Project Management Report for H2-Power Substituting Diesel Generator Project

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1. Introduction

This report provides a detailed overview of the tasks and responsibilities I, Md Zilani Hossain, fulfilled during the H2-Power Substituting Diesel Generator project. My involvement spanned several key areas, including component research, documentation leadership, 3D modeling, and hands-on assembly tasks. The purpose of this report is to highlight my contributions, the milestones achieved, and the challenges faced throughout the project.

2. Roles and Responsibilities

Component Research and Making Team: I was deeply involved in researching and selecting the components necessary for the project. Working closely with Md Ferdous Amin, I compiled detailed lists of all required components, ensuring they were compatible, safe, and appropriate for our design. My responsibilities included:

- Conducting thorough research to identify suitable components for the hydrogen generator. I found every main component detail (PTFE tubing, Fuell cell, Hydrate Storage, MultiPlus, NF A14 V1, ROUTER, UP5000, ALUMINIUM PROFILE) , used in the project and also found out the optional components details (ESP 32, Lufter, Digital pressure gauge, RP5 Microsd 64GB)that we can use in the making of the generator.
- I have researched to ensure that all selected components met safety and functionality standards. I am sharing all the finding data with my teammates during the work on our project.
- Documenting the components, their specifications, and most importantly their compatibility with the overall system .

Documentation Team Leader: As the leader of the documentation team, I structured and oversaw the entire documentation process. My key tasks included:

- Write the ‘documentation overview’ and maintain the project report.
- Conducting weekly interviews with team members to gather updates and ensure the accuracy of the documentation. Here, more specifically, an interview means: To keep

a record of everything we have done. I have taken interviews with the IT team for their work in ESP programming, wiring, and cable management. I also took interviews with the 3D modeling team to keep a record of every detailed measurement of our 3D models. Over time, a lot of our 3D models get updated. So keeping a record of the 3D models and their measurements was one of the important tasks. And during our work on the project, I am having continuous discussions with Mr. Omed about the work on our project (specifically in research of the systems) and how I can shape our documentation report.

- Assigning documentation tasks to team members, ensuring all project activities were recorded in detail. So for final report purpose on July, I have assign task to write few of the part to our teammates.
- Compiling, editing, and finalizing the project documentation according to the university's report writing guidelines.

More details on how i have managed everything of the documentation/ Report :

On May 29,30 – I recorded the final measurement of all the 3d modeling we have done. We also added all the optional components in the reports, though later we removed it from the final report. My idea is to keep track of this data because when we make the final report at that time, we will have all the information about every little things.

On July 7 and 11 – we briefed everyone about the documentation we worked in and discussed about the restructuring and put every little details in our report. So I have shared my previous documentation docs which named 'H2-Power substituting diesel generator' with everyone so everyone can see all the data we have recorded. Also, assign different parts of documentation to different members. We discussed which things we can give shape to, and

On July 13 – Taking report of members writing of their different parts. Review parts like research documents, future work, and IT team documents and structure them in the final documentation.

On 22nd July to 27th July – Updated all the member's parts in the final documentation, structured it according to the university report writing manual, wrote my part "documentation overview" by Md Zilani Hossain, and later reviewed the documentation multiple times with the proofreading team, and correct some error.

On 29th July: Submitted the Final documentation/ report named " Ip Final Report"

The things that have not been going according to the plan is :

On May 21: We thought we would add details of ESP programming, Algorithm, and coding part and keep a record of all those things. But after discussing with the IT team I found that we have to wait until testing.

3D Modeling Team: I contributed to the 3D modeling efforts led by Fungai Machingaifa, specifically focusing on:

- Designing the solenoid cover, ensuring it could be properly attached to the prototype. For designing the solenoid cover i have done the measurement by having discussion with Mika And fungai and make the cover of the Solenoid. I have to learn 3d modeling key concepts to design it.
- Collaborating on the pressure regulator cover, taking precise measurements, and coordinating with the 3D modeling team to ensure accurate production. In this part i am working on the cover for the pressure regulator to ensure seamless integration with the main frame.

Assembly and Frame Construction: During the assembly phase, I took on the critical task of building the system's frame, which involved:

1. **Frame Construction:**
    - **Preparation of Aluminum Profiles:** I began by preparing the aluminum profiles, which are fundamental to the structural integrity of the frame. This involved taking precise measurements to ensure each profile was cut to the correct length, polishing the edges, and joining the outside structure with brackets.
    - **Connector Attachment:** After the profiles were prepared, I focused on attaching them using the appropriate connectors (4mm, 6mm, and 8mm). I ensured that each profile was securely connected and screwed for stability.
2. **Solenoid and Small Components Attachment:**
    - **Positioning and Attaching the Solenoid:** In June, I worked on the assembly of the solenoid and other small components onto the frame. I carefully evaluated the frame to find the optimal position for the solenoid, ensuring that it was securely attached to the frame by screws to ensure stability.
    - **Board Preparation and Attachment:** Additionally, I prepared the boards that were to be integrated into the frame. This involved sharpening the edges of the boards and then attaching them to the frame by tightly screwing the lid on, There were 4 boards I have to prepare to integrate in the frame.

3. Milestones and Key Activities

April 3 - May 25:

- **Research and System Design:** Conducted foundational research, developed system diagrams, and identified essential components, laying the groundwork for the project’s technical framework.

May 29-30:

- **Final Measurements:** Recorded final measurements for the 3D models, ensuring accuracy for the final report. Initially included optional components in the documentation, which were later removed.

June 12-15 :

- **3D Modeling:** Worked on 3D modeling tasks, including the design of the solenoid cover and preparation for the pressure regulator cover, ensuring all measurements were precise. And printing the solenoid cover to attach it to our main frame.

June 5-26:

- **Assembly:** Led the construction of the system frame, including measurement and attachment of aluminum profiles and connectors, solenoid attachment, and final integration of small components.

July 7 - 29:

- **Documentation Finalization:** Led the final documentation efforts, ensuring all technical details were accurately recorded, reviewed, and compiled into a comprehensive final report.

4. Challenges and Adaptations

June 14-15: I work on 3d modeling to make the cover of solenoid. In that time 2-3 models has created. But a few things regarding the final measurement of the solenoid frame cover needs to be fix. So I ask help from Mika to initialize it.

July 24-28th July: Faced a delay in documenting and proofreading. Like we have planned to complete the Documenting and proofreading in between 24-26th July. However due to not getting every updated document in time, the report works took some more time .

5. Conclusion

In conclusion, my role in this project was multifaceted, covering research, documentation, 3D modeling, and assembly. As I led the documentation team, I effectively managed the documentation process, ensured thorough research and accurate 3D modeling, and contributed to the assembly of the system. Despite some challenges, I have tried to complete all my tasks.