DESIGN OF A PRESSURE VESSEL

DESIGN PROJECT REPORT

submitted by:

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to

the APJ Abdul Kalam Technological University

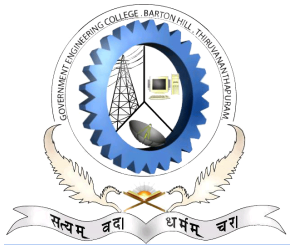
in partial fulfilment of the requirements for the award of the Degree

of

Bachelor of Technology

in

Mechanical Engineering



DEPARTMENT OF MECHANICAL ENGINEERING

GOVT. ENGINEERING COLLEGE, BARTON HILL,

THIRUVANANTHAPURAM

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DEPARTMENT OF MECHANICAL ENGINEERING

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CERTIFICATE

This is to certify that the Project report titled **Design of a Pressure Vessel** submitted by **Rajeev D.**, Reg. No. TRV16MEaaa , **Joseph George**, Reg. No. TRV16MEbbb, **Student3 Name Initials**, Reg. No. TRV16MEccc, and **Student4 Name Initials**, Reg. No. TRV16MEddd to the APJ Abdul Kalam technological University in partial fulfilment of the requirements for the award of the Degree of Bachelor of Technology in Mechanical Engineering, is a bonafide record of the Project work carried out by them under my guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

Name of Supervisor
Project Supervisor

Dr. K. Jayaraj
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ACKNOWLEDGEMENT

Write your acknowledgements here.

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ABSTRACT

The objective is to minimize the overall system costs which include the fixed costs of opening depots and using vehicles at each depot site, and the variable costs associated with delivery activities. A novel heuristic is proposed which is based on variable neighbourhood descent (VND) algorithm to solve the resulted problem.

Keywords: *keyword1, keyword2, keyword3, keyword4*

Contents

List of Tables

List of Figures

Chapter 1

INTRODUCTION

In every chapter we usually provide an introduction to the chapter in this space. Since it is the chapter named 'Introduction', a brief introduction about the project work is to be provided here in this chapter. It can extend to two or three pages, if required. This unnamed section can even hold citations to references also.

After reading this section of the report the reader will get an idea about the problem being discussed in this report and the tools used to solve/analyse the problem and address the research question.

1.1 Problem Definition

Provide a brief description of the problem and its domain, the practical importances of the problem, etc.

1.2 Objectives of the Project Work

IN this section you have to provide a list of objectives that you achieve after completing the manufacturing of the product or its prototype. You can list the main objectives behind selection this topic for the design project. That list can have many number of entries.

The objectives of this project work are:

1. First objective
2. Second objective
3. Third objective

1.3 Scope of the Project Work

The scope of this project work to be included in this section. By the term 'scope' we usually intend to provide the boundary of the problem and the validity and applicability of: (a) the results based on the initial design or prototype building, (b) the methodology used to solve the problem/design the product, (c) the conceptual design and the parameter settings, (d) the applications and usability of the product, etc.

1.4 Research Methodology

This section is to provide an overview of the selection of design problem used in this project work, the design tools used, the data collection, data analysis, making inferences, making prototype, comparing the results, etc. This section should provide only an introductory description. Description of each has to be provided in detail after the literature review in the next Chapter, Sec **??**.

1.5 Limitations of the Project Work

As the title says, this section is dedicated to explain what limitations exist for the project work in terms of the validity of the results because of the method used, data source, data collection method, difficulties faced in different stages of the project, etc. It can go up to two paragraphs.

Chapter 2

EXISTING DESIGNS AND PRODUCTS

In this chapter you have to provide the results of your preliminary and detail searches related to the topic conducted to find out the existing products, designs and ideas. Refer to the all available sources that you searched and obtained results related to it. It can go up to many designs/products/ideas.

2.1 Design 1/Product 1

Write about the existing first product/method/design to give an introduction to the your product/design/idea.

2.2 Design 2/Product 2

Write about the second alternative. If possible give the name of section as that of the alternative's name.

2.3 Design Tools / Algorithm Used

Write here your logic in the design in relation to all the above alternatives available.

2.4 Methods of Design/Fabrication/Implementation

Do not use the above title. Use the appropriate title here and explain what methods followed to get your design/product/implementation.

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2.5 Summary

This is a must especially in this chapter, which will tell the reader what are the points you accepted for the design, what are the alternatives available that you studied after your search, and the methods, ideas and implementations that form the basis for the current design project.

Chapter 3

DESIGN/DATA COLLECTION

An introduction to this chapter has to be provided here. This chapter should provide the design that you made by numerical, analytical, simulation, or observation based methods. Each section below this should focus on these aspects of your design.

3.1 A Section Here

A figure can be inserted as follows. Fig. 3.1 is in this section and so on..... First observe the figure number should contain the chapter number as the first digit and the second digit or number as the position of the figure in the current chapter.

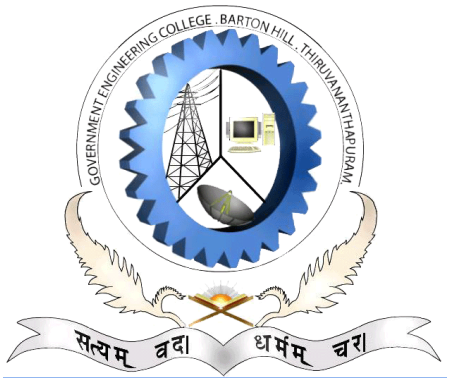

Figure 3.1: A sample figure inserted in a chapter

See how the figure in this chapter is used in another chapter to refer to it by its number and page number. Check Chapter 4, page no. 7.

3.2 Second Section

Here in this section you can give a proper name and explain about it.

We can see a sample table, Table 4.1, in page no. 7 referred in this section. Any floating objects like this can be referred without actually counting the page where it comes in the document. Just say what to be done, the rest is up to LaTeX.

Table 3.1: Expenses of Rakhul

Item	Rate	Qty.	Amount
Rice	34	5	170
Sugar	32	1	32
Salt	15	1	15
Chilli	150	0.25	37.5
		Total	254.5

Table 3.2: Modifications in a table design

Rakhul	Vrinda	Raveendran	Krishna	Anu
		Anna	Bhaskar	Nizam

In Section 2.2, page no. 3, the different modes and different practices in e-procurement has been discussed. The research in e-procurement actually discusses the success stories of e-procurement.

3.3 Equation referred here

Any equation in the report can be referred anywhere like this. Eqn. (4.3), page no. 7 is a sample equation that says about the displacement of an object travelling with specific parameters.

3.4 Summary

Provide a paragraph to summarise every chapter.

Chapter 4

DESIGN ANALYSIS

Provide an analysis of your design and compare it with the existing ones. Here you can use the sections for comparison of design, establishing the benefits, etc., split into different sections with appropriate section names.

A table will always have a caption on top, with its number having chapter number followed by the position number in the chapter.

Table 4.1: First sample table with the table caption above the table

Left align	Center	Right align
one	two	three
four	five	six

We can have many types of equations in this report, may be in previous chapter(s). They are single equation, equation array, and aligned equations. The first one below is a single equation.

$$p(x \leq n) = \sum_{i=0}^{n} \frac{e^{-\lambda x}(\lambda x)^{i}}{i!} \tag{4.1}$$

Now we can see an equation array.

$$f(x) = \lambda e^{-(\lambda x)} \quad \text{pdf of exponenial} \tag{4.2}$$

$$S = ut + \frac{1}{2}at^2 \tag{4.3}$$

The above equations are aligned to the right. We can make them aligned at any character. If we select the equal sign as the alignment position, we have to use align environment like this.

$$f(x) = \lambda e^{-(\lambda x)} \quad \text{pdf of exponenial} \tag{4.4}$$

$$S = ut + \frac{1}{2}at^2 \tag{4.5}$$

4.1 Another Section

The above equations can be referred to at any position in the document. It is by its identifiers. Eqn. (4.5) measures the distance an object travels in time t, starting with an initial velocity u and an acceleration a. Eqn. (4.1) gives the cumulative probability of a Poison process that there will be n or less events in a given period of x units of time when the process has an average rate of λ per time.

In the same way we can refer any table or figure in the document at any place. Example, Table **??** is a sideways table, placed alone in a page.

4.2 Summary

Provide a summary of what discussions you made in the above sections.

Chapter 5

DISCUSSIONS

The discussions on the design / implementation / algorithm are presented in this chapter divided in to different sections. Each section presents results of one analysis each.

Here we will discuss how to include figures side by side. Assume there are two figures to be added. We have to create **subfigure** environment inside the figure environment.

(a) First sub-figure caption

(b) Second sub-figure caption

Figure 5.1: Common Caption for the Two Figures

5.1 Another Section

You may compare the cost aspects, the environmental impacts, aesthetics, etc., in comparison with the existing ones in this chapter in appropriate sections.

5.2 Summary

Summary of the discussions made above have to be presented here.

Chapter 6

CONCLUSIONS

Here comes the conclusions derived after completion of the project work. This chapter should provide the future directions for the current work. This chapter can extend to any number of pages. If it goes into many pages, keep them under different and appropriate sections. A separate sections can be devoted for Limitations.

REFERENCES

Angels and Nath (2007). Title of the article. *Journal of Purchase 23*, 196–2004.

Croom and Brandon-Jones (2005). A title of the author's choice. *International Journal of Marketing 18*, 34–46.

Kalakota and Robinson (2001). Title. *Journal 3*, 61–68.