GNG 1103 Project Deliverable B: Need Identification & Problem Statement

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Problem Statement

A need exists for Mill St. Brewery to monitor the productivity and efficiency of its production line remotely with a reliable system that is applicable to various machines, providing an accurate measurement of throughput of the entire line.

Overview

This report outlines the team's interpreted needs of the client's identified problems from the first meeting within their efficiency line. The client, Mill St. Brewery, requests the creation of a system to monitor the productivity and efficiency of its production line. The usage of bottling machines as a benchmark for maximum productivity and efficiency is proposed - as it is the bottleneck of the system, and basing the calculations for all other machines based on the aforementioned. The system proposed will determine if the line is up to the correct pace of production, otherwise, any shortcomings where upgrades or repairs can be done will be known and hence, the team can make further recommendations for solution as needed to the throughput of the entire line. Lastly, the product line capabilities will be measured in cbm, bpm and kph.

Need Identification

Figure 1 establishes design criterias that are ranked based on their importance to form a consolidated recommendation for action that is best suitable for the client's needs and as interpreted by the team. When formulating a problem statement, remote access, and usability were deemed foremost. The client has noted that it would be ideal for them to have a user interface that can insert filler speeds, hence, the team understands their need for a quick method to check for the speed of the throughput to know immediately whether the station is operating at a sufficient speed. On the other hand, ease of usage and real-time information are of lower importance yet still notable. Since the system will be used generally by Robert and his two supervisors, the other individuals can be trained in any nuances as it will not be used by many. Real time information is still just as important but there may be a delay in information, counting, and relay. The team interpreted the client's remarks as a valuable perspective to devise an effective personalized solution that will aid them to reach their target of a +2% overall equipment efficiency.

Need	Importance (3 being of highest importance, 1 being lowest)
Low maintenance	2
Reliable	3
Remote	3
Cost effective	1
Easy to use	2
Accurate data	3
Real time information	2
Safety	1
System that functions with various machines and bottle/can types	3

Figure 1. Ranked Design Criterias

The following similar projects and/or current tools in the industry are then considered to be used as benchmarks:

1. IoT Solution Bottling Line Capper Head Calibration and Monitoring System
2. Domestic Beverage Plant - Filling Line Monitoring System
3. Optimizing liquid packaging, filling operations with inline viscosity management
4. Utilizing IoT Solutions to Monitor Beverage Bottling Assets on the Production Line
5. Browar Warka Increases Bottling Line Efficiency with GE Digital
6. Real-time Monitoring of Can and Bottle Filling
7. Keg Line Monitoring System