

Custom Wax Applicator Provides Cost-Effective, Sustainable Solution to Keep Returnable Bottles Looking New



The Case for Returnable Bottles

Although returnable bottles only account for about 7% of the total beverage market worldwide. In Canada, Western Europe, and Latin America, refillable bottles hold a significant market share, particularly for beer.

Percentage of Beer Sold in Refillable Bottles:¹

U.S.	3%
Canada	74%
Germany	84%
Sweden	38%
Norway	95%
Mexico	80%

Success with refillable bottles depends on the emphasis on environmental concerns, government and business practices that encourage returnable bottles, and the ability of companies to take advantage of the cost benefits.

Companies refill bottles to save on packaging, the largest cost in making and distributing beer. Many companies, such as SABMiller worldwide and The Beer Store in Canada, co-owned by 25 Ontario-based breweries, promote their environmental responsibility and tap into consumer preference for refillables. The Beer Store boasts a 99% return rate of refillable bottles by consumers who are environmentally conscious and take advantage of bottle deposits. Government regulation and incentives have also been a major factor in the success of refillable bottles.

Environmental benefits and cost savings for manufacturers primarily depend on:

- number of times bottles are reused
- distribution distance and complexity
- willingness of consumers to recycle bottles
- capabilities and cost for storing, washing, sanitizing, and inspecting bottles
- amount of waste eliminated

Refilling bottles reduces solid waste and energy use. If bottles are filled enough times, the cost and environmental impact of material, washing, and transportation are significantly reduced. Today's refillable beer, soft drink, and milk bottles can withstand at least 25 reuse trips, with the average typically being about 19. Refillable glass bottles weighing 10.5 ounces that are reused 25 times use 93% less glass. Refillable glass bottles reused 25 times use 96% fewer containers to deliver 1,000 gallons of beer than an aluminum can or single use bottle. This also means 96% fewer bottles are

deposited in landfills. A survey of brewing companies found that refillable bottles can save between \$4 and \$15 a barrel, or 31 gallons.

Manufacturer Challenges to Refilling Beer Bottles

The lowest cost package doesn't always mean the lowest overall system cost.

Challenges include:

- bottle return rates
- manufacturing space for storing and washing empty bottles
- equipment investments
- transportation costs
- seller resistance to handling returned bottles
- consumer resistance to scuffed appearance of refillable bottles.

Keeping Recycled Bottles Looking New

The ability to keep recycled bottles looking new and attractive can make all the difference in sales and the number of times a bottle is reused, which is the largest factor in reaping potential cost benefits.

Scuffing primarily occurs on the chimes of a bottle during washing, sanitizing, and handling during packaging. To prevent marking and scuffing on the chimes, some bottlers apply a light protective coating of wax or other protectant. There are challenges with most of the available standard applicators.

The wax protectant typically flows freely in most systems to keep up with high production speeds and throughput volume. With around the clock operation, the volume of wax use can be significant if it is

Septimatech Wax Applicator Case Study

Customer Challenge

For its returnable beer bottle line, a large Canadian brewery was using wax to protect the bottle exterior from scuffing. The standard applicator they were using consisted of a bent steel arc with a hard rubber applicator with drilled holes in the face. Wax seeped through the holes onto the rubber face. The customer had no control of the wax. Application was uneven and excess wax dripped onto the machine and line.

Customer Requirements

The customer wanted a more durable applicator that applied liquid wax completely and evenly on the scratched chimes, reduced and controlled the amount of wax, and could be changed quickly.

Septimatech Solution

A custom-engineered modular applicator with two absorbent, wicking pads and mechanical adjusters on each pad to control wax flow.

Results

- Wax applied completely and evenly over the bottle chimes
- Applicator module is easily replaced and easily adjustable for bottle contact
- A 76% reduction in wax usage
- Less clean up and production slowdowns due to excess wax
- Estimated cost savings of 2 cents per bottle
- Used bottles look like new

not controlled properly. Applicator components that contact the high number of bottles rapidly moving through the line are subject to extreme stress and wear.

Many standard applicators use one or more small holes that continuously distribute wax to a rubber component that applies protectant to the bottles as they pass through the line. The main complaints bottlers have with standard wax applicators are:

- poor wax application
- wax overuse or waste
- excessive clean up and performance issues from too much wax
- limited or no adjustment capabilities
- excessive wear
- difficult to replace or change wear components

Septimatech's Wax Applicator

Septimatech's wax applicator addresses each of the primary concerns. Septimatech engineers believed if they could better control the wax flow, several of the challenges could be overcome. Most importantly, the engineers focused on a more efficient applicator that would evenly distribute less wax more effectively across the two bottle chimes prone to scuffing (*image 1*).

The solution was an absorbent pad strip that would hold and apply the free flowing wax and conform to the bottle chime profile as it passed through the applicator. The primary concern was finding a material that would be durable enough to withstand the rigors of high speed, high volume bottling, but be absorbent and flexible enough to hold the wax and apply it evenly. After testing multiple materials, engineers selected a material that met all the requirements for durability and cost. Each applicator includes mechanical adjusters that allow users to control wax application without stopping production (*image 2*).



Image 1: Modular applicator pad



Image 2: Lower modular applicator pad installed. Adjusters on each pad control wax flow and even application around the bottle as it passes through.

Flow to the applicator strip can be adjusted during operation to reduce waste and ensure ideal bottle protection. Septimatech customers have experienced material savings of 75% over free flowing wax applicators by simply controlling the flow. The applicator can be used with liquids of different viscosities with minor adjustments. This means future protectants or other existing coatings could be used with minimal changes.

The complete applicator is a stainless steel, modular cartridge with two application pads that are easily replaced, and aligned with the bottle chimes. The cartridge features a low profile design with alignment guides, and precise tolerances for consistent wax application, line speeds, and safety. Changeover is easy and takes less than 20 minutes. (*image 3*).

The durable absorbent applicator pad ensures even application as the bottle moves through the line. (*image 4*).

Typically, bottles are reused 20 to 25 times. The wax protectant prevents additional scuffing and covers existing marks to keep bottles looking like new (*image 5*).



Image 3: Both applicators installed.



Image 4: Applicators installed in contact with the bottle.



Image 5: (Left) Bottle without wax protectant. (Right) Bottle with wax protectant applied.

Key Benefits of Septimatech Wax Applicator

- Adjustable wax flow while line remains in operation
- Applicators independently adjustable
- Absorbent, wicking applicator for consistent wax application and control
- Eliminates leakage and drips—keeps wax in place on applicator
- Uses less wax than competitive products for cost savings and faster dry time
- Modular stainless steel construction
- Quick, easy to change applicator pads
- Durable, long wear applicator pads.

Finding the Right Custom-Engineered Parts Manufacturer

Your reputation and return on investment may depend on the quality of your parts vendor. Here are some tips to keep in mind when evaluating a custom parts manufacturer.

Project Management

Ability to understand your needs and translate them into a solution that meets your requirements and deadlines. Do they work with you to set expectations and understand your needs, share knowledge, explain decisions and designs? Do they meet deadlines?

Material Testing and Use

Material choice impacts effectiveness, durability, ease of use, and cost. The right materials ensure you receive the best value for your investment.

Design, Fit, and Finish

Can they manufacture build to your tolerances and requirements? Is the finished part well designed and quality built to fit your application in performance and appearance?

Manufacturing Processes

Do they use state-of-the-art technology that ensures consistent, precise construction?

*1. Based on data from Grass Roots Recycling Network, Treehugger, CM Consulting, and The Beer Store.
based on data from Grass Roots Recycling Network, Treehugger, CM Consulting, and The Beer Store.*