

August 2011

## Tosca, Ltd. – Plastic Stretch Wrap

### Challenge

Tosca, Ltd. is a reusable packaging company based in Green Bay. It manages and services pools of returnable containers for the dairy, produce, meat, and brewing industries.

A large portion of Tosca's business involves servicing "640" cheese containers – so named because they are used for producing and storing 640 pound blocks of cheese. Tosca owns and leases out over 380,000 of these containers and provides reconditioning services for another 150,000 that are owned by customers. Until 2009, Tosca's customers used steel corner iron brackets and steel banding to hold the containers together and prevent damage during cheese manufacturing, storage, and shipping. However, these metal pieces took up considerable weight and volume, presenting difficulties in optimizing shipping efficiencies. Corner irons added almost 4,000 lbs. to each truckload of 640s shipped from Tosca to their customers, causing truckloads to exceed weight restrictions before reaching cube capacity.

### Strategy

In order to search for alternatives to the iron brackets and steel banding, the company needed to step back and reexamine exactly what they needed the pieces to do. First and foremost, they needed to hold together and protect the 640 containers while being shipped and stored during the cheese aging process. Second, the



*Corner iron brackets on a "640" cheese container*

containers needed to be able to be quickly disassembled so the cheese cutters could access the cheese. And third, the whole process had to be easy to do for all the various users (cheese makers, cheese cutters, distributors), including shipping the disassembled 640's back to Tosca.

Tosca employees realized that they would have to find a creative solution, to seek out alternative materials and processes that they had not used before. During a brainstorming session, an employee suggested using plastic stretch film to hold boxes together rather than corner irons and banding. This suggestion, while intriguing, also raised a number of concerns. Would the plastic stretch film be strong enough to sustain the outward pressure of the cheese itself, as well as withstanding pressures exerted on the box during the cheese manufacturing process? Would stretch film make the job of 640 assembly more difficult or time-consuming for the

cheese makers? How does plastic stretch film compare in cost to steel banding? Would cheese cutters have problems disassembling boxes, or disposing of used stretch film? But the more Tosca team members thought about this suggestion, the more they thought it might work. They started experimenting with different types and tensile strengths of plastic in-house and eventually came up with the right formulation.

The stretch film was now strong enough to hold the container panels together and did not weigh nearly as much as the corner iron brackets, nor did it take up as much space. Furthermore, the plastic would be much easier to deal with during the disassembly phase, because users could simply dispose of or recycle it once they

were finished with it, instead of having to manage, store and ship the heavy corner irons. And, costs were reduced because plastic stretch film was less expensive than steel banding.

The only remaining problem was figuring out how each cheese maker would be able to wrap the containers. Tosca's answer was to supply customized stretch wrap machines for each of their cheese making customers, and to pay for the machines with the savings realized by no longer having to process steel corner iron components. All steel 640 components are painted and waxed during processing, and must be totally reconditioned after each use. Reconditioning involves stripping old paint and wax off of the steel, then repainting and reapplying fresh wax to each component. The labor, paint, wax, and utility costs saved by no longer having to process corner irons would allow Tosca to recover the costs of the stretch wrappers within 4-5 years.

A major customer was contacted and agreed to allow testing at their facility. The stretch film worked extremely well- in fact, better than the corner iron/banding system. Customers experienced reduced container failures in their vacuum chambers, where whey is recovered from the cheese, and 640s that were dropped or bumped into while being material handled didn't burst apart like they did when held together with banding.

Tosca rolled out the plastic stretch wrap in 2009. They have now supplied stretch film machines to all of their major customers. Aside from the man-hours dedicated to the project, the company has invested nearly \$1,000,000 in testing and equipment.

## Results

Overall, the plastic stretch wrap has been a huge success for Tosca and its customers. In attacking the issue by thinking "outside the box," the company was able to identify an area for optimization and then come up with an entirely novel solution. It involved careful consideration of all customer needs and getting everybody at the table to listen to their ideas (the employee who first suggested using stretch film was a maintenance Team member, not management).



*The plastic stretch wrap around a "640" cheese container*

The plastic wrap has dramatically improved freight efficiency, increasing the amount of 640 containers per truckload from 363 to 401, an increase of more than 10%. Tosca services cheese makers across the country. Since their customers pay the freight for shipping the containers, needless to say they are enthusiastic about the change! In addition to freight savings, by phasing out the corner iron brackets Tosca has decreased the amount of steel component reconditioning needed by one third, resulting in reduced energy, chemical, water, and paint usage. Customers have reduced labor costs and storage costs since they no longer have to deal with the corner iron brackets. And, finally, stretch film is easily recyclable. Currently more than half the stretch film used is being recycled, with more customers planning on recycling the film in the future, another advantage of this environmentally friendly improvement to Tosca's 640 cheese box.

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