Automation of Granola Production

Overview
Our sponsor runs a company which makes a flax granola product using mainly manual work. The problem is that he cannot meet his current demand with the slow, labour-intensive process. He needs a team of Engineers to design a process complete with new machinery that will fully or semi-automate the process so that more granola can be made at a lower cost. The process will also be implemented in a new facility so a layout must be considered.

Objectives
The teams first objective was to put together a fully or semi-automated process that could create the granola product. In addition, the team would create a facility layout for the company which included the proposed design and a cost analysis on the equipment.

Approach
- Visited existing and new locations to observe the granola making process and space available for the new process
- Researched mixing, baking and cluster forming equipment which could be used in the new process
- Deliberated with project sponsor, advisor, and equipment manufacturers to select the best equipment
- Utilized a relationship chart for creation of an optimized and constrained layout
- Created CAD models to illustrate different layout ideas utilizing different equipment
- Created a 3D model to better illustrate the final recommended layout
- Performed a cost analysis including payback period to justify the purchase of our proposed equipment

Outcomes
Finally, list the outcomes for this project making sure to clearly convey their implications for the sponsoring company:
- Sponsor’s cost per bag will decrease by $2.14
- Production will increase from 500 bags per week to 1,800 bags per week
- Payback period for initial investment of $162,064 will be 13.6 weeks at current price point
- Proposed system leaves possibility of further expansion through a second line