

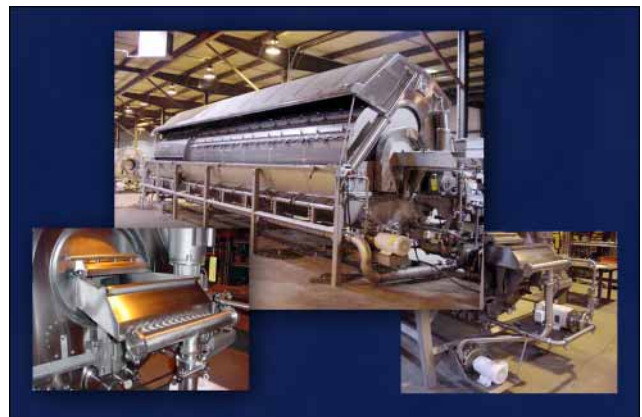
# Breakthrough Blanching Technology Combines Benefits of Steam and Rotary Drum Design

*The replacement of outdated water-blanching and steam belt units with new rotary drum steam technology accelerates ROI for vegetable processors with greatly reduced production costs and enhanced product quality*

For 40 years, vegetable processors have found the benefits of steam and rotary drum blanching as separate as oil and water. Now, however, an advanced new technology is giving vegetable processors the benefits of both steam and rotary drum blanching, with the flexibility to switch back to traditional water-based blanching as needed.

In place of traditional steam belt and water-based, rotary drum blanchers, plant managers are discovering that new *Vapor-Flow* rotary drum steam technology can not only minimize water, energy, and water treatment costs to the tune of thousands of gallons and hundreds of dollars per day, but also increase product recovery by up to 2 percent or more. It is also improving product quality, freeing up critically needed factory floorspace, and significantly reducing maintenance costs - all of which contribute to swift ROI.

It's no secret that steam-blached vegetables retain solids and nutrients better than comparable water-blached vegetables. Since the solids and nutrients in steam-blached vegetables aren't washed out in water, product recovery typically increases from 1.5 to 2.5 percent, and yields crisper, tastier, fresher-looking product. Steam blanching also saves water, energy, and water treatment costs compared to water-based, rotary drum blanching since there is little need for make up water or large-scale, process water discharge at the end of the production day. In freezing operations, it also minimizes the water clinging to product as it enters the freezers, which eliminates a costly heat load at the end of the process.



*VaporFlow(tm) rotary drum steam technology can not only minimize water, energy, and water treatment costs to the tune of thousands of gallons and hundreds of dollars per day, but also increase product recovery by up to 2 percent or more. It is also improving product quality, freeing up critically needed factory floor space, and significantly reducing maintenance costs - all of which contribute to swift ROI.*

On the other hand, rotary drum blanching - which until now has been strictly water-based - blanches product more evenly with constant product agitation than traditional steam belt blanchers. Rotary drum blanchers also use just 50 percent or less of the production floorspace required by large steam belt blanchers, which can be up to six-feet wide and 75-feet long.

"I've used just about all types of blanchers the industry has to offer," said Glenn Stousland, a veteran plant manager of the food processing canning industry. "What's been missing in the marketplace is a blancher that gives both the benefits of steam and the

benefits of rotary drum technology.”

### **Other Drawbacks of Old Technology**

For 40 years, besides the drawbacks inherent in *having to choose steam or rotary water drum blanching* rather than enjoying the benefits of both, vegetable processors have faced additional challenges using traditional technology.

For example, steam belt blanchers, often used for frozen and fragile products, are complex, expensive, as well as difficult to clean and maintain. The belts themselves are difficult to “track” and stretch. Belts, mesh, hinges, bearings, rollers, and items such as rotary air lock valves not only add to mechanical complexity and capital outlay, but also to maintenance and cleaning costs.

Moreover, when vegetables are loaded onto the conveyor system, the product on top creates a heat barrier so the product underneath heats slower and more unevenly. Belt blanchers are notorious for an inconsistent process, even with center belt turnover, because as feed rates vary, so does product depth, which changes the final result. With belt blanchers, product temperature variations as great as 10° F are possible under production conditions.

Water-based, rotary drum blanchers, for their part, use an excessive amount of water, which not only must be purchased but also treated and disposed of. This is increasingly expensive as environmental regulation becomes more restrictive, placing the burden on manufacturers to limit effluent at the source.

Rising utility costs also make water-based, rotary drum technology less attractive, since its thermal transfer rate is less direct and relatively ineffective compared to steam. Water-based rotary drum blanchers, in fact, typically inject steam into tank water, which then blanches or cooks product. Steam, in contrast, is more energy efficient because it directly transfers heat to product, thus eliminating the intermediary step of heating water to blanch product.

### **How Rotary Drum Steam Technology Pays for Itself**

In the late 90s, Columbus, Wisconsin-based LYCO Manufacturing, the leading supplier of rotary

drum hot water blanchers in North America, conceived of the idea of using a rotary drum hot water blancher to process product with pure steam instead of hot water. The idea, which at first seems as far-fetched as running your car on gas vapors instead of liquid gas, led to the development of the *Vapor-Flow* Rotary Drum Steam Blancher, which combines the benefits of both steam and rotary drum blanching in a single, cost-effective machine.

The new blanching technology is lowering production costs and accelerating ROI for vegetable producers in a number of ways:

### **Water and Waste Water Savings**

Since the *Vapor-Flow* Rotary Drum Steam Blancher requires just six-inches of water to fill its tank rather than the typical 30-inches of water that rotary drum water blanchers require, water savings and waste water savings are significant. In some cases, water usage and waste water discharge can be reduced by up to 30,000 gallons a day to 500,000 gallons per year, depending on machine size and other variables. Wastewater savings can mount quickly, as they’re typically three times the cost of water.

### **Energy Savings**

Energy savings accumulate as well. Because *Vapor-Flow* substitutes steam for hot water, this eliminates heating millions of gallons of make-up water per year. Studies show the rotary drum steam blancher to be 25 percent more efficient than water blanching with steam usage of 9 lbs. of product per lb. of steam with some products.

“We saved on gas, water, steam, and sewer rates,” said Rich Bartz, who was General Manager at Lakeside Foods’ Manitowac, Wisconsin plant when their *Vapor-Flow* blancher was installed. “No water make-up or initial water dump had to be performed to get the machine up and running.” Tests at Lakeside Foods, a privately held international food processor, showed an average 8.3 percent increase in lbs. of product processed per lb. of steam compared to traditional rotary water blanching.

The rotary drum steam blancher also avoids excess steam usage by properly sizing steam manifolds,

containing steam upon entry and exit, and eliminating steam venting to the atmosphere. Along with heavy-duty seals, a patented technology feeds product to the blancher on a water flume that doubles as a water curtain to more efficiently contain steam. This helps to minimize utility bills by preventing steam energy from wasteful venting, while improving environmental controls by eliminating condensation into work surroundings. The water curtain is as effective as the complex, rotary air lock valves used on some belts and much better than sloped belt in-feed/discharge designs, which can create environmental condensation problems.

### **Increased Product Recovery and Improved Product Quality**

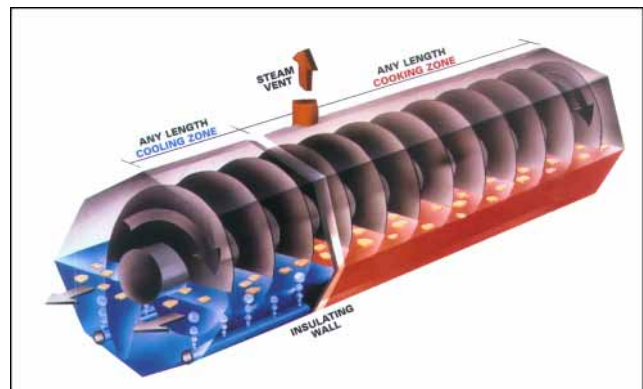
Compared to water blanching, product recovery increases up to 2 percent or more are achievable with steam blanching, as water blanching tends to leach solids and nutrients from fragile products. Since the rotary drum steam blancher continually turns product over, temperature variations are kept within 2° F under production conditions, instead of the 10° F of some belt blanchers. This uniform heat penetration, combined with gentler steam processing, translates into brighter, crisper, tastier vegetable products.

### **Frees Up Critical Factory Floorspace**

Because of its compact rotary drum design, the *Vapor-Flow* steam blancher typically takes just 50 percent or less factory floorspace than a comparable steam belt, depending on the vegetable processed, retention times, and other variables.

“We simply didn’t have the factory floorspace for a steam belt,” says Bartz. “Without the rotary drum steam blancher, we would’ve lost the advantages of steam processing. The *Vapor-Flow* used a much smaller footprint to get the same work done. In fact, it took just 25 percent the space a belt blancher would have.”

Moreover, the rotary drum steam blancher offers food processors the flexibility to do steam or water-based blanching/cooking within the same machine, with change over taking just minutes. For example, vegetable processors can steam blanch carrots or diced



potatoes in the morning. Then they can fill the tank for water blanching, and with a flip of a valve handle proceed to re-hydrate products such as pasta or dry beans in the afternoon. This eliminates the need for expensive, multiple machine purchases that can take up critical factory floorspace.

### **Lowers Maintenance and Capital Costs**

Since the rotary drum steam blancher has just one major moving part, the cylinder, it’s very low maintenance. By contrast, steam belts are notoriously high maintenance - with belts, mesh, hinges, bearings, rollers, and complex mechanisms such as rotary air lock valves that raise maintenance and cleaning costs. While baked-on product residue can be extremely difficult to remove from steam belt perforations and mesh, the rotary drum steam blancher keeps its interior surfaces moist, which reduces clean-up time.

“The machine cleans-in-place just like regular rotary units, except that steam spreaders are placed so the product won’t stick to the flights,” says Bartz.

Because *Vapor-Flow* processes product in rotary units 12, 15, or 18-inches deep, compared to belt blanchers that typically process product about 4-inches deep, the end result is a smaller machine with lower capital costs. Including reduced maintenance and cleaning costs, the rotary drum steam blancher ends up costing about 20 to 40 percent less than a comparable steam belt in total cost, even though it costs a bit more per lineal foot.

### **Summary**

Given the opportunities for cutting water, energy, disposal, and maintenance costs, while boosting prod-

uct recovery, quality, and freeing up critical factory floorspace, new rotary drum steam technology not only brings about rapid ROI but can actually add to the bottom line. For this reason, profit-minded plant managers are choosing to immediately upgrade their water-blanching units.

“If you’re replacing a water-blanching unit or want the benefits of steam blanching in a compact space, you should definitely consider the rotary drum steam blancher,” concludes Bartz.

*For more information about the Vapor-Flow™ patented rotary drum steam blancher, contact LYCO Manufacturing, Inc. at, 115 Commercial Drive, P.O. Box 31; Columbus, Wisconsin 53925; (920) 623-4152; or fax (920) 623-3780; or [www.lycomfg.com](http://www.lycomfg.com).*

Del Williams is a technical writer based in Torrance, California.