

If you package tablets or capsules in bottles, induction sealing may give you an advantage. Induction sealing creates a visible seal that assures consumers of the product's safety. As a result, you're more likely to earn their repeat business. This article discusses the components of induction sealers, selection, installation, and Pillar's Cap Sealing Equipment Upgrades.

Using an induction sealer requires you to cap bottles with a closure that includes a foil inner-seal, sometimes called a liner. As the capped bottles travel along the conveyor, the induction sealer fuses the inner-seals to the bottle openings using an electromagnetic field. After the bottle exits the electromagnetic field, the foil cools. The hermetic, air-tight inner-seal provides visual tamper evidence, prevents leakage, promotes child resistance, and protects your product from dust, mist, fumes, vapors, and gases. In some cases, the inner-seal also extends shelf life of certain products.

## Components of an Induction Sealer

### Power Supply

The power supply (inverter) transforms input power into the power and frequency necessary to seal bottles. The power supply's kilowatt rating indicates its suitability for the application. In general, the more bottles to seal (and thus the faster the bottling line) and the larger the bottle opening, the higher the kilowatt rating required. Manual or handheld systems require as little as 0.5 kilowatt, while high-speed lines may require 6 kilowatts, which is the largest unit on the market. The industry workhorse has a 2-kilowatt rating.

### Sealing Coil

The sealing coil is a metal conductor surrounded by ferrites and enclosed in a non-conductive housing. The ferrites direct and focus the electromagnetic field for sealing efficiency. Virtually any coil configuration is possible, but Pillar offers three different designs that include Universal Flat Coils, InFinity Tunnel Coils, and the C-Series Hand-Held Sealing Coil. Universal Flat Coils is used for the inner-seals of child-resistant or standard flat caps ranging from 20 - 120 millimeters in diameter. The InFinity Tunnel Coil is used with spouted, dispensing, push-pull, yorker, or flip-top caps, most of which are not used to package solid dosage forms. And the C-Series Hand-Held Sealing Coil is designed to be used with Pillar's C-Series Hand-Held Induction Sealer to seal both flat caps and dispensing caps, with a removable plug that can be removed for inserting and sealing tall caps - for low-volume, portable sealing applications. You can mount either coil design over an existing conveyor, or you can unitize the system by placing the coil and the power supply on a cart for easy movement from line to line.

Waterless (air-cooled) systems have replaced water-cooled systems as the most popular type of induction sealer. While custom water-cooled systems are still the preferred choice in wash-down environments or specialized hazardous chemical plants, waterless systems, for the most part, are replacing standard water-cooled units. Why? Because waterless (air-cooled) sealers are half the size and eliminate the need for water recirculators, water filtration, hoses, radiators, pumps, and flow switches. In short, air-cooled systems minimize maintenance, are more reliable, and cost less to own and operate.

Pillar offers additional sealing coils for manufacturers needing to seal different types of products, or to replace old coils. With three different types of coils available, Pillar's sealing coils are easily interchangeable and help to deliver high quality induction sealing.



## Getting your Money's Worth

When evaluating the purchase of an induction sealer, you should recognize that the return on investment lies mainly in the long-term benefit of adding an inner-seal, which is difficult to quantify. But when comparing induction sealers, look at the service life you can expect from the machine and the quality of service you can expect from the supplier. First you need to decide whether adding an inner-seal to your bottle will significantly improve your packaging. Next, look at the sealer's electronics, which typically dictate its life expectancy. Induction sealers are manufactured to last a long time. In fact, some sealers in daily use today are more than 25 years old. However, the availability of the electronics used to build the equipment is always a factor. As electronics are upgraded, replacement parts are harder to find. Reputable manufacturers design equipment based on components that they can replace for years to come.

When examining a supplier's service, or after-sale support, be sure to ask if the vender will:

- Troubleshoot the system with you over the phone or by sending a service technician, or must you return the system to the factory for service?
- Furnish the power supply independent of the sealing coil? If the two components are separate, the failure of one won't force you remove the entire system from service.
- Supply replacement parts quickly? Ideally, the parts will arrive at your plant the day after you order them.

Finally, you may want to choose a system that's large enough to accommodate many shapes and sizes of caps and bottles, as well as one that can handle high line speeds. That way, you won't need to replace the unit if your application changes or your output increases. Paying a little more now for a larger power supply or more flexible coil design may save you money in the future. If you know that the application will change, look for a system that allows you to interchange sealing coils without tools. Contract packagers often purchase more than one sealing coil so they can seal a wide variety of cap sizes and styles.

When comparing price quotes, make sure you compare systems with equally sized power supplies, identical coil designs, and the same coil mounting arrangement, either stationary or portable. The quote may also include one or more of the options describes in the next section. If you're unsure what a quote includes, ask for more detail.

While price is one important criterion, you shouldn't select a system based solely on initial price. Make sure to factor in the overall costs that you may incur in the long run. If you're thinking of buying used equipment, be careful. It may use water cooling, which will entail higher maintenance costs than air cooling. Used machines may also be obsolete or lack service support. Always consult the manufacturer to determine the age, type, and history of a used induction sealer. Most used equipment will not come with a warranty.

## Installation

Induction sealers are easy to install. The sealer requires 3 to 5 feet of straight, unimpeded conveyor for mounting or placing the sealing coil. The coil is always mounted parallel to the conveyor. To prevent accidental heating, keep the sealing zone clear of metal components.



## Cap Sealing Equipment Upgrades

Pillar has engineered a variety of equipment upgrades for its induction sealers to better suit your needs, enhance the functionality of your induction sealer, and optimize your production processes. These upgrades will help you detect and deal with faulty seals, comply with FDA regulations for your products, and more.

### IQ/OQ Process Validation

In order to meet the FDA's guidelines for the IQ/OQ validation process for the pharmaceutical, nutraceutical, and food and beverage industries, Pillar offers a very cost effective way to meet these regulations. For a nominal fee, Pillar will validate your induction sealers prior to shipment to ultimately save you time and money.

### Allen Bradley Control Option

To better accommodate unique customer needs when it comes to programming your induction sealer, Pillar offers an upgradable control option over the microprocessor that comes standard with our flagship induction sealers. The Allen Bradley Control Option gives customers the ability to program their own options into their induction sealer to better align with the other equipment on their line.

### Bottle & Cap Detection System

Pillar offers a complete Bottle and Cap Detection System designed to significantly reduce the chances of shipping unsealed products. This comprehensive cap detection package employs the latest sensor technology to detect and remove bottles that have one of three fault conditions: stalled bottles, missing foil, or crooked cap.

### Conveyor System

Pillar offers an optional, variable-speed conveyor that can be attached to the portable coil support of your induction sealer. This stainless steel system is approximately 6 feet (1.8m) long with a 4.5 inch (115mm) wide belt and includes single-high guide rails.

### In-Feed Bottle Stop

The In-Feed Bottle Stop is an air-actuated gate that stops bottles from entering an inactive sealing area when the machine is in STOP mode, there is an alarm condition, the energy drops below the operator's output set point, or the power is turned off - ultimately eliminating the risk of unsealed products getting through production lines.

### Pneumatic Reject

Pillar's Pneumatic Reject device works in conjunction with the Bottle and Cap Detection System to detect and remove stalled bottles, and bottles with missing foils or crooked caps from the conveyor.

### Stacked Light

Pillar's Stacked Light is a tower light that is mounted to the back of your induction sealer and indicates a Stop, Start, and Fault condition, and also includes a dual alarm mechanism - both visual and audible.