



HPP Trends and Case Studies

**Tim Hunter, HPP Marketing
Avure Technologies Inc. 2014**

Overview

- **History of HPP**
- **Market trends and directions**
- **The market and case studies**
- **The journey to successful HPP products**

History of HPP

1899

Hite envisioned HPP as a way of pasteurizing milk while protecting nutritional properties

1990s

First commercial products, Semi-custom HPP systems

- Guacamole, Mexico/USA
- Jellies, Japan

2000 – 2006

First truly commercial systems

- Vertical and horizontal
- Used for specialty products, seafood and RTE meats

2007 – Today

Accepted as commercial process, Generation 4 systems

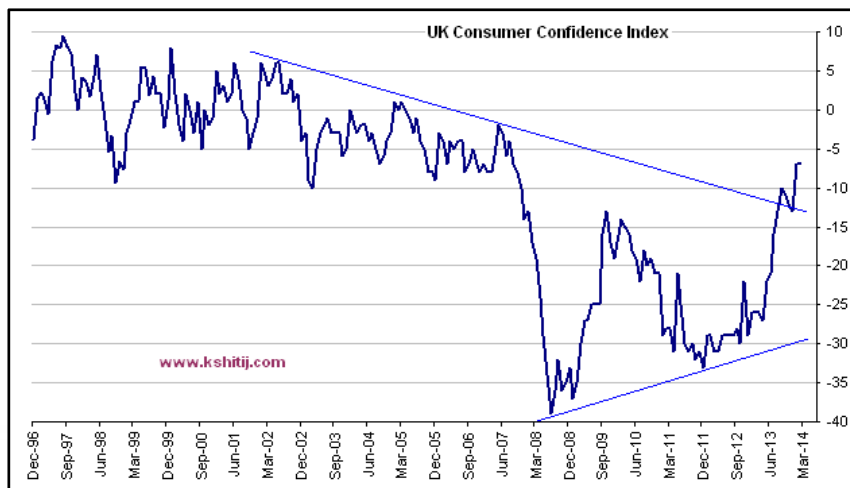
- High uptime, low cost per unit
- World-wide market

Consumer Confidence Mixed

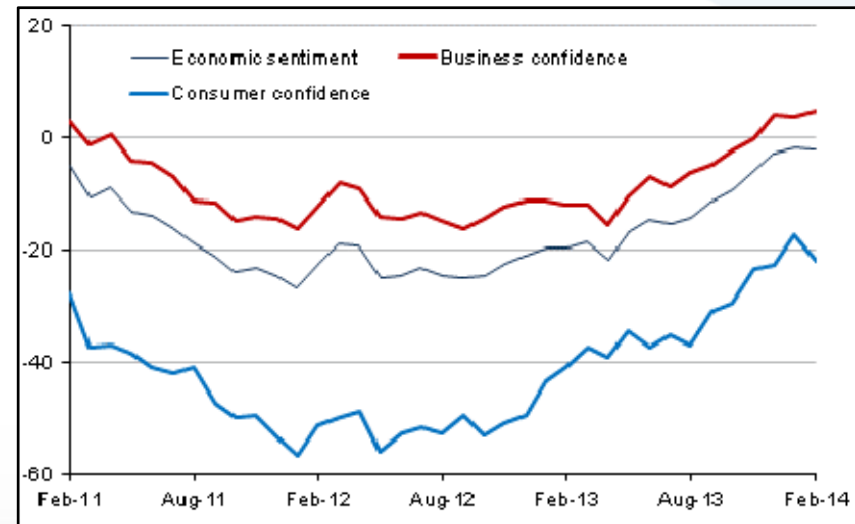
US and EU up but China down: UK highest since 2007

- Inflation fears
- Energy prices
- Government belt tightening
- Housing market recovery lag

UK



US



Consumer Eating Habits Are Changing

Fresh

- Refrigerated (not frozen or canned)
- High quality

Healthy

- Clean label
- Nutritional

Convenient

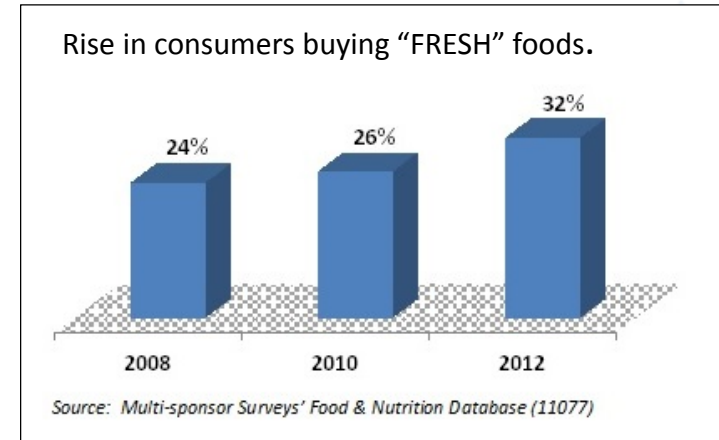
- Homemade look and taste
- Brings pleasure



Consumers: Freshness and Food Safety a Must

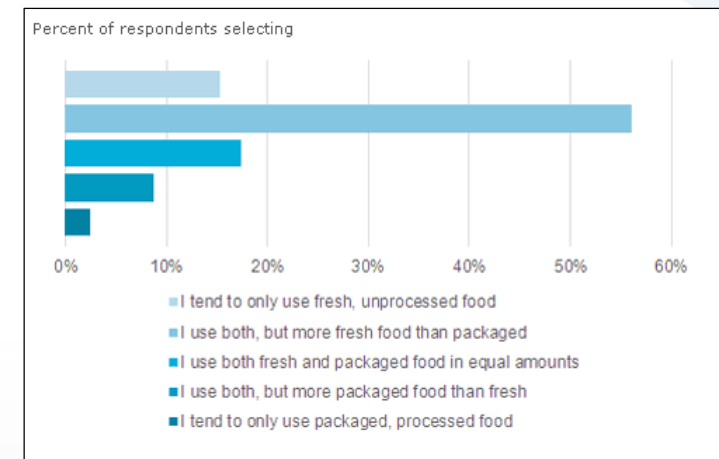
More and more consumers want “FRESH” foods:

- with active enzymes
- that are rich in vitamins
- with no artificial preservatives



They all want protection from:

- salmonella
- eColi
- Listeria
- spoilage



Beverages: “Fresh” “Raw” “Pasteurized?”

Recent lawsuits have challenged words like RAW and FRESH on packaging of healthy beverages treated with high pressure.

- Stark vs. Hain Celestial (settled out of court)
- Rebecca Heikkila vs. Suja

Here are the facts:

- Science proves that vitamins, bioactive compounds, phytochemicals, and enzyme systems are not negatively affected by HPP.
- Most probiotic microorganisms are not significantly inactivated under high pressure processing conditions. These strains of bacteria quickly reach original population levels after HPP.
- HPP products require refrigeration for microbiological and chemical stability ... because probiotic organisms are thriving!
- We have volumes of data to prove this.



Producers: Freshness and Food Safety a Must

As more consumers want “FRESH” foods:

- traditional heat pasteurization will not be an option
- label must be clean
- packaging must communicate “fresh,” “raw” and “healthy”
- products must move quickly from farm to table and have extended shelf life

Producers require protection from:

- costly and deadly recalls
- spoilage
- destruction of brand

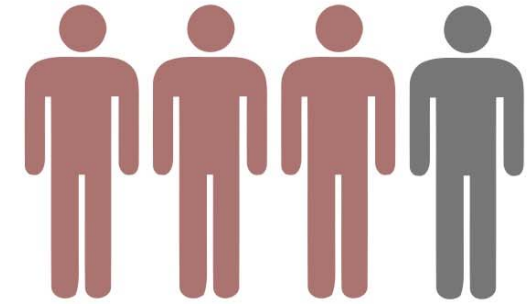
Biggest Disease Outbreaks from Contaminated Food

Figures as of Jan. 16, 2014

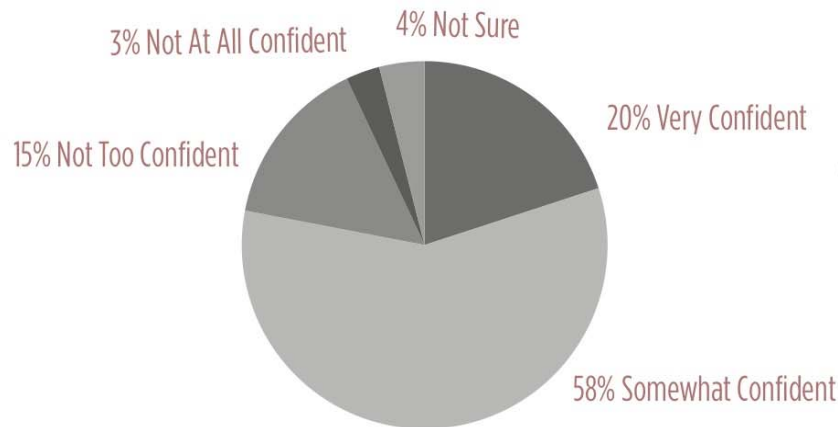
Food, brand	People sickened	States affected	Year
Eggs	1,939	10	2010
Jalapeño and serrano peppers	1,442	44	2008
Peanut butter	714	46	2009
Prepackaged salad mix	631	25	2013
Chicken – Foster Farms	430	23	2013
Ground tuna – Nakauchi scrape	425	29	2012
Peanut butter	425	44	2007
Potpies – Banquet	272	35	2007
Red, black pepper/Italian style meats	272	45	2010
Cantaloupes	261	24	2012

The Good News

**3 OUT OF 4 CONSUMERS
ARE CONFIDENT IN THE SAFETY**
OF THE COUNTRY'S FOOD SUPPLY



BREAKDOWN OF ALL RESPONSES:

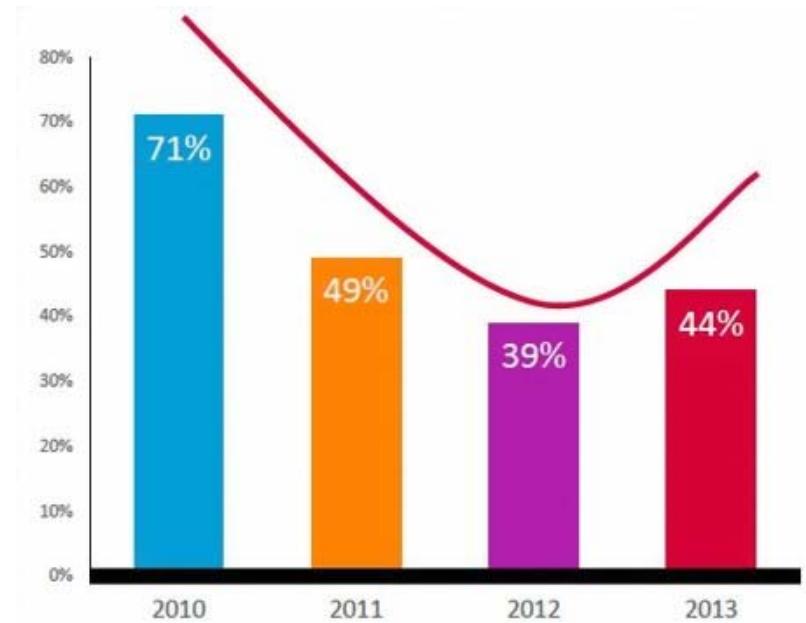


78% of consumers are **VERY** or **SOMEWHAT** confident in the safety of the U.S. food supply.

The Good News: Italy

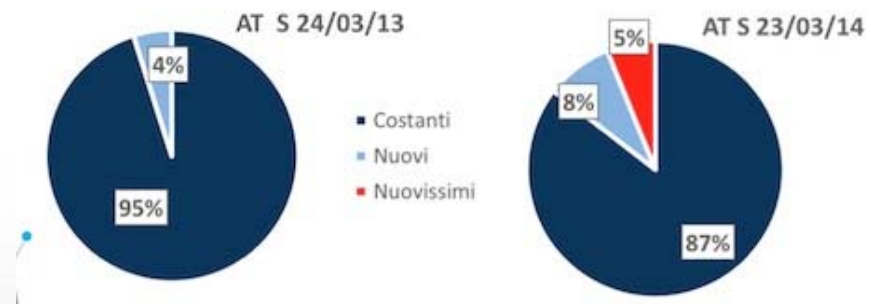
Fresh sector is recovering

The trend changed in the first two months of 2014 - the food sector recovered lost volumes, especially for what concerns pre-packed food, fresh produce and drinks.



Confidence trend in Italy. Source: Nielsen Consumer Confidence IV trimester.

Innovation is proving essential for this market as, for example, fresh-cut refrigerated vegetables represent 8% of the value on the market. **New and brand-new products** represent 13% of the turnover.



All-Natural

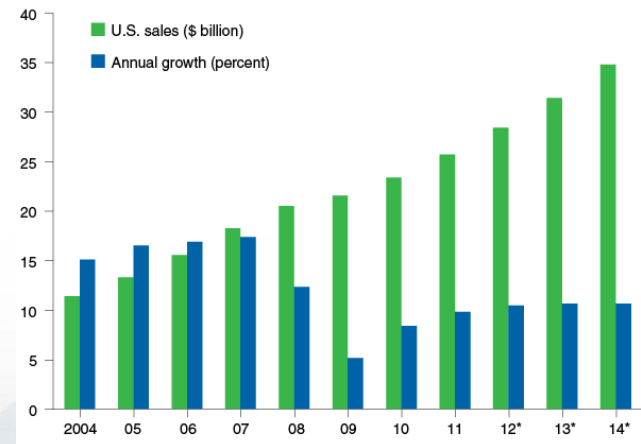
- Driven by demand for healthy choices, organics and less costly all-naturals



- 48% growth rate in RTE meats alone, which will continue



U.S. organic food sales reached \$28 billion in 2012



Functional Foods Become Mainstream

- Functional foods are climbing out of the health niche market and entering the mainstream



- Increasingly, functional foods and beverages are positioned on their taste and quality

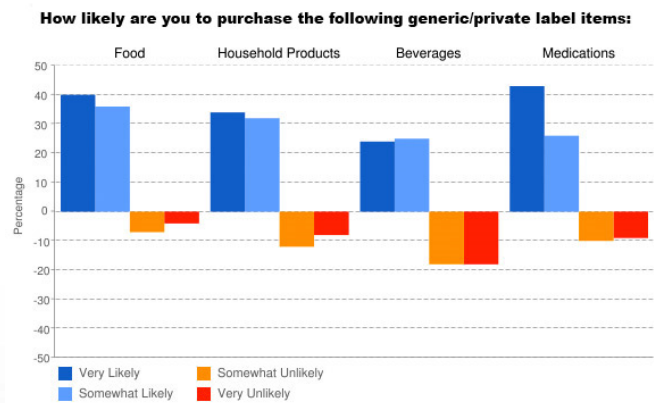


Private Label Not “Generic” Anymore

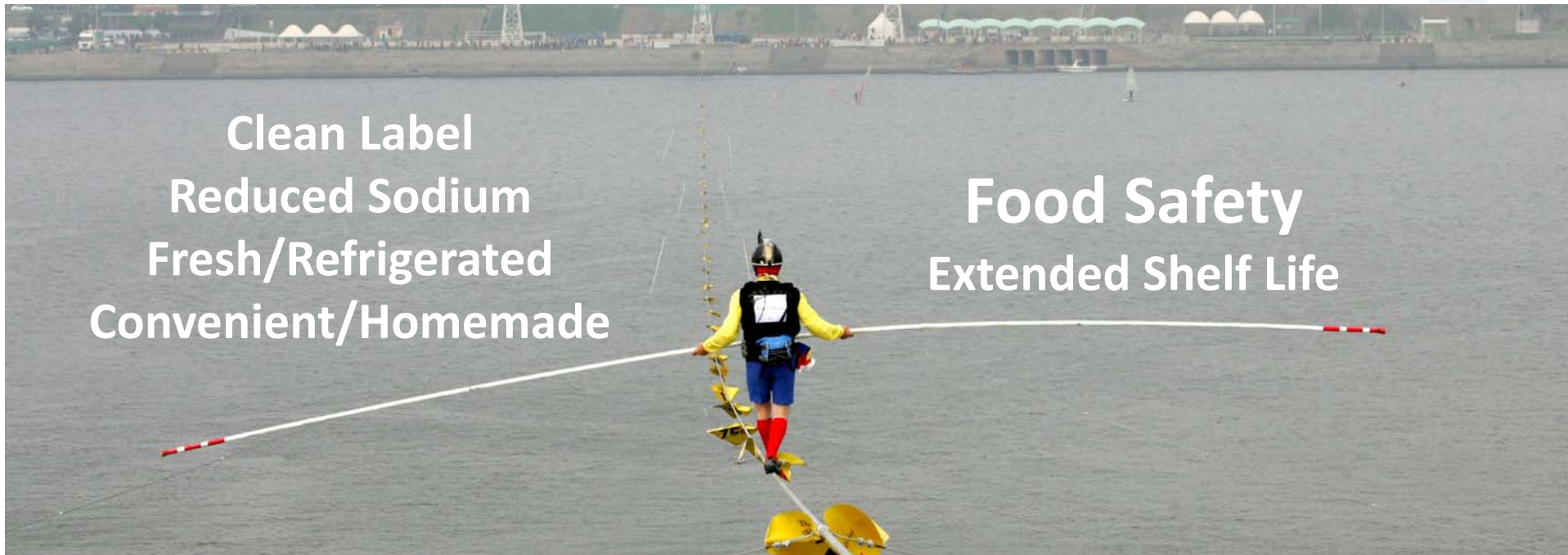
- Store brands have become equated to quality



- Consumers are not just buying private label to save money any more and are more likely to buy store brands



A New Balancing Act for Processors



Clean Label
Reduced Sodium
Fresh/Refrigerated
Convenient/Homemade

Food Safety
Extended Shelf Life

HPP: A Silver Bullet for Refrigerated Foods

Meets consumer trends:

- Fresh/refrigerated
- All natural (no preservatives)
- Convenient (ready to eat, ready to heat)
- Economical (ground poultry instead of ground beef)

Enables processor innovation

- An opportunity to renew existing products
- Expand geographical distribution
- Enables creation of new products

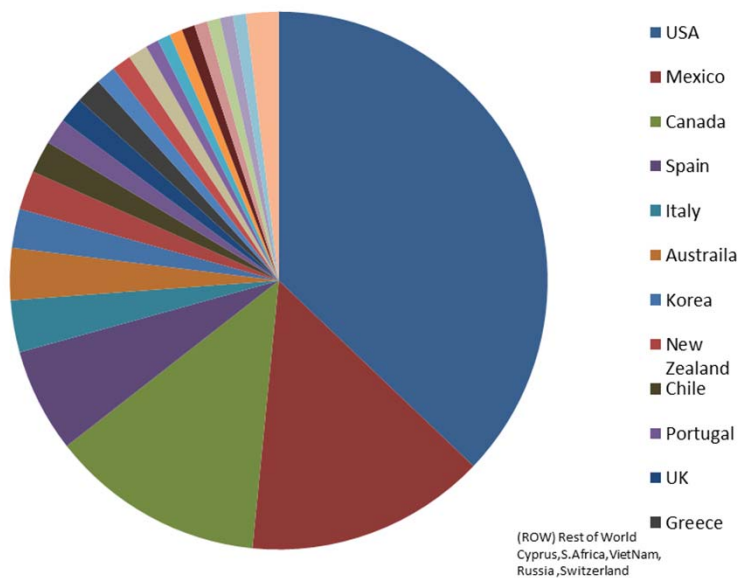
Assures food safety: allows you to sleep at night



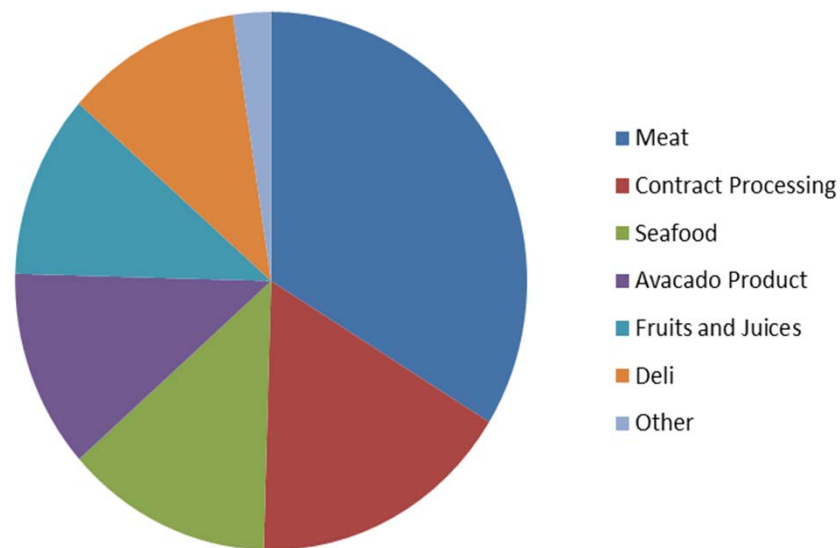
HPP Grows Globally While Attracting New Customers

Segments

HPP Production Systems Sold by Country

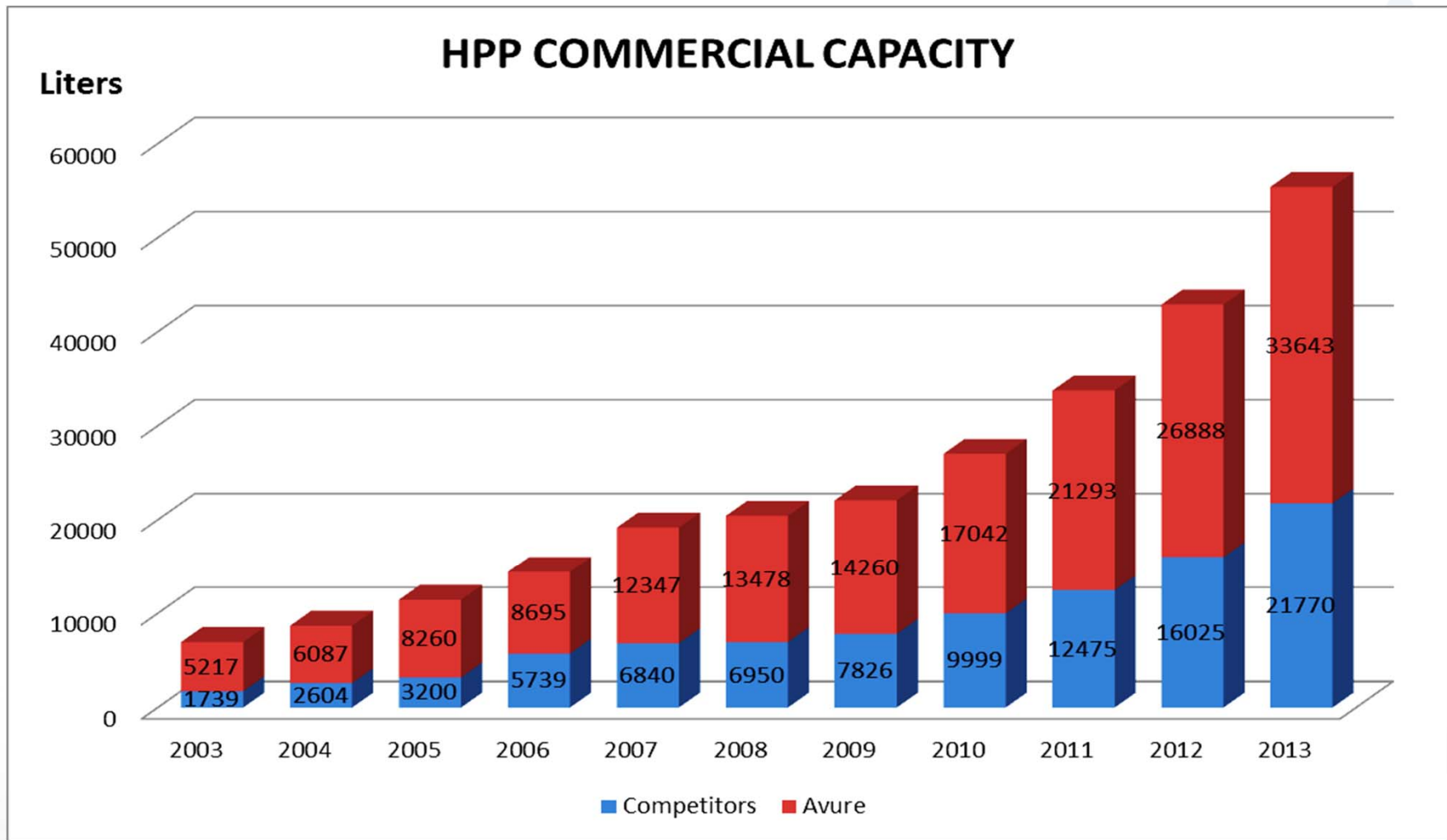


HPP Product by Production System Installed Liter



Market Growth & Avure Leadership

What does this mean to YOU?



HPP Adoption

- HPP is making headlines and gaining global acceptance
- The HPP food and beverage market is expected to reach \$12 billion by 2018
- HPP is opening the doors for new applications

The screenshot displays two news articles from FoodProduction daily.com. The top article, dated 24-Sep-2013, is titled "\$5bn HPP market growing 11-15% a year" by Jenny EAGLE. Below it is a section for "FOOD PROCESSING" with a navigation menu including Home, Topics, Voices & Blogs, Knowledge Centers, Products, Magazine, Events, and White P. The second article, dated 26-Mar-2014, is titled "HPP food market nearing \$12bn" by Jenni Spinner+. Both articles include social media sharing options and a "Subscribe to the Newsletter" button.

FoodProduction daily.com Breaking News on Food and Beverage

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\$5bn HPP market growing 11-15% a year

By Jenny EAGLE, 24-Sep-2013

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High-Pressure Pasteurization, Other Technologies, Drive Improvements In Ready-To-Eat Meats

Extended shelf life, a clean label and quality assurance for ready-to-eat meats are benefits with appeal to processors, and high pressure is one of the technologies that deliver them.

By Kevin T. Higgins, Managing Editor

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HPP food market nearing \$12bn

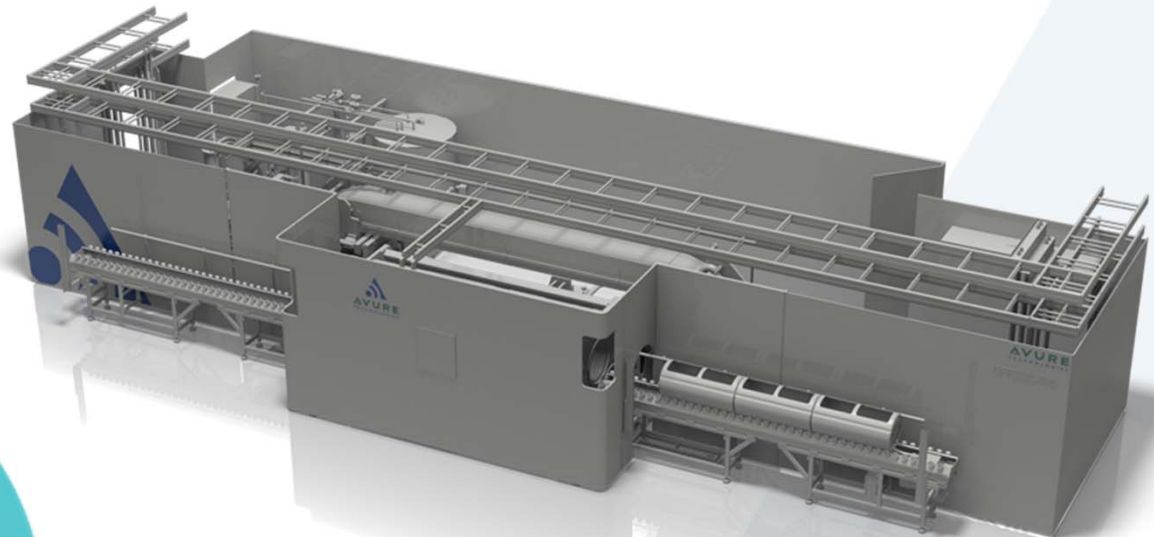
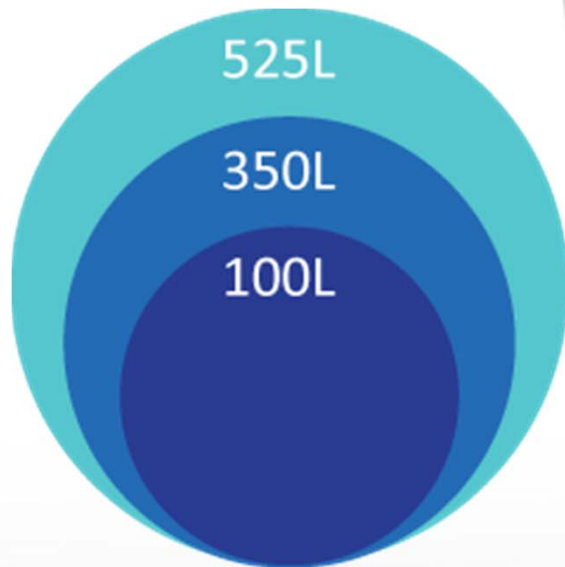
By Jenni Spinner+ 26-Mar-2014

Related tags: Food processing, High-pressure processing, HPP, Safety, Quality, Demand, Markets

Related topics: Innovation

HPP Adoption

New, higher-volume HPP systems are being built to meet producer demands



Avure QFP 525L-600

- Increased throughput
- Easier maintenance
- More flexibility
- Lower processing costs

Hormel

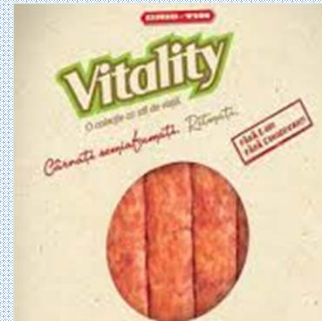
- **Natural Choice Post-package processed sliced meat**
 - Food service (Bread Ready)
 - Retail
- **Labeled “All natural, no preservatives, minimally processed”**
- **Marketing HPP on Hormel’s website**



Cris-Tim of Romania



- Initial goal: A new range of healthy, no preservative RTE meats
- Avure lab performed all formulation, packaging and HACCP
- System selection of 2 x 350L HPP systems
- Avure Marketing assisted with branding, launch plan consisting of PR, online and advertising



Created a unique, high value product line, new markets and a new Brand with the help of HPP.



Astra Foods of North America

- Family owned since 1978
- The top cheesesteak supplier in the US (supplies 75% of all 30,000 restaurants of a major chain)
- HPP for food safety and quality
- Two Avure 350L machines run 16-hours a day, 7 days a week

Top Quality Steaks
ASTRAFOODS®
in the Philly Tradition



Ifantis of Greece



- Initial goal: shelf life extension for existing products
- Avure lab performed all formulation, packaging, and HACCP
- System selection of 350L with highly adaptable material handling
- Avure Marketing assisted with branding, launch plan consisting of PR, online and advertising



Volume up 30%,
new line of all-natural salads recently launched, with the help of HPP.



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Garden Fresh Gourmet of North America

- All natural dips, salsas and meat products through use of HPP
- Sold through Costco and upscale grocery chains throughout the US



Grigoriou of Cyprus



- **Initial goal: A new range of healthy, preservative-free RTE meats.**
- **Avure lab: performed all formulation, packaging and HACCP**
- **System selection: 100L HPP system.**
- **Avure Marketing: assisted with branding, launch plan consisting of PR, online and advertising**



An family business that created new products and a unique brand, thanks to HPP.



Bolthouse Farms / Campbell's of North America

- Largest processor of carrot products-acquired by Campbell's in 2013
- Line of premium yogurt-based salad dressings
- Half the calories and fat of leading dressings without losing taste
- Active enzymes



Fruity Line/Juicy Line of the Netherlands

- Producer of cut fruit and raw juice products
- HPP has enabled distribution outside of Holland to UK, Austria, France, Germany
- Business has grown to two large commercial HPP systems



The Journey to a Successful HPP Product



Avure Lab Services

- Determine product formulations
- Optimize micro inactivation
- Optimize process conditions
- Select packaging



Avure Equipment and Contract Services

- Select horizontal, vertical, lab or seafood-specific
- Develop material handling automation
- Provide global installation and operator/maintenance training
- Contract service providers provide market entry and long term production



Avure Marketing Support

- Determine product branding
- Develop launch plans
- Execute jointly or individually



Avure Aftermarket

- Global spares depots
- 24/7 telephone support
- World wide service team

Minimize time to market, maximize success

You Have Plenty to Think About

- ✓ **Consumer needs are driving new processing methods**
 - Fresh, convenient products
 - All natural
- ✓ **Retailers want fresh but with long shelf life**
- ✓ **HPP meets both consumer and retailer needs**
 - Has strong consumer acceptance
 - Has cost per unit similar to other refrigerated foods preservation methods
- ✓ **You are not alone! We can help you get started**





Thank You!