

METU

Department of Mechanical Engineering

ME 400

Summer Practice Report

by

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**I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as require by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.**

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# Introduction

The aim and the scope of the summer practice should be presented briefly in this chapter. This chapter shouldn’t be longer than 1 page.

# Description of the Company

In this chapter of the summer practice report, the company is introduced. This chapter shouldn’t be more than 3 pages.

## Factory Name

Find a proper name for your factory.

## Factory Location

Find a proper location for the factory and discuss the reasons behind selecting this location

## Organizational Structure of the Factory

Give an organizational structure of your factory, feel free to assign fictitious positions (do not forget to have engineering departments).

## Types of Engineers and their Duties in the Factory

Discuss the types of engineers hired in the company and mention about their duties

## Main Area of Business of the Factory

Discuss your main area of business (How do you sell your products? Who are your customers? What are your main products?)

## History of the Company

Write a brief fictitious history of your company (founders, date of establishment, initial businesses, etc.)

# Details of the Product

## Main Function and Features of the Product

Write down the main function and features of your product

## Bill of Materials

Create a multi-level bill of materials (BOM) schematically. Start from the product, continue with the assembly and finish with parts (Visit https://mub.me/ChL for a tutorial on how to create a multi-level BOM.)

## Explanation of Functions of Each Assembly and Part

Explain the function of each assembly and part in detail.

## Make or Buy Decision

Do make-or-buy decisions for the parts in BOM and justify your decision (Determine at least 5 parts that you decide to manufacture in your plant).

## Solid Model of Five Selected Parts

Make a 3D model of 5 parts (that is going to be manufactured in your factory) using a CAD software.

## Engineering Analysis of Five Selected Parts

List and explain the type of engineering analysis that the design and R&D engineers should be performing for the design of parts in (3.5).

## Technical Drawings of Five Selected Parts

Generate 2D technical drawings of the parts using the solid models you generated in (3.5) (with necessary views, dimensions, materials, tolerances, scale, surface quality, etc. by using a proper template)

## Production Steps of Five Selected Parts

Give detailed production steps of the parts in (3.5)

# Assessment of Production

## Machines and Machine Tools in the Factory

Select proper machines and machine tools to produce the parts in (3.5).

## Layout of the Factory

Make the plant layout based on (4a) (layout of machines and machine tools, the layout of assembly lines, material handling methods, raw material storage, storage methods used for semi-finished and finished products).

## Production Planning and Scheduling

Production planning and scheduling for the parts in (3.5).

## Quality Control

Quality control procedure for the parts in (3e)

# Cost Analysis

Make the cost analysis of one of the parts in (3e) (Do your best to collect best information for the overhead cost of the machines, energy costs, machine tool costs etc.).

# Quality Assurance

Assessment of quality assurance and quality control systems used for raw materials, parts, and products. At this point, you know which parts and/or assemblies are being manufactured in your factory and which parts and/or assemblies are being purchased from outside. Think about what kind of supplier controls you need and acceptance tests (for parts and/or assemblies you purchase from outside and raw material of the product you are manufacturing) you may need to ensure the quality of all parts of your product. Try to determine the relevant quality standards through research.

# Marketing and Future Plans

Imagine that you are manufacturing and selling the given product in expected volumes successfully. What products will be reasonable next product(s) for the continuation of the cash-flow and growth of the company?

# Conclusion

The experience gained during the preparation of the summer report, please elaborate on how the research you performed during the preparation of the report improved your knowledge as an engineer.

Appendices

All related data, tables and drawings should be given in this section.