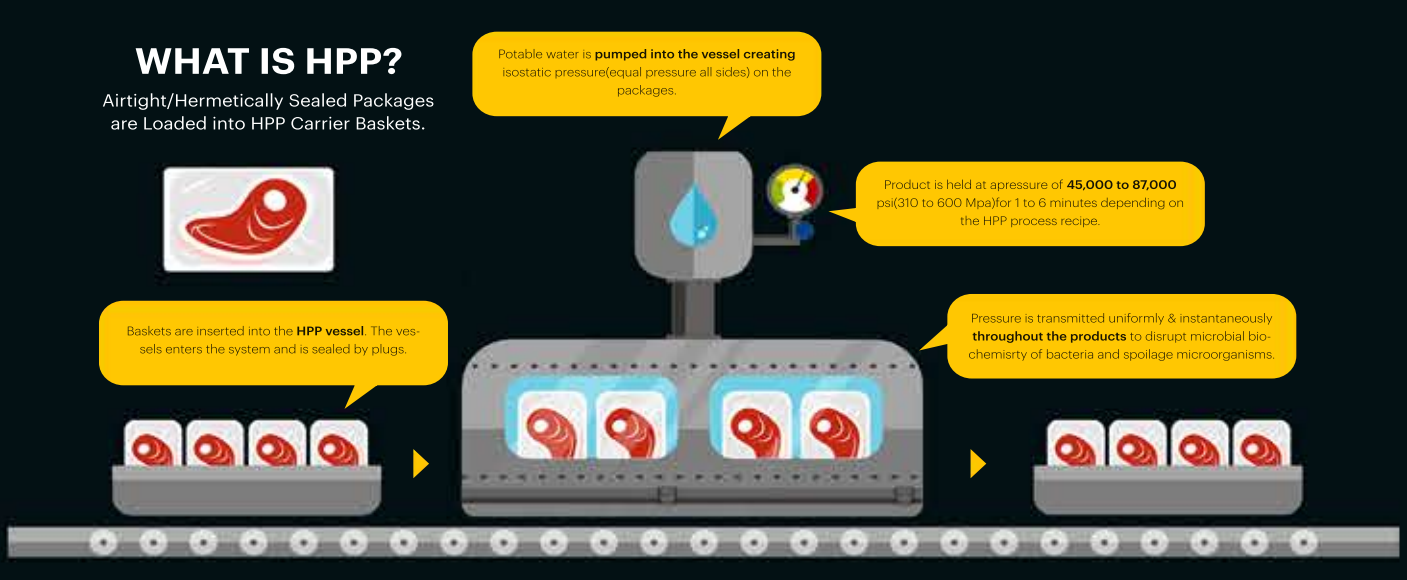
THE BENEFITS OF HIGH PRESSURE PROCESSING (HPP)

A BRIEF BY UNIVERSAL PURE

WHAT IS HPP?

High pressure processing (HPP) is a **UNIQUE FOOD** preservation method that utilizes water pressure to inactivate food-borne pathogens and spoilage organisms. Unlike traditional thermal preservation methods that can compromise flavor and nutrients, HPP uses a cold pasteurization process to enhance food safety, more than double product shelf-life, protect your brand, and enable the sale of cleaner label products.

How does HPP work? Airtight/hermetic sealed packages (e.g. bags, pouches, plastic bottles, chubs, trays, etc.) are loaded into HPP carrier baskets. The baskets are inserted into an HPP vessel. Potable water is pumped into the vessel, creating isostatic pressure (equal pressure on all sides) on the packages. The product is held at pressure **(45,000 to 87,000 psi)** for one to six minutes depending on the HPP process recipe. This pressure is transmitted uniformly and instantaneously throughout the product. The high pressure disrupts the microbial biochemistry of bacteria and spoilage microorganisms, creating a safer, cleaner product. Since the pressure is transmitted uniformly, it does not alter the shape of the food.



HPP IS REVOLUTIONIZING

The food industry. The technology has broad application across many product categories. The benefits of HPP are realized in raw and ready-to-eat meats, fresh juices and smoothies, deli salads, dressings, dips, sauces, soups, salsas, ready-to-eat meals, fruits and vegetables, dairy products including cheese, and even raw pet foods.

THERE ARE MANY DRIVERS THAT MAKE HPP A LOGICAL CHOICE TO CONSIDER IN YOUR NEW PRODUCT DEVELOPMENT AND PRODUCTION PROCESSES:

1. IMPROVED FOOD SAFETY
2. SHELF LIFE EXTENSION
3. CLEANER LABEL PRODUCTS
4. FOOD WASTE REDUCTION
5. INNOVATIVE NEW PRODUCTS / R&D
6. CREATES LOGISTICAL ADVANTAGES
7. BETTER ORGANOLEPTICS (TASTE, TEXTURE, COLOR ETC.)
8. BRAND PROTECTION

BENEFITS OF HPP

FOOD SAFETY

The food industry continues to experience product recalls because of pathogen contamination. The sources of the contamination could be raw materials, environmental contamination, or a breakdown in quality assurance and HACCP programs. HPP is very effective on vegetative bacteria including Listeria monocytogenes, E. coli 0157:H7, salmonella, Campylobacter, etc. Often times HPP is applied on post-packaged products significantly reducing the risk of recontamination. However, HPP is also effectively used to address microbial loads on problematic incoming ingredients.

SHELF LIFE EXTENSION

An important economic benefit of using HPP is the concurrent destruction of spoilage microorganisms e.g. fungi. This often results in more than doubling of the refrigerated product shelf-life and an extension of the quality of the products. Processors not only have the means of getting longer microbiological shelf-life, but are able to reduce or eliminate chemical preservatives and offer their customers the high quality products that maintain "recently produced" organoleptic characteristics throughout the shelf-life.

CLEANER LABEL PRODUCTS

Consumer demands for all-natural, cleaner label products are increasing. Using the benefits of HPP, health-conscious people are able to avoid many preservatives, reduce the amount of sodium in their diets, and consume more fresh and natural foods all with enhanced food safety.

FOOD WASTE REDUCTION

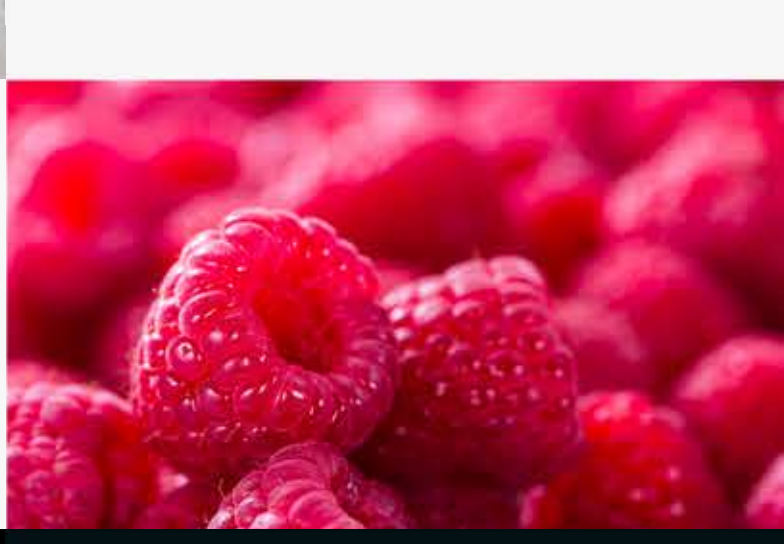
Consumers, grocery chains and restaurants throw away a staggering amount of food produced in the United States. Food spoilage is a significant contributing factor to this problem. In the USA, 30-40% of the food supply is wasted, equaling more than 20 pounds of food per person per month. Because HPP addresses many of the common spoilage microorganisms such as bacteria, yeast and mold, product shelf life is often doubled by the HPP process without the use of chemicals or heat.

INNOVATION / R&D

Products that cannot be thermally treated can now be High Pressure Processed. Products previously distributed frozen can be offered as fresh items. Some products see increased tenderization through HPP. New innovative food propositions can be introduced.

LOGISTICS

Since HPP'd products stay fresh longer, they can be shipped farther, which cuts down on waste and spoilage, increasing the profits for food manufacturers, retailers and food service providers. As your customers expand their business, you can expand right along with them.



IMPROVED ORGANOLEPTICS

With HPP processing, the characteristics of the fresh product are retained much longer. In addition to sensory properties, vitamin and nutritional properties remain mostly intact. For example, when using HPP for marinating, the flavors are quickly driven throughout the product. With some products, the mouth feel (i.e. smoothness) can be enhanced with HPP.

BRAND PROTECTION

What keeps you awake at night? Protecting your brand is critical to the success of your company. Maintaining a safe source of ingredients, consistently executing on your food safety programs, and minimizing employee turnover are key to protecting your brand. HPP can play an important role in your overall business strategy. All in all, HPP offers a unique set of benefits for the food and beverage industry.

ABOUT UNIVERSAL PURE

Headquartered in Villa Rica, GA, Universal Pure (www.universalpure.com), is dedicated to ensuring the safety and quality of foods and beverages. As a customer-centric service provider of high pressure processing (HPP), Universal's four U.S. locations and 10 HPP machines in operation make it the largest service provider of HPP services globally. Companies also outsource with Universal Pure for Cold Storage and related pre and post HPP value-added services (kitting, pre-pricing, code dating, inventory control), and to leverage their technical, quality assurance, engineering and cold-chain expert resources in order to bring fresh, natural, organic and cleaner-label products to market. We are grateful for the role we play and we are focused on continually improving by investing in our people, facilities, technology and services to support food safety and quality requirements and initiatives in the food and beverage industrie