Maple Leaf Consumer Foods (MLCF) has requested the University of Toronto’s assistance in:

→ Simulating the preliminary design of the future Walker Drive Fresh-Frozen Sausage production facility

Project Rationale & Contingencies

- Client plans to more than double 2010 production capacity
- Retrofitting Walker Drive facility to accommodate new equipment
- Consolidating Sausage product’s manufacturing into 8 lines
- Highly seasonal production curve → Peak demand 1.3 to 5 times higher than low point for most Fresh-Frozen sausage products

Figure 1: 2010 Fresh Frozen Sausage Production

2. Goals & Challenges

Goals

- Create a dynamic simulation flexible enough to model peak production schedules accurately
- Identify system bottlenecks and capacity limitations
- Accurately represents reality (assumptions, constraints)

The MS Excel Challenge

→ Created partially automated Excel files to go hand-in-hand with simulation
- Contains all SKUs and meat formulation specifications
- Defines routing and information labels used by SIMUL8
- Creates a raw material schedule based on product list

3. Solution & Validation

The SIMUL8 Component

1. Over 200 lines of simulation code
2. Reads in Excel files and uses spreadsheet data to assign all simulation variables and parameters automatically
3. Inputs required raw materials following Excel-calculations
4. Simulates production cycle of each scheduled product (See Production Stages Diagram)
5. Continuously tracks the storage of finished product pallets in storage areas, indicating when capacity is exceeded

Validation

→ Model assumptions, specifications, and data successfully approved by both plant managers and senior management
→ Only partial validation of the model is possible:
  o Nonexistent performance data for new technology
  o Limited data on currently existing production lines

Results

→ Preliminary simulation runs indicate an overflow of the Blast Freezer by as much as 75% of its capacity! (see Fig. 6)

4. Conclusion & Future Work

Our model provides client with:

✔ Ability to identify missing resources for higher throughput
✔ An easy method for spotting bottlenecks and freezer capacity limitations
✔ Feedback on the effects of changes in production parameters and schedules
✔ Validation of future facility requirements

Future Work

- Statistical validation of the model where applicable
- Assessment of production efficiency and bottlenecks
- Recommendations based on further testing

Acknowledgements: Deb Loach, Maple Leaf Consumer Foods
Supervisor: Dr. Daniel Frances
Team Members: Daniel Smith, Paulette Holtham, Ernesto Kling