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PROJECT TITLE: AUTOMATED PLUG FOR FLUID'S MECHANICS LAB'S HYDRAULIC TANK

MECHANICAL ENGINEERING

INTRODUCTION

The drain plug for the hydraulic tank requires an individual to physically remove the plug from the drain to allow the liquid in the tank to flow through the drain. This project aims to automate the process of removing the plug.

AIMS

- To design and manufacture a device to automate the process of pulling the plug from the drain hole of the hydraulic tank.

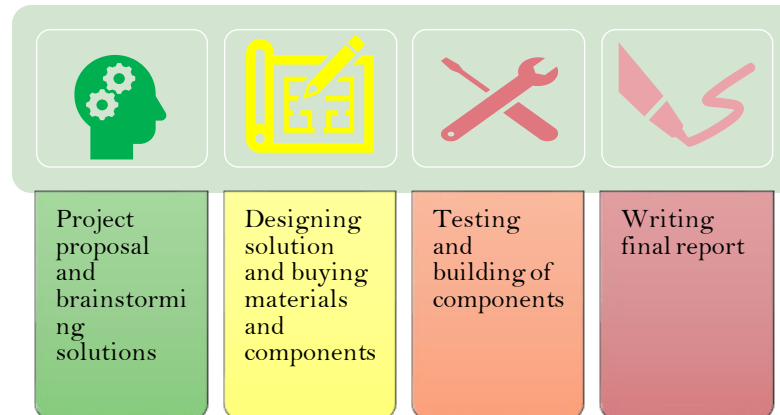
OBJECTIVES

- To investigate possible mechanisms to allow for an automated plug.
- To research and design a new and suitable plug for the tank.
- To design a device to automate the pulling of the plug.
- To design a platform to attach the device to the hydraulic bench.
- To build and test the device in the laboratory.
- Check if any improvements can be made and further consider methods of optimizing the device/ mechanism.

PROJECT OVERVIEW

- As stated in the introduction, the project aimed to automate the process of pulling or removing the plug from the drain of the hydraulic tank. The solution product manufactured uses an electromagnet and a pulley system to make this possible. This involves the electromagnet attracting a magnetic plate attached to the pulley via a string which is also attached to the drain plug, the attraction causes the pulley to be lifted and the drain unclogged and the liquid in the tank can freely flow through the drain.

PROCEDURE



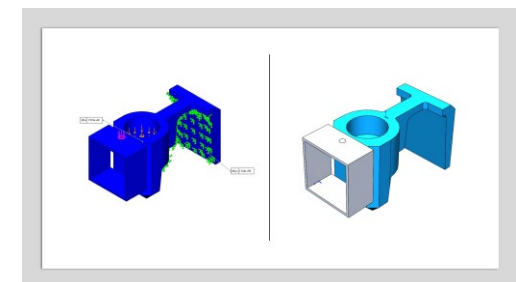
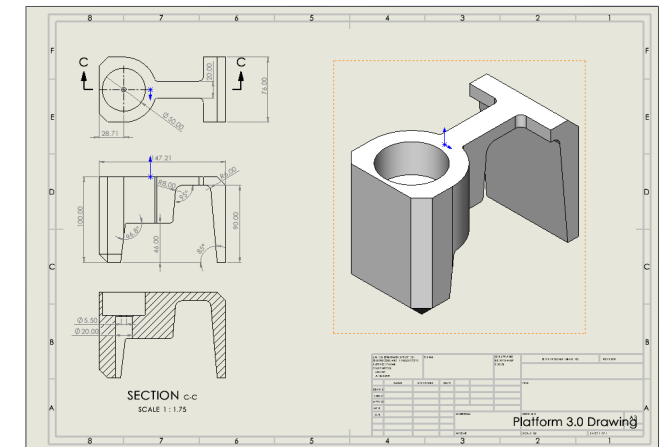
RESULTS

- The solution product was incomplete and needed some modifications.
- The product verified the principles followed in the project.
- The product was able to hold the lifted plug in-place.
- Objectives regarding design and manufacturing were met.
- Product meets requirements of PDS.

FINAL PRODUCT



DESIGN FOR ELECTROMAGNET PLATFORM



CONCLUSION

- Although the solution product was not successful in attracting the magnetic plate due to reasons stated in the report, the overall project was a success as it proves the principles work and the solution product can also be used to help hold the plug in-place which also eliminates the need for an individual to do it.