Deliverable D

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Abstract

This deliverable aims to develop conceptual subsystem designs based on the previously established problem statement, design criteria, user, and technical benchmarking. These subsystems will then be combined into fully functional solutions and then evaluated against each other using an evaluation matrix. The team will then finally select its best conceptual design to move forward with in the design process.

Defining Subsystems

To select the best design concept, the team will first divide the process into four subsystems. These subsystems will be classified as the user interface, the can line, the bottle line, and the keg line. The interface subsystem will be what the user sees when logging into the program. The ideal interface will be aesthetically pleasing without intimidating the user. Each keg line will be sketched using block diagrams that will represent the coding process associated with each line. The best block diagrams will display efficient coding paths that will require minimal maintenance over time. Each subsystem will have three corresponding sketches that will then be grouped into evaluated solutions.

Subsystem Concepts

Organized below, one will find all the sketches organised by subsystem.

1) User-Interface Sketch's

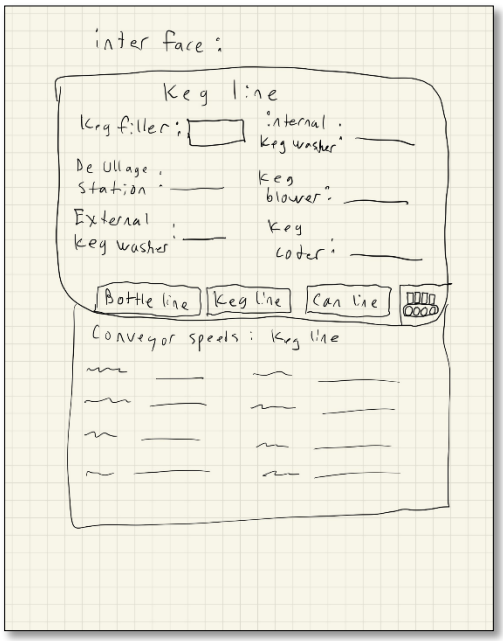

Figure 1.1

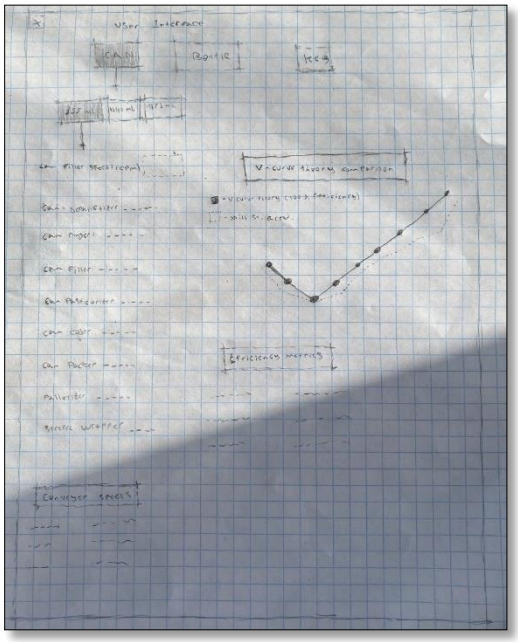

Figure 1.2

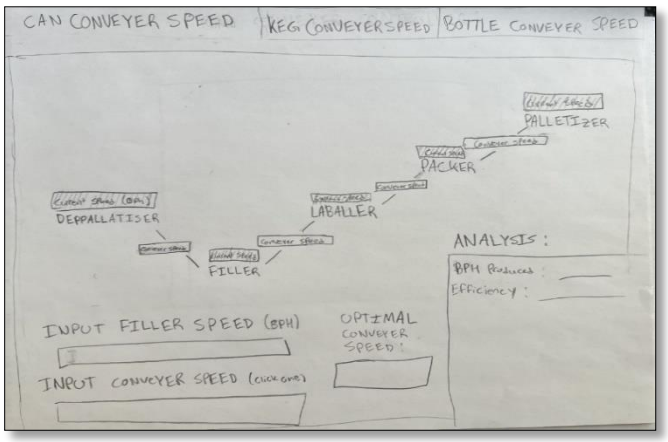

Figure 1.3

2) Can Line Block Diagram's

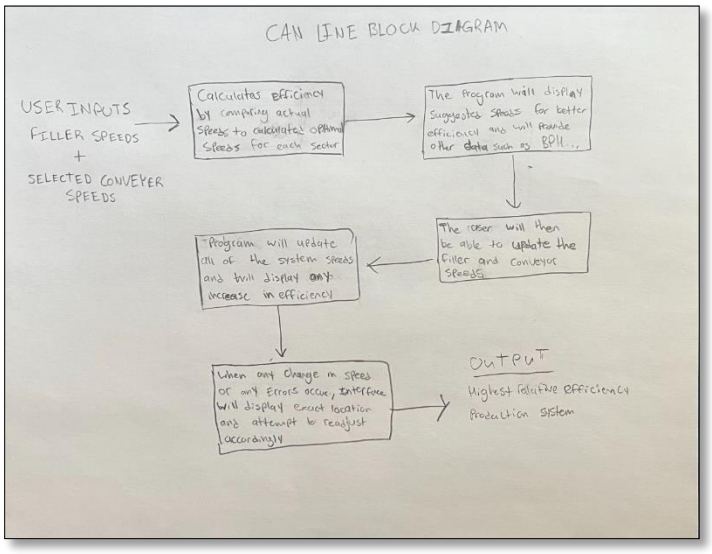

Figure 2.1

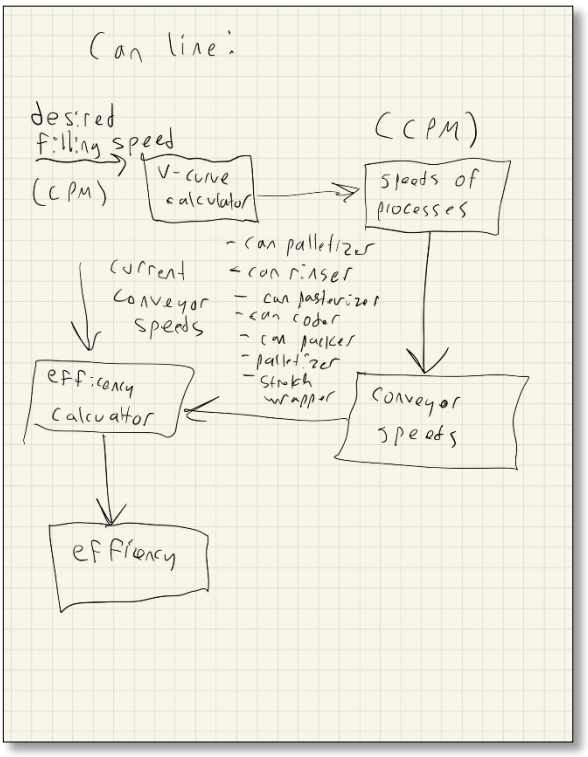

Figure 2.2

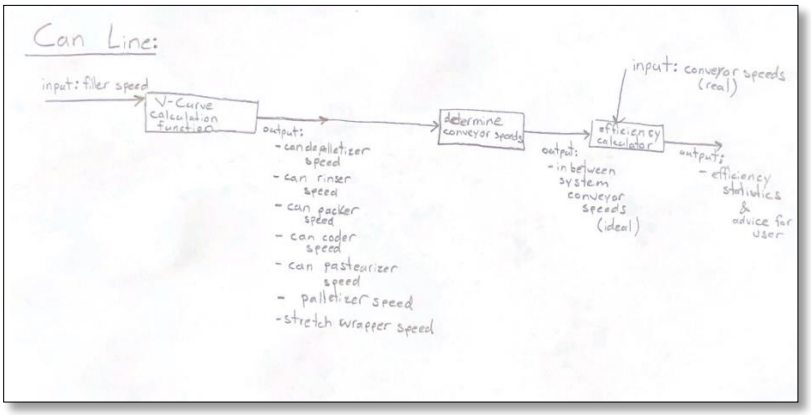

Figure 2.3

3) Bottle Line Block Diagram's

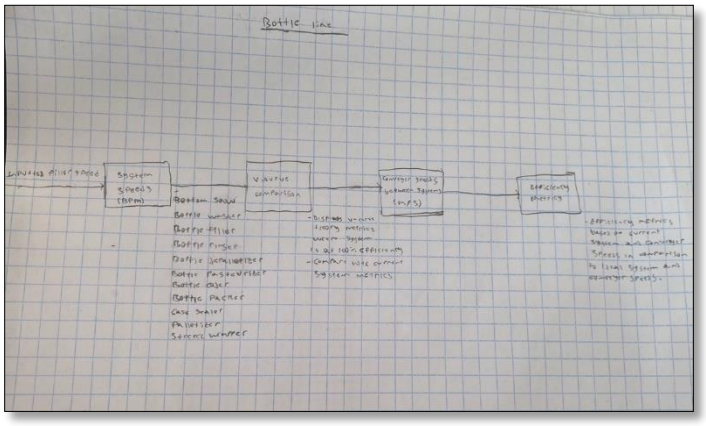

Figure 3.1

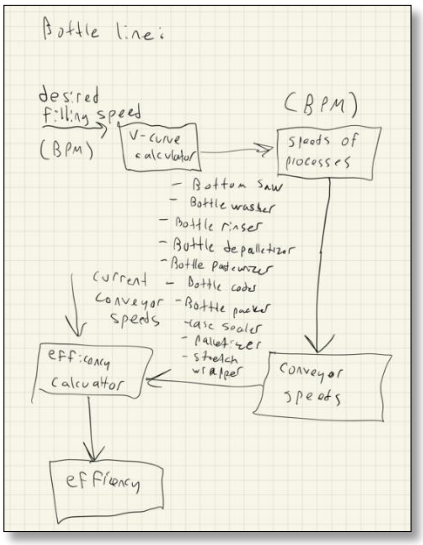

Figure 3.2

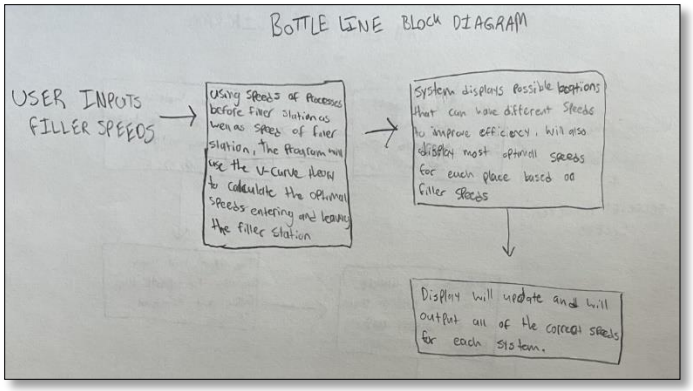

Figure 3.3

4) Keg Line Block Diagram's

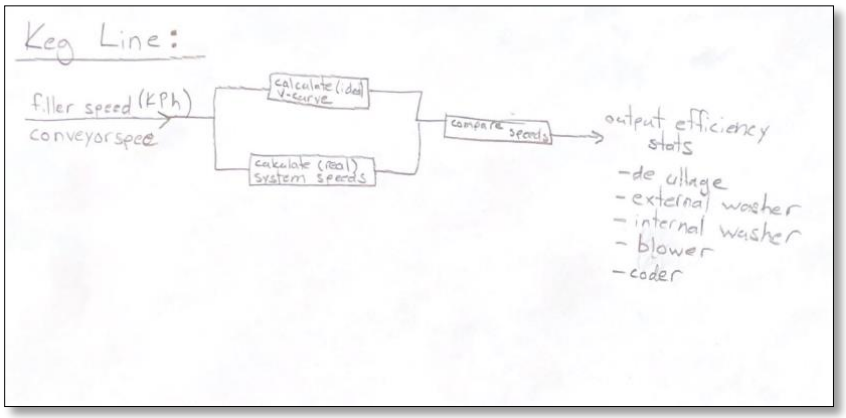

Figure 4.1

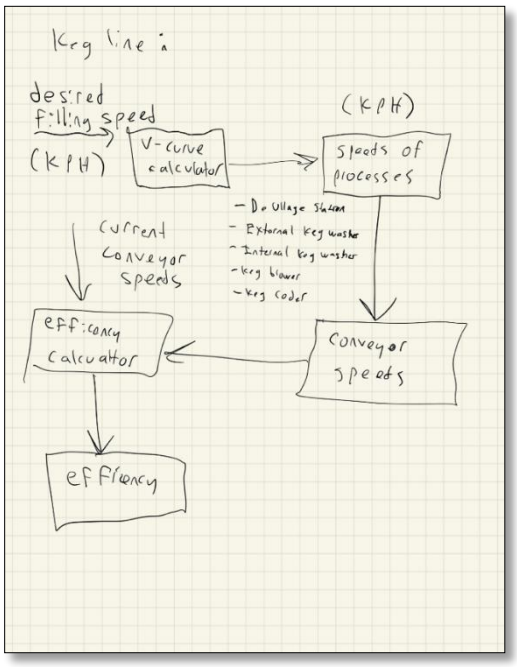

Figure 4.2

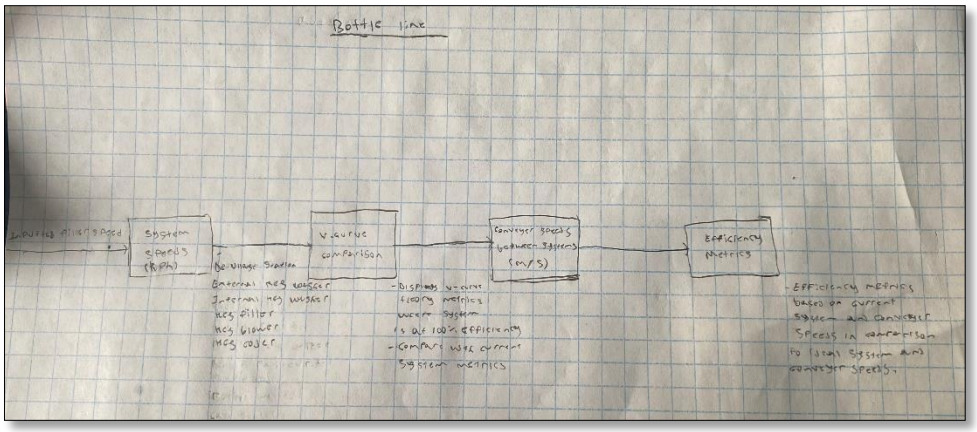

Figure 4.3

When developing sketches for a subprocess, the team realised that every member's sketch had great similarity, which is due to the nature of the project. Aside from the interface and the code itself, the project's nature lacks a quantity of sketchable subsystems. In addition, the project is completely software-based, and therefore there is little physical product to sketch.

On top of these issues, the client is still yet to respond to the team and provide the data required to complete the project, which means the team is constrained by the amount of project knowledge available and therefore don't have the required materials needed to ideate a proper solution at this time. The team plans to express this difficulty at the second client meeting, hoping to obtain the required data and further knowledge of the project itself.

Despite these challenges and uncontrollable variables, the team has a general idea of the product and can complete the required coding once the data is given.

Reaching Full Solution

After ideating possible interfaces and code diagrams, the team has decided to group the subsystems into the following full solutions.

Design 1: Figures 1.1, 2.2, 3.2, 4.2

Design 2: Figures 1.2, 2.3, 3.1, 4.1

Design 3: Figures 1.3, 2.1, 3.3, 4.3

These grouping decisions were based of off interface and code compatibility, as well as level of concept detail.

Solution Evaluation

The team creates a selection matrix that evaluates the success of each solution now that the various subsystems have been collected into full solutions. Provided below is the teams' selection matrix, where the assigned weights and rankings were chosen by team consensus.

Specification	Weight	Design #1	Design #2	Design #3
Aesthetic	2	1	4	5
Efficiency	3	2	3	4
User-Friendly	3	2	3	5
Low Maintenance	2	2	2	3
Total		18	30	43

Selection of Best Solution

Now that each solution has been empirically evaluated, the process concludes with the selection of the best solution being Design #3. Therefore, Design #3 will be the ideal solution the team will continue to use in the design process and prototyping phase.