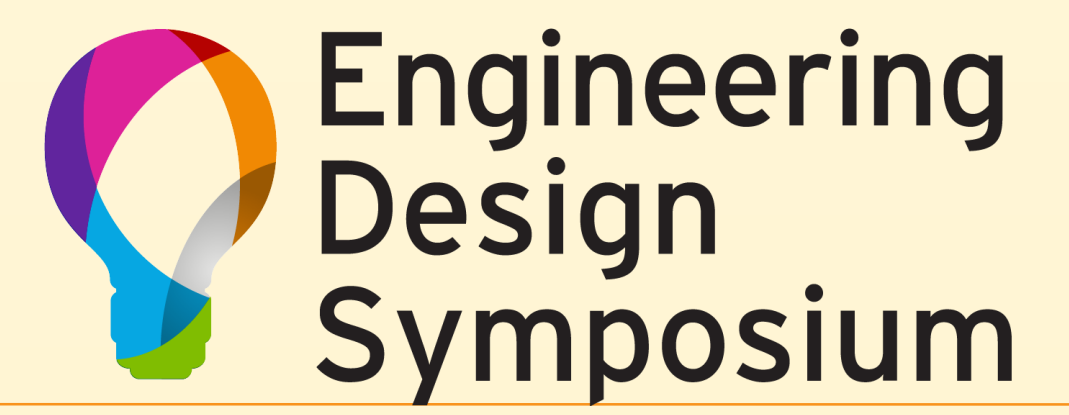


Improved Cooking Process for Manufacturing Honey-Based Products



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Summary

The following details the possible design of an upgrade to the honey gummy production facility named Island Abbey Food located in Charlottetown, Prince Edward Island. The new process is designed to produce 13 million bottles per year of honey-based gummies and is expected in 2022. The process follows a semi-continuous process scheme and adds steam heating technology.

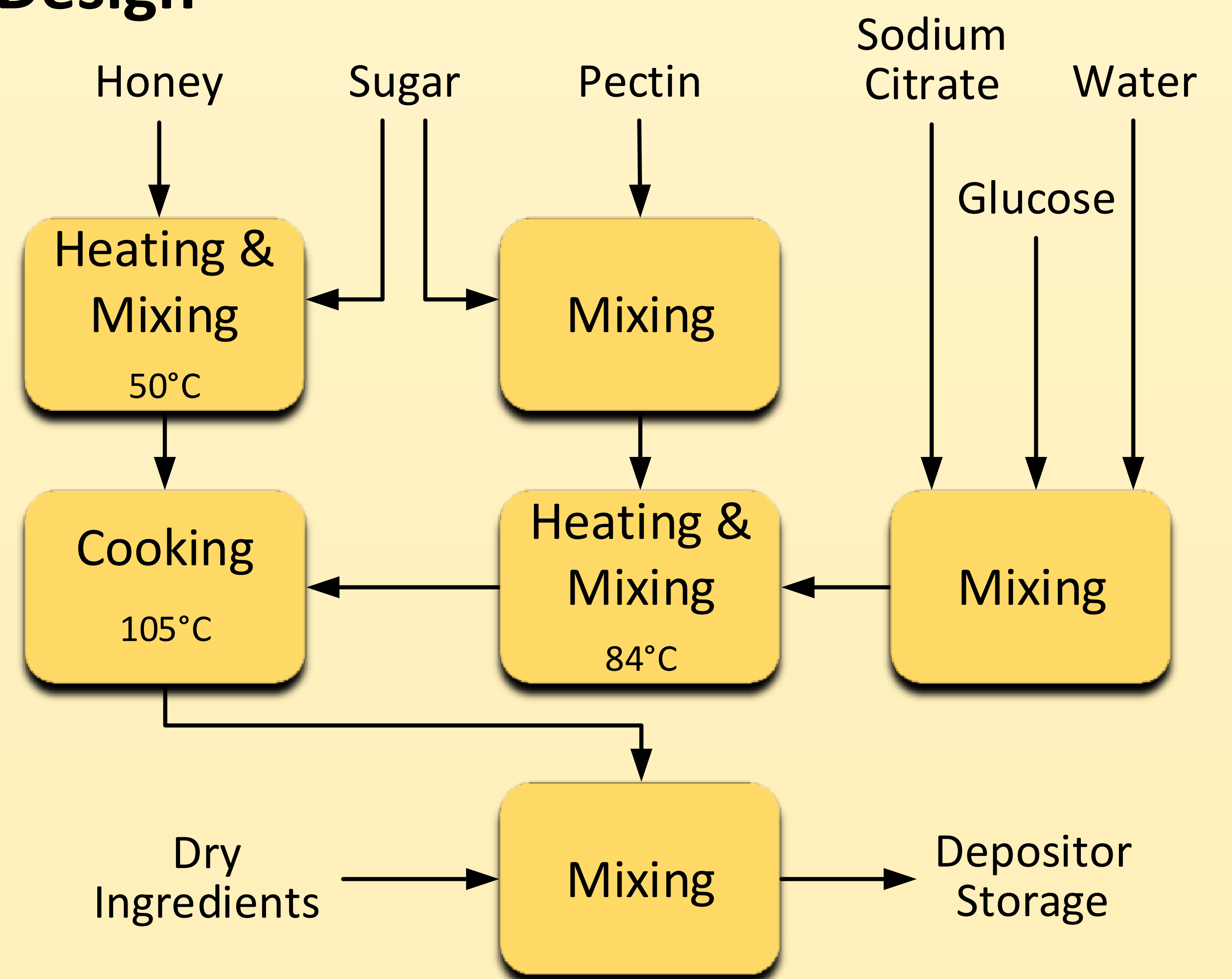
Background

The current batch cooking process is a process bottleneck. Gummy demand has increased 3-fold in 2019, and the current process will not be able to handle the forecasted demand. The batch process can cause variability from batch to batch. The oil jacketed cooking mechanism makes temperature control difficult. Moreover, manual ingredient transport introduces safety hazards and is more likely to cause product loss during the transfer.

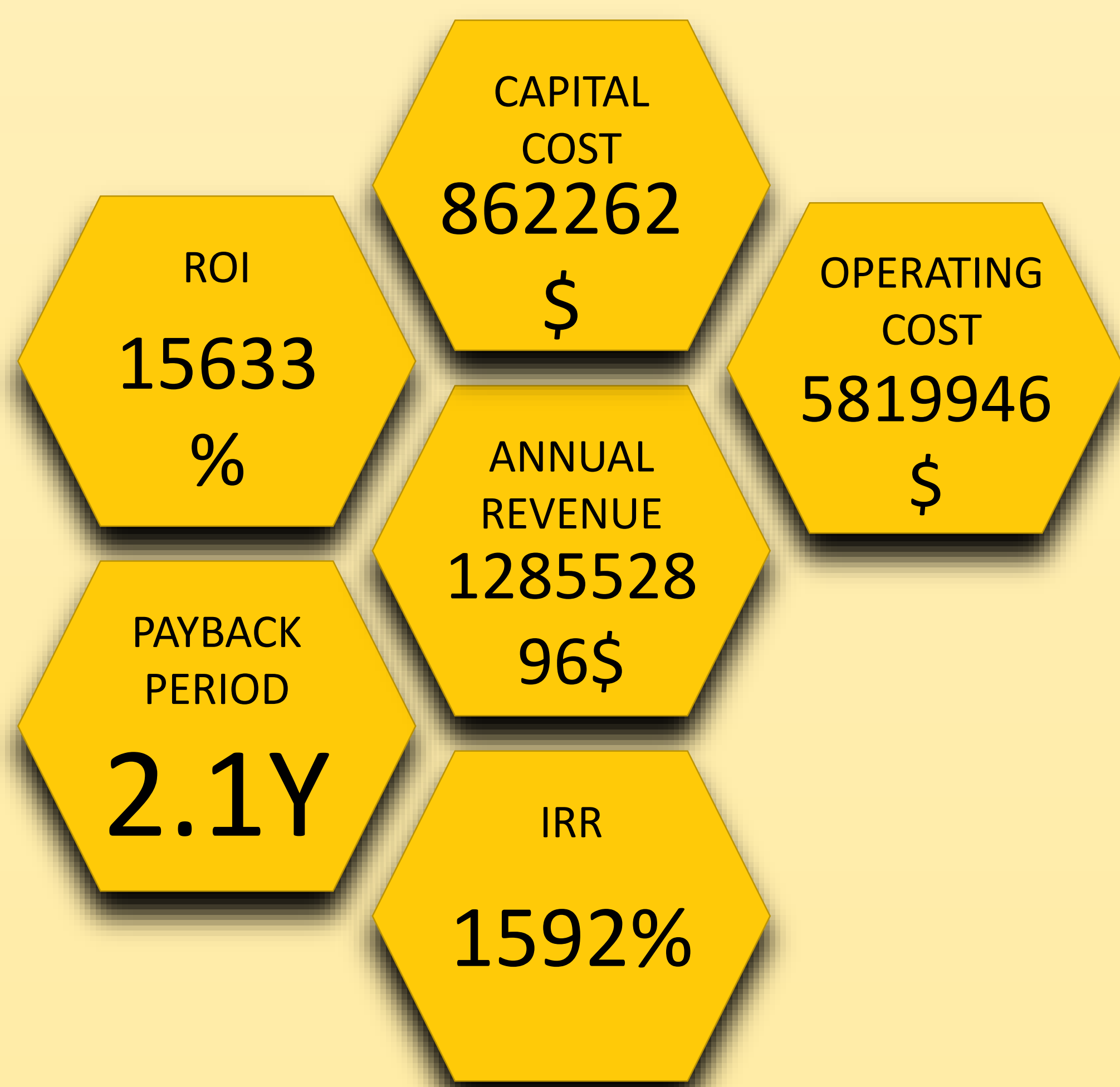
Proposed Design

The proposed design includes the following core technologies :

- Use of scraped surface heat exchanger to make cooking process continuous and scalable
- Use of screw conveyors and rotary lobe pumps to transfer raw materials.
- Erection of a steam production station and use steam heating technology.



Economic Analysis



Current cost per batch

- \$ 1500 (CAD)

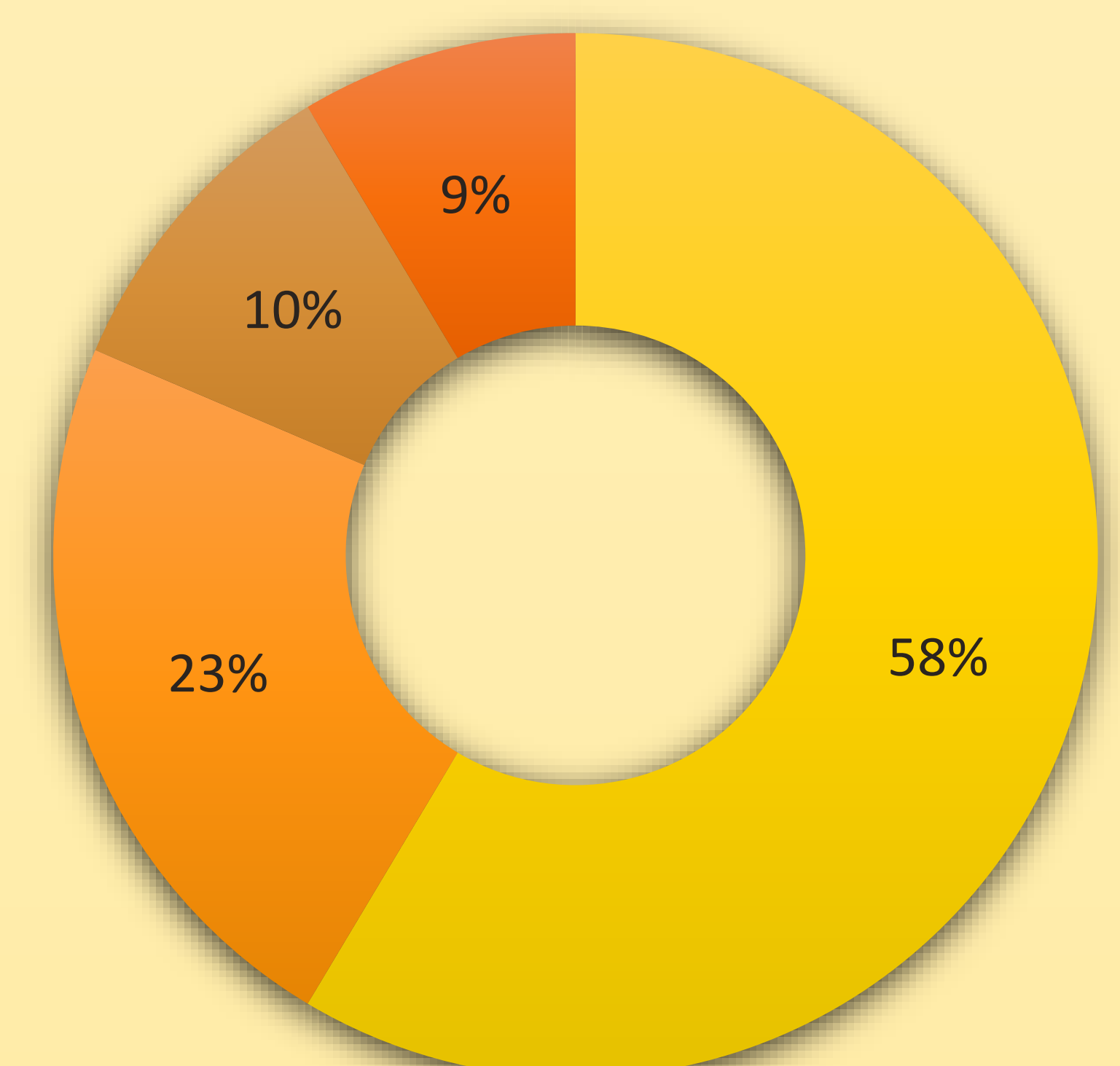
Process Upgrades

- Higher production
- More efficient cooking
- Labor reductions

Upgraded cost per batch

- \$ 950 (CAD)

Total Capital Investment



Conclusions

The preceding is a possible design scenario for the Island Abbey Food to produce 13 million bottles per year of gummy production. Critical design features are as follows

- Safe design for operators
- Scalable
- Produces more consistent product
- CIP used to reduce cleaning times

Recommendations

There are several points the authors recommend investigating further. These are outlined below:

- Heat recovery for cooking process can be explored once steam needs scale up
- Recycle stream for heat exchanger for reprocessing

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