Cheese Trim and Packaging

Client
The cheese company is a manufacturer and packager of cheese products. At one of their facilities their primary product is packaged cheese for the retail market. Large blocks of cheese must be cleanly cut to smaller pieces. Size and weight control are critical for the final product. Since the large blocks of cheese are irregular in shape, there is significant trim waste from the exterior surfaces of the blocks. This trim is a lower value product without additional processing. Cheese packaging waste is in three forms: incoming cheese block packaging, defective retail packaging, and plastic pallet wrap.

Opportunity Areas
The New York State Pollution Prevention Institute was asked to evaluate the cheese trim process and alternatives for the cheese trim. The NYSP2I was also asked to look for alternatives to sending the packaging waste to landfill.

Objectives
- Determine if there were ways to reduce the amount of cheese trim
- Determine if there were alternative products that could be economically produced from cheese trim
- Look for ways to reduce retail packaging waste
- Try to find alternative outlets for the packaging waste as an alternative to the landfill

Work Performed
1. With significant help from the cheese company staff, the trim losses were measured for a full cheese block (600 lbs) along with the weight of each cheese piece and its location in the block.
2. Both NYSP2I and the company independently determined that the cheese trim for certain cheese types, had the potential of being extruded and converted back to proper size and weight pieces suitable for retail.
3. The packaging line was observed for unusual feeding issues or other observable problems with the packaging process.
4. Samples of packaging were sent to a company specializing in converting plastics back to oil for evaluation as feedstock.

Results
1. The cheese piece analysis determined that the cheese pieces were very consistent in weight except for the cheese pieces near the exterior of the block. Therefore, attempting to reduce the thickness of the trim pieces would result in even more weight variation in the pieces near the exterior of the block. NO PROCESS CHANGES WERE FEASIBLE.
2. The cost of equipment to extrude the trim and convert it back into retail product was very cost effective and is being tested by the cheese company before they proceed with implementation. If the testing proves successful the equipment payback will be less than 6 months.
3. There were positioning problems with the cheese packaging machine resulting in mislocated cheese pieces. These pieces resulted in packaging errors and reject packaging.
4. In general the packaging plastic was not suitable for either recycling or conversion to oil. The presence of cheese residue was a major hurdle for recycling the plastic along with the fact that the retail packaging material was a multi-layered laminate. The multiple types of plastic within the laminate prevent recycling. The multiple types of plastic within the laminate prevent the plastic from being a plastic-to-oil feedstock. The pallet wrap material was a suitable feedstock but the volume was too low to offset the cost associated with handling and shipping the material.

Future Work
The cheese company will continue to work on the extrusion process to determine whether this will recover cheese trim. The retail packaging losses are still an issue but the cheese company will continue to work on solving the machine issues.