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| [Report Title] | |
| **Module code:** | **[4 digit code]** |
| **Module name:** | **[Module name]** |
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| [Date of submission] | |
|  | |
| **Author(s):** | **[Author name]** |
| **Student ID(s):** | **[Number]** |
| **Degree:** | **[e.g. MEng Aerospace Engineering with Industry]** |
| **Tutor/Project supervisor:** | **[Name]** |
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| Summary |
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# Introduction {Paul} Real world applications , requirements

This template is designed to be used with the Department Technical Writing Handbook for students, which details the standards you are expected to follow. The section headings in this template are examples commonly used for a laboratory report. For project reports in later years, the section headings and structure of the report should be discussed with your supervisor, because they may be different, specially for software or control projects.

Examples of tables, figures, equations and examples of references for a textbook [1], journal paper [2] and webpage [3] are included which can be used as a template for these features in your report.

## List of members

## Chassis (Brad)

3-4sentences  
link back to spec

Roles and responsibility

## Design (Alex)

As a design engineer in the team I had to deal with fans, materials and budget. We decided to go with a centrifugal fan for the lift because it produces high pressure in low power. An axial fan is going to be used for thrust. Basic material is going to be the Craft Foam Blue because it is light, strong for our application, easy to change the shape and the price was more than good for the budget we have. The total cost of materials and components is going to be around £184.15. Moreover, safety covers will be made to protect us from the rotating blades and a cover around it so we can prevent any accident.

## Powertrain (Keqi)

3-4sentences Roles and responsibility

## (Paul)

3-4sentences Roles and responsibility

## (Divine)

3-4sentences Roles and responsibility

## (Xiang)

3-4sentences Roles and responsibility

# The criteria derived from the specifications for the design to meet the system requirements and the rules; {Brad}

# A requirement tree {Divine}

|  |  |  |
| --- | --- | --- |
| Wish: | Requirement: | Specification: |
|  |  |  |
|  |  |  |

# A morphological diagram or mind-map showing the range of solutions or devices considered for concepts; {Keqi}

**Blaaaaaa**

**aaaaaaaaah;**

.

# A sketch and corresponding description of each concept presented in the first VDP meeting. The name of the "designer" should be written on the sketch together with some reference number or text to the synthesis chart

## Chassis (Brad)

## Design (Alex)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **VDP 1** | | | |  | **VDP 2** | | | |
| **Fan type** | **Feature** | **Properties** | **Material** | **Fan Type** | **Feature** | **Properties** | **Material** |
| First type | 3 short blades | Plastic | Craft Foam Blue | Centrifugal Fan | Produces high pressure in low power | Plastic | Craft Foam Blue |
| Second type | 2 long blades | Carbon |
| Third type | 2 long blades with curves | Plastic |

## Powertrain (Keqi)

## (Paul)

## (Divine)

## (Xiang)

Calculatios (VDP2 stuff)

# Synthesis chart Sort of VDP2 {Do together on monday}

* **Completed synthesis chart ( or charts if a second iteration is attempted) showing:**
  + **The specifications considered;**
  + **The weightings for each criterion;**
  + **The marks for each design concept and the totals**

**Completed as a group**

**Bring every solid works design + sketches**

# Materials & Pricing {Alex}

A model hovercraft in the dimensions of an A3 size and around 2kg with only 12V battery, in order to be lifted from a single centrifugal fan, a very light weight material should be found. This material should meet some requirements such as stiffness, light weight, low cost and easy to change the shape of it. After taking into account the materials provided from the university’s workshop and their prices we ended up with three different materials with completely different properties from each other. The first one was the aluminium sheet, a 0.9mm thickness and a cost of £11/m2. Second material was the MDF with a 3.6mm thickness and only £3/m2. The last material was the craft foam blue, a very light material compared to the other two and with a great stiffness for our application. Also, a material that it is significantly easy to modify in the workshop and with a price of £12/m2. So, the craft foam blue was meeting all our specifications and it was the most suitable material for what we were planning to apply it to. However, some parts of the hovercraft are not going to be made from craft foam blue such as the safety cover from the fans. For these application the most common materials that we will use are going to be metals, likely aluminium and MDF. Around 80% of the materials is going to be the craft foam blue.

**PRICING OF THE HOVERCRAFT**

|  |  |  |
| --- | --- | --- |
| Cost of Materials and Components | | |
| Material / Component | Number of items | Price (£) |
| Centrifugal Fan | 1 | 10.60 |
| Blades | 2 | 6.80 |
| Motor | 2 | 8 |
| Plastic bag | 1 | 1 |
| Craft Foam Blue | 1 | 12 |
| 6 Channel Radio | 1 | 30 |
| Battery-Charger | 1 | 60 |
| Electronic Speed Controller | 4 | 16 |
| Metal (small parts) | 1 | 10 |
| Servo | 1 | 6.67 |
| Wires | 1 | 4.08 |
| Other Materials | - | 20 |
| Total | 13 | £185.15 |

# Conclusion on design After VDP2 {Xiang} does introductory paragraph

* **Concluding section stating the outcome of the selection process and giving outline details of the final design with the division of task to sub-groups.**

Picture of final design and more words

## Chassis (Brad)

## Design (Alex)

## Powertrain (Keqi)

## (Paul)

## (Divine)

## (Xiang)