Sheet Count Automation

Overview
Sekisui | SPI, LLC is a global leader in specialty thermoplastic sheet design and manufacturing. Currently, after a production run is performed, a quality inspector counts and verifies the number of sheets on a pallet. The number of sheets, however, is occasionally miscounted due to human error. Sekisui | SPI, LLC requested that we create an automated device that will more accurately count the sheets and reduce human error.

Objectives
The main objective of this project is to create a new solution to accurately count how many sheets are on a packaging pallet. Testing should be completed on the proposed solution(s) and a recommendation should be given to the company sponsor, Jason Geiswite at the end of the semester.

Approach
• Team members began the project by further analysing the initial problem.
• The next step involved analysing customer needs and project constraints.
• After reviewing customer needs and project constraints, team members began brainstorming possibly solutions to the given problem.
• Concepts that did not fully meet the customer needs and project constraints were removed and not considered for further evaluation.
• Team members selected two concept solutions to pursue: a weight device and a height device.
• Thickness and weight testing was performed on a variety of sample sheets sent to the team by the company sponsor, Jason Geiswite.
• Maximum possible miscount errors were calculated based on the collected data.
• Recommended weight and thickness tolerance tables were created to ensure 100% accuracy.
• From the collected data, maximum miscount error calculations, and the created recommended weight and thickness tolerance tables, a conclusion was made.

Outcomes
• A final recommendation was made to the company sponsor, Jason Geiswite.
• A height measurement device was recommended over a weight measurement device.
• However, if sheets were to be produced with tighter tolerances then either option could be successfully implemented.
• Standardizing the packaging process could also lead to a more accurate manual counting procedure.