

Dylan Marsh Project Presentation

by Dylan Marsh

Submission date: 09-Jan-2025 11:46AM (UTC+0000)

Submission ID: 247765818

File name: 22564_Dylan_Marsh_Dylan_Marsh_Project_Presentation_182128_652437715.pdf (1.77M)

Word count: 392

Character count: 2186

Project Design Presentation

Dylan Marsh



Company Background

EBS Automation (based in Dafen, Llanelli) design and manufacture machinery and production lines which are tailored to meet the customers specifications and requirements.

EBS Automation specialise and thrive in many different corners of engineering, including Electrical, Mechanical, Pneumactical, Software and more.



Problem Definition

Former machine was inconsistent with wire length

Former machine featured an old and outdated PLC

Former machine had code that was difficult to understand



Project Objectives



Create a machine that measures, melts, and coils rolls of wire.



Use Siemens software to create a program to control and monitor the machine.

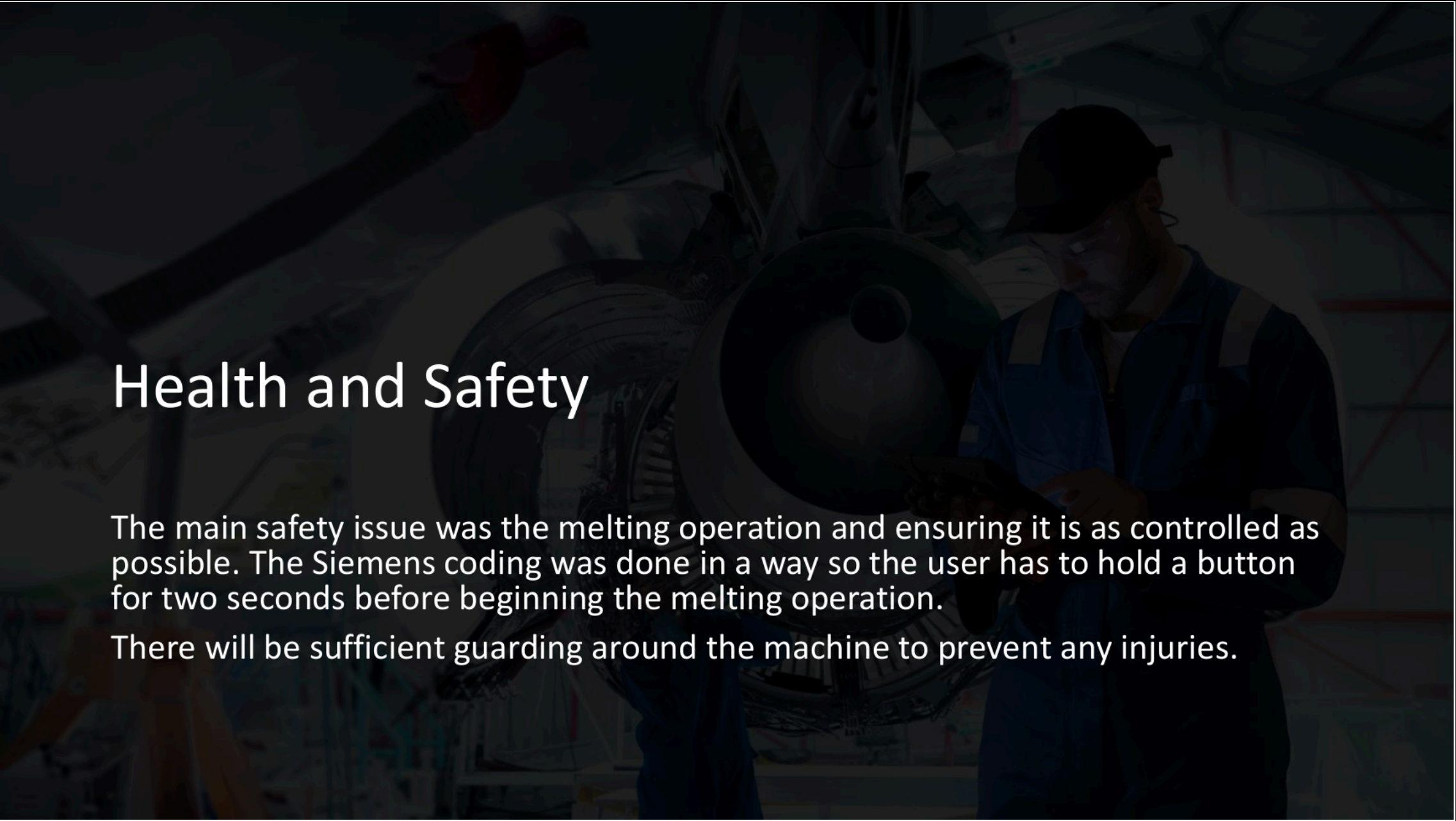


Implement code comments to make the code more understandable.

Specifications

- The coding must be able to monitor at all times to check the machines current status.
- For safety purposes, the machine must feature an E-STOP button and sufficient guarding.
- All activities must fall under EBS practices and/or standards from relevant regulations.

Project purpose is identified

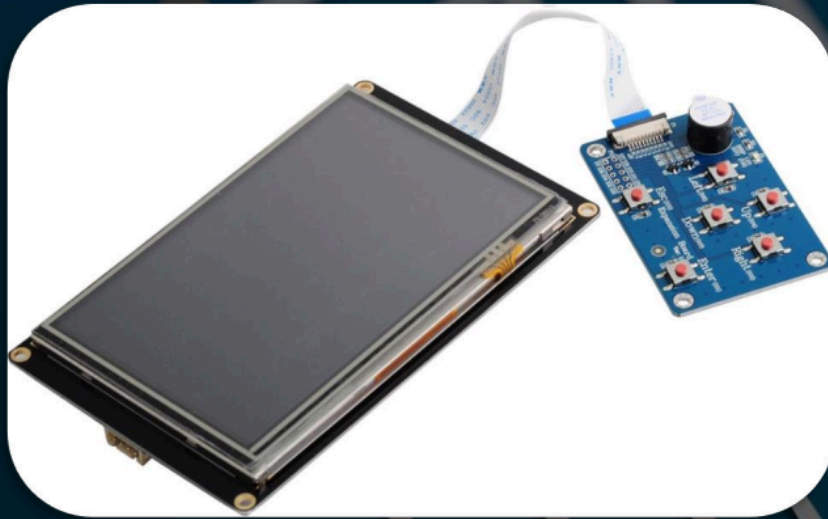
A worker in a blue uniform and cap is operating a large industrial machine in a factory setting. The worker is holding a control device, possibly a tablet or a specialized control unit, and is looking down at it. The machine has a large circular opening in the center. The background shows the industrial environment with various pipes and structures.

Health and Safety

The main safety issue was the melting operation and ensuring it is as controlled as possible. The Siemens coding was done in a way so the user has to hold a button for two seconds before beginning the melting operation.

There will be sufficient guarding around the machine to prevent any injuries.

Solution 1



Nextion Display Board

Has features similar to that of a HMI yet is simpler.
Would be better suited for small jobs.

Disadvantages

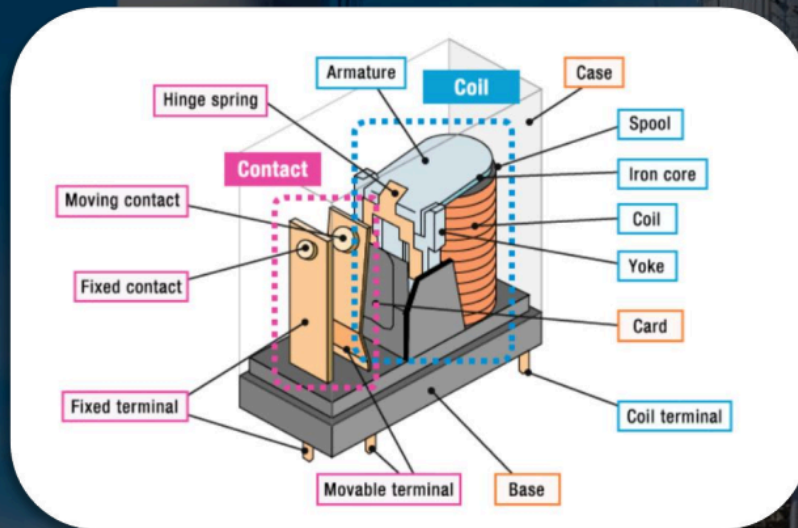
- Much harder to set up compared to HMI
- Programming for Arduino is C++(text based)

Advantages

- Cost-Effective
- Compact Design

Good arguments for the solution

Solution 2



Relays, Contactors and Timers

Components like relays and contactors could be used in preference to a PLC.

Uses mechanical contact, hinting at long term wear and/or unreliability.

Disadvantages

- Liability over time
- Limited scalability

Good points made for the solution

Advantages

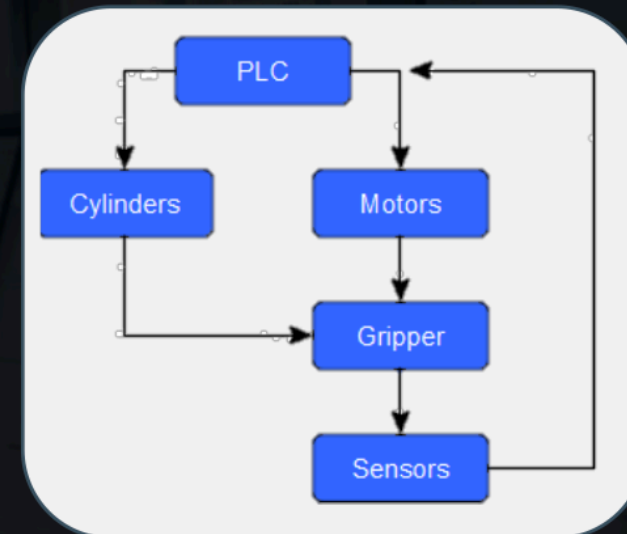
- Lower Initial Cost
- No Programming required

Chosen Solution

This will be solution 3

Solution 2 will be developed upon and implemented. The panel will feature a PLC as well as Relays that will have separate responsibilities.

- The PLC will accordingly control all of the cylinders via the current state of the sensors
- The Relays will control the direction of the Gripper head
- Potentiometer is used to adjust the speed of the Gripper head



Cost

- Panel Parts (Relays, PLC etc.) ≈ £1200
- External Electrical Parts (Sensors, Transformer etc.) ≈ £800
- Pneumatic Parts (Cylinders, Valves etc.) ≈ £2000
- In-House Parts (Guarding, Base Plate etc.) ≈ £2000

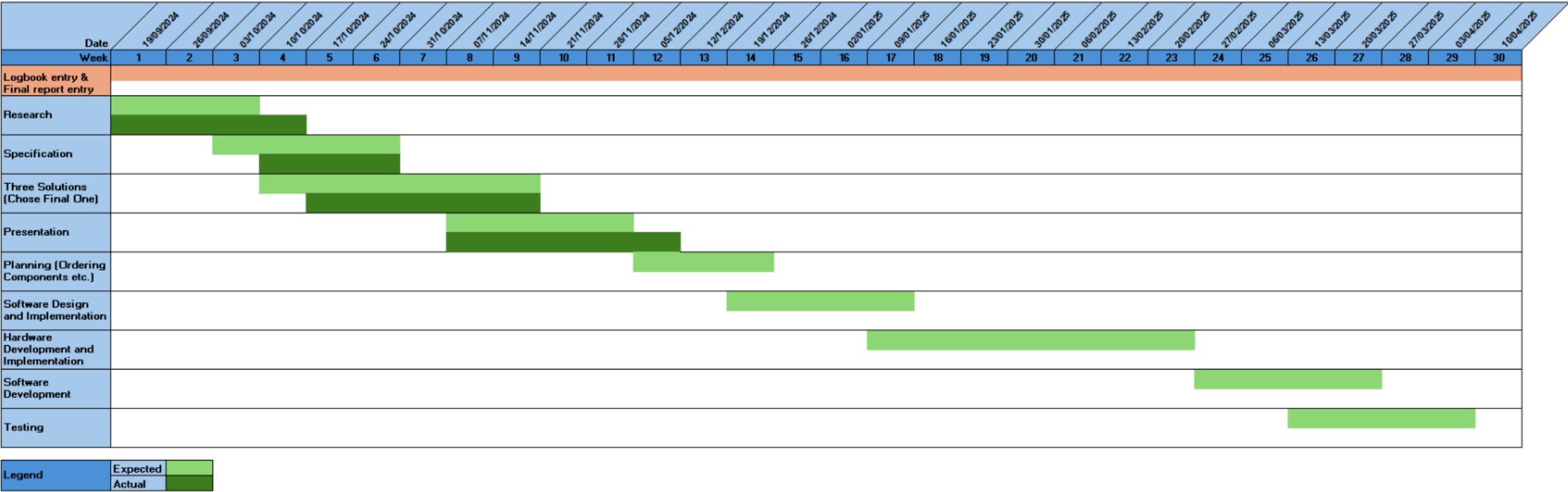
Total Cost ≈ £6000

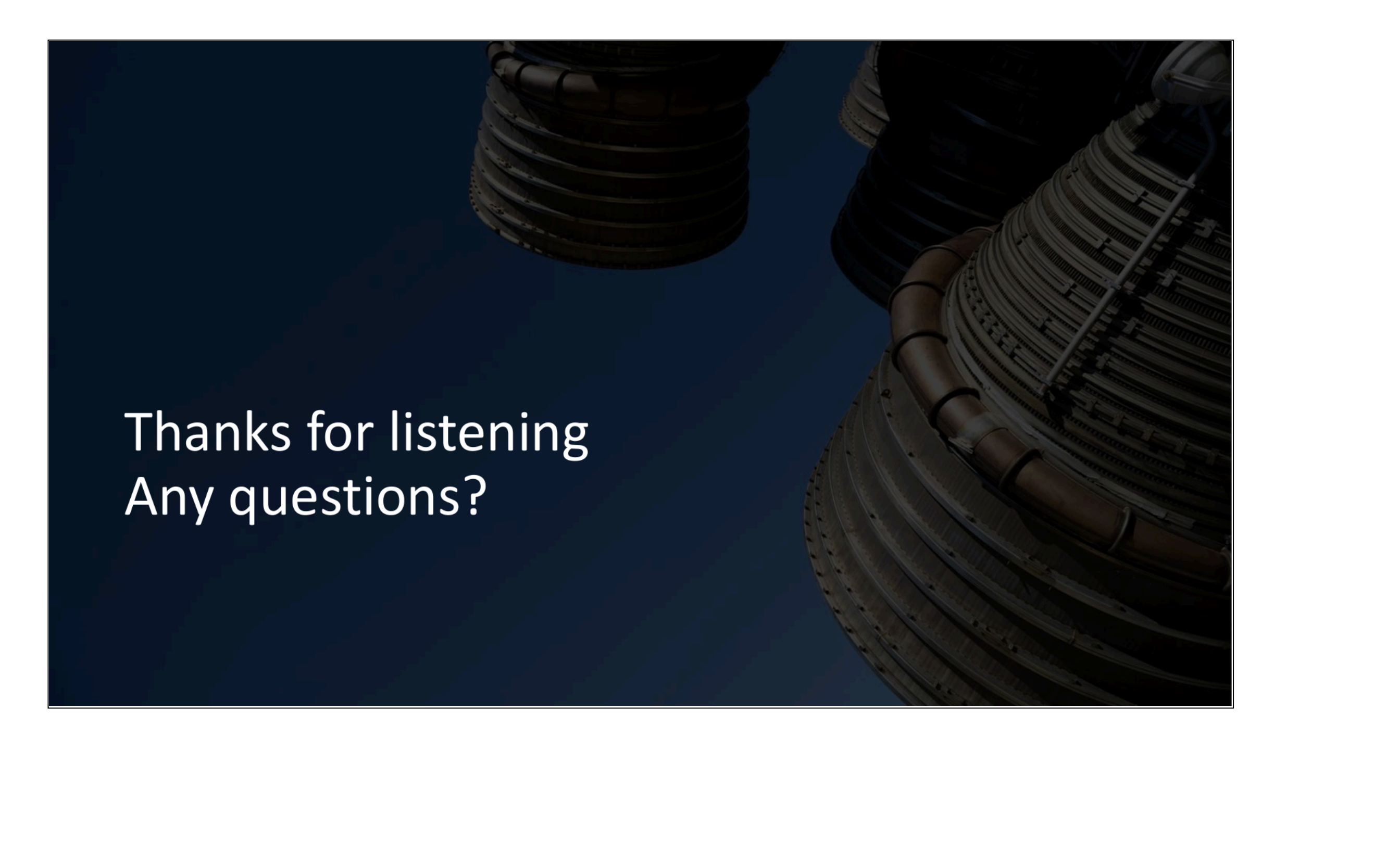
Good budget breakdown



No test plan included

Gantt Chart





Thanks for listening
Any questions?

Dylan Marsh Project Presentation

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

66/100

PAGE 1

PAGE 2

Text Comment. Good information

PAGE 3

PAGE 4

PAGE 5

Text Comment. Project purpose is identified

PAGE 6

PAGE 7

Text Comment. Good arguments for the solution

Text Comment. Good points made for the solution

Text Comment. This will be solution 3

Text Comment. Good block diagram

Text Comment. Good budget breakdown

Text Comment. No test plan included

Text Comment. Good chart with timeline comparison

GRADING FORM: CSG-RUBIC

DYLAN MARSH

0

RESEARCH-INFORMED LITERATURE



Background research has been carried out and is relevant to project. 6/10
Research for solutions has been explained and includes a good level of detail. This indicated and a good level of reading around the subject area.7/10

13/20

KNOWLEDGE AND UNDERSTANDING



Problem definition was explained with a reasonable level of detail. 3.5/5
Constraints and codes of practice were identified with software licencing, standards and intellectual properties. 3.5/5
Environmental issues have been included in the form of software replacing hardware, and sustainable program structure. 3/5
Functional design was explained with a block diagram. 3.5/5
Response to questioning was adequate and demonstrated an understanding of the project and the problem. 6.5/10

20/30

ANALYSIS



Problem definition has been identified with an understanding of the objective and procedures needed. 3.5/5
Functional design was understood and the specification was explained from the block diagram. 7/10
Final solution justified and explained with environmental and sustainability issues used in the justification. 3/5

13/20

PRACTICAL APPLICATION AND DEP.

 Design spec was explained in detail with relevant components identified. 3.5/5
Critical choice has been justified through evaluation and showed an understanding of PLC's. This was aided with a table of comparison. 7/10
Project plan with breakdown of activities was included and explained with management methods.
No test plan included. 2.5/5

13/20

SKILLS FOR PROFESSIONAL PRAC.

 Slides included good relevant content. 3.5/5
Delivery of content demonstrated an acceptable understanding of the project. 3.5/5

7/10