood 1988). Figure 2.1 presents an illustration of one of these crankshaft driven machines.

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**Figure 2.1:** An illustration of a conventional crankshaft driven IC engine

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Source: Heywood 1988

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# Classification of Internal Combustion Engines

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(Heywood, 1988; Dawson, 1998). However, if the limit of the scope to geometries involving reciprocating pistons, two broad distinctions are of special importance.

The force balance to the crank engine piston in the *x* direction is expressed as in

Eq. (2.3)

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*d* 2 *x*

Right align within parentheses

Center

*Fx*  *mp*

*dt*2

*PC AC*  *Fl* cos **

(2.3)

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Table 2.1 are listed the materials properties of the materials used in this study

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**Table 2.1:** Monotonic and cyclic properties of the MANTEN and RQC100 materials

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|  |  |  |
| --- | --- | --- |
| **Materials properties** | **MANTEN** | **RQC100** |
| **Monotonic Properties** |
| Young’s modulus, E, GPa | 203.4 | 203.4 |
| Ultimate tensile strength, *Su* , MPa | 552 | 863 |
| **Cyclic and Fatigue Properties** |
| Fatigue strength coefficient, ** *f* , MPa | 917 | 1158 |
| Fatigue strength exponent, *b* | -0.095 | -0.075 |
| Fatigue ductility coefficient , ** *f* | 0.26 | 1.06 |
| Fatigue ductility exponent, *c* | -0.47 | -0.75 |
| Fatigue strength, *S f* @ 108 cycles, MPa | 10 | 10 |
| Cyclic strength coefficient, *K*  , MPa | 1103 | 1151 |
| Cyclic strain hardening exponent, *n* | 0.19 | 0.10 |

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Source: Rahman (2007)

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The SAE keyhole was modeled using the MSC.PATRAN and analyzed utilizing the MSC.NASTRAN, the finite element analysis code.