

Hiperbaric

HIGH PRESSURE PROCESSING



WEFTA 2014, Bilbao

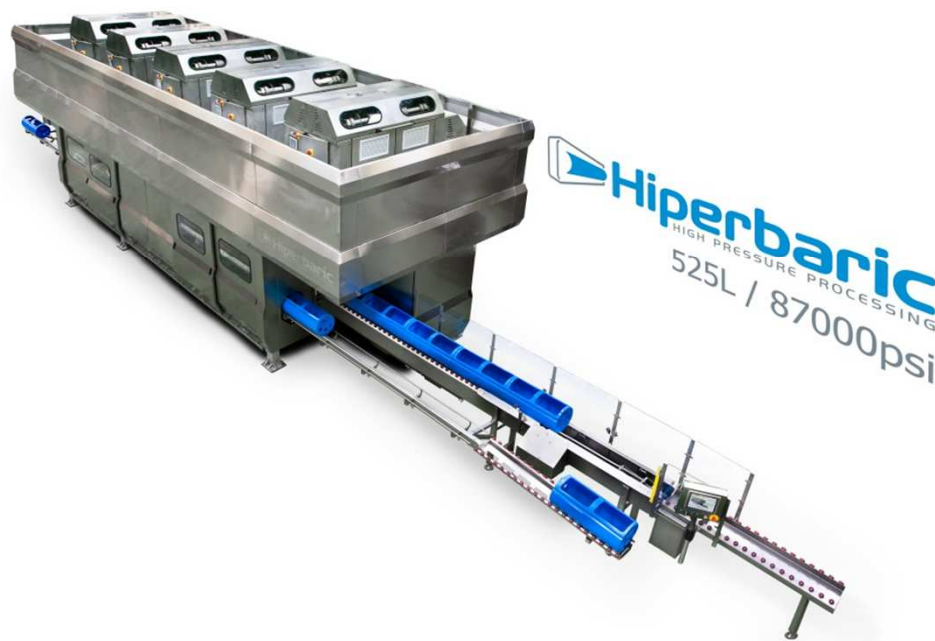
Francisco Purroy

Technical Sales Manager – Projects Europe&Asia-Pacific

Hiperbaric.com

Hiperbaric

Hiperbaric (formerly NC Hyperbaric) designs, manufactures and markets industrial High Pressure Processing (HPP) equipments for food processing since 1999



Market leader with 132 HPP industrial machines installed in 26 countries and more than 80 companies for meat, vegetable, fruits, dairy, seafood, toll processing...

¿Who we are?

Hiperbaric factory in Burgos, Spain



Hiperbaric USA, our subsidiary in Miami, USA



Hiperbaric Range

The current largest offering of industrial HPP equipment, from 250Kg/h up to more than 3,000Kg/h for the new **Hiperbaric 525**

HIPERBARIC | 55

The Hiperbaric 55 is ideal equipment for small/medium production, product development and market tests. For instance: SME's with relatively low production environments, food companies servicing "niche" markets, seasonal production, or installed in a R&D centre willing to not only investigate High Pressure Processing, but to provide real food concepts to the market and test them before upscaling.

Its robust and compact design, with one integrated single intensifier, makes it easy and quick to install in almost any facility. It is a perfect fit for the first steps into High Pressure Processing.

Equipment	Throughput (Kg/h)	Vessel Volume (liters)	Vessel Diameter (mm)	Footprint (sqm)
Hiperbaric 55	255 (562)	55 (14.5)	200 (7.9")	22 (237)



HIPERBARIC | 120

The Hiperbaric 120 is designed to service medium sized industries in need of consistent production while minimizing the initial investment. Together with the Hiperbaric 135, it is part of our range of equipment solutions for food industries with average to high production.

Hiperbaric 120 brings a highly innovative concept to High Pressure Processing. It is the first HPP equipment in the world with two integrated, but independent, high pressure intensifiers; it has no external modules, thus minimizing space requirements and facilitating hygiene of the area.

This piece of equipment was developed by integrating the most reliable components with the most advanced designs, to provide highly productive and profitable High Pressure Processing.

Equipment	Throughput (Kg/h)	Vessel Volume (liters)	Vessel Diameter (mm)	Footprint (sqm)
Hiperbaric 120	525 (1157)	120 (31.7)	200 (7.9")	37 (3989)



HIPERBARIC | 135

Hiperbaric 135 is targeted for medium-high food production environments. Its 135 litre capacity vessel together with its bigger diameter, 300 mm, provide an improved filling ratio and allows the processing of large products (whole hams, large formats etc.), enables it to achieve throughputs of more than 500 Kg/h. Its horizontal design and a contained footprint make it very easy to install, operate in an ergonomic way, and perform maintenance. The standard configuration includes two high pressure intensifiers which can work separately for optimized reliability and uptime, an exclusive characteristic of the Hiperbaric High Pressure Processing range.

A pioneer middle sized industrial equipment, it has been installed in 4 continents (America, Europe, Asia and Oceania) and in such a variety of sectors such as: meat, fruit and vegetable, juices, seafood and dairy. Many technological centers, international reference in new and innovative food products development, have this equipment as one of its main R&D tool.

Equipment	Throughput (Kg/h)	Vessel Volume (liters)	Vessel Diameter (mm)	Footprint (sqm)
Hiperbaric 135	650 (1500)	135 (36.7)	300 (11.8")	39 (420)



HIPERBARIC | 300

Since its conception back in 2002, Hiperbaric 300 very rapidly became the benchmark in big Hiperbaric units. Developed from the start as a game changer in the High Pressure Processing world, it has surpassed expectations. Its optimized vessel volume (300 L) and diameter (300 mm) along with outstanding cycle times, make it the classic high production equipment; the target for any food industry with demanding throughput requirements.

Constant improvement of Hiperbaric 300 by our Engineering Department has made it become the fastest industrial HPP equipment in the world, in its 6 high pressure intensifier version, and provided it with maximum reliability.

Equipment	Throughput (Kg/h)	Vessel Volume (liters)	Vessel Diameter (mm)	Footprint (sqm)
Hiperbaric 300	1300 (2874)	300 (79.3)	300 (11.8")	61 (657)



HIPERBARIC | 420

The Hiperbaric 420 is the best-selling HPP equipment in the market. Its productivity and profitability have been far ahead of any other equipment in the world and it represents an important improvement in efficiency and economy for food industries.

Hiperbaric 420 includes all the new features and developments in components and material design that our engineers from the R+D Department achieved, making it the most reliable and highly productive from a new generation of industrial high pressure processing equipment. Its 420 litre capacity and 380 mm diameter vessel together with its 8 high pressure intensifiers, allow this equipment to process more than 2 Tons per hour.

The Hiperbaric 420 was awarded the IFT Innovation Award (Institute of Food Technologist) in 2008.

Equipment	Throughput (Kg/h)	Vessel Volume (liters)	Vessel Diameter (mm)	Footprint (sqm)
Hiperbaric 420	2200 (4800)	420 (111)	380 (15")	56 (601)



HIPERBARIC | 525

Our latest addition, following the demands of those customers with the largest production environments. The biggest, and most productive, HPP system in the world.

With a 525 litre capacity and large 380 mm diameter, it shows throughputs of over 3,000 Kg of product per hour. It's capacity is unmatched and the resulting costs per Kg of product being processed, are the cheapest ever possible.

Equipment	Throughput (Kg/h)	Vessel Volume (liters)	Vessel Diameter (mm)	Footprint (sqm)
Hiperbaric 525	3000 (6000)	525 (14.5)	380 (15")	61 (657)

What is HPP, how does it work?

Tecnología HPP



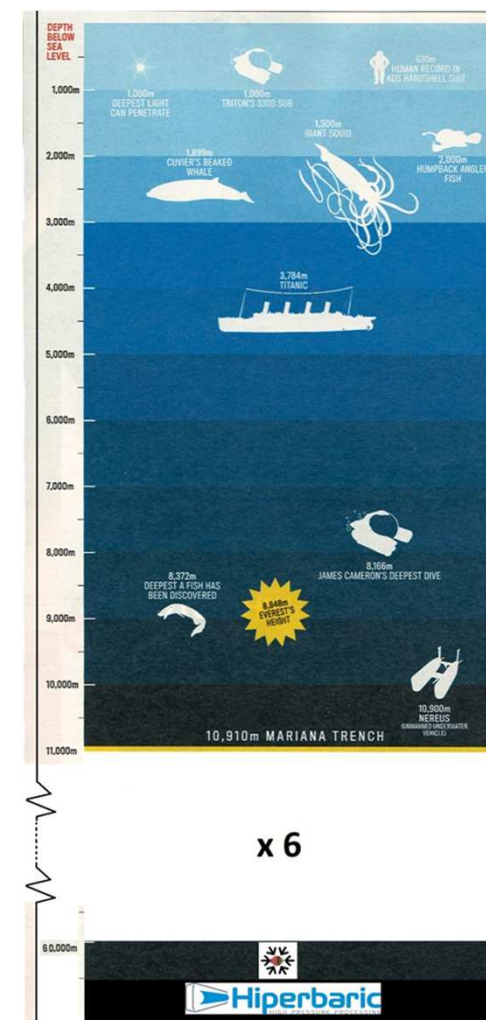
La industria de alimentos mantiene su búsqueda constante de aplicaciones innovadoras que permitan hacer cosas imposibles de

PRESSURE

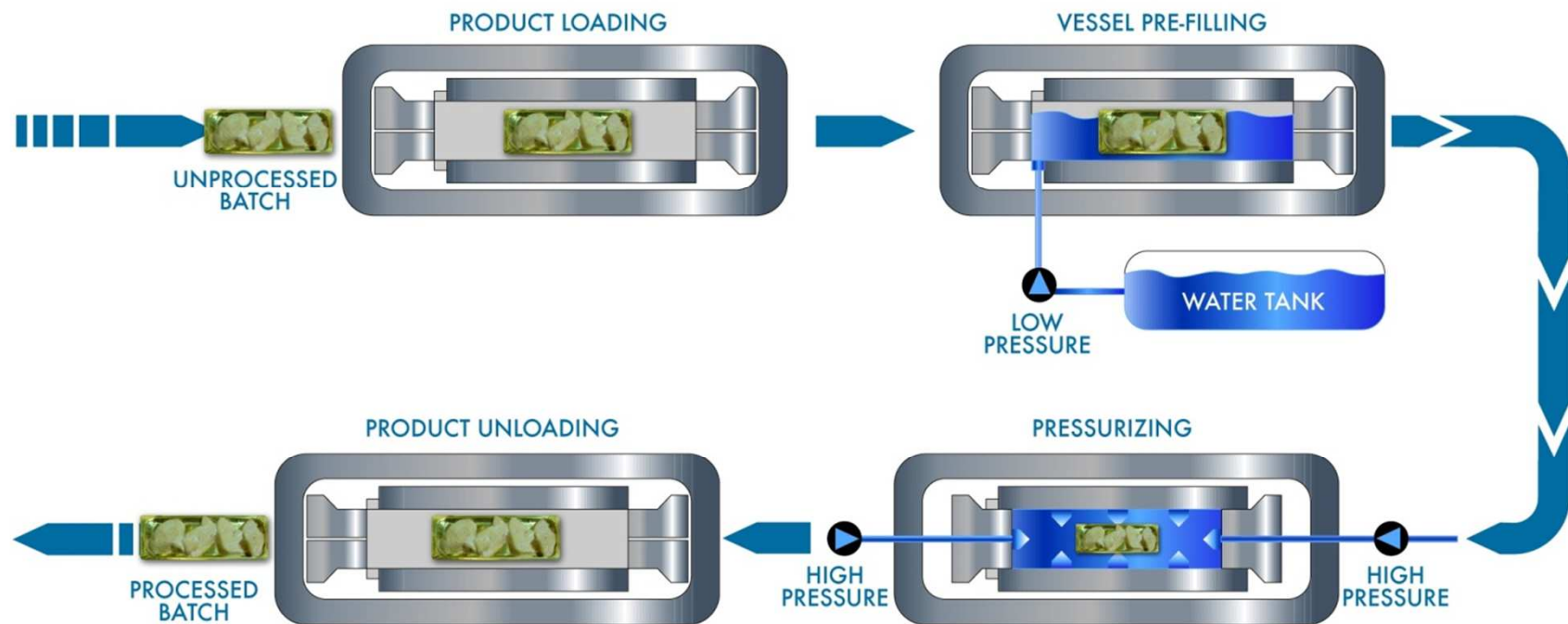
Instantaneous transmission
No gradients
Identical in every point

HEAT

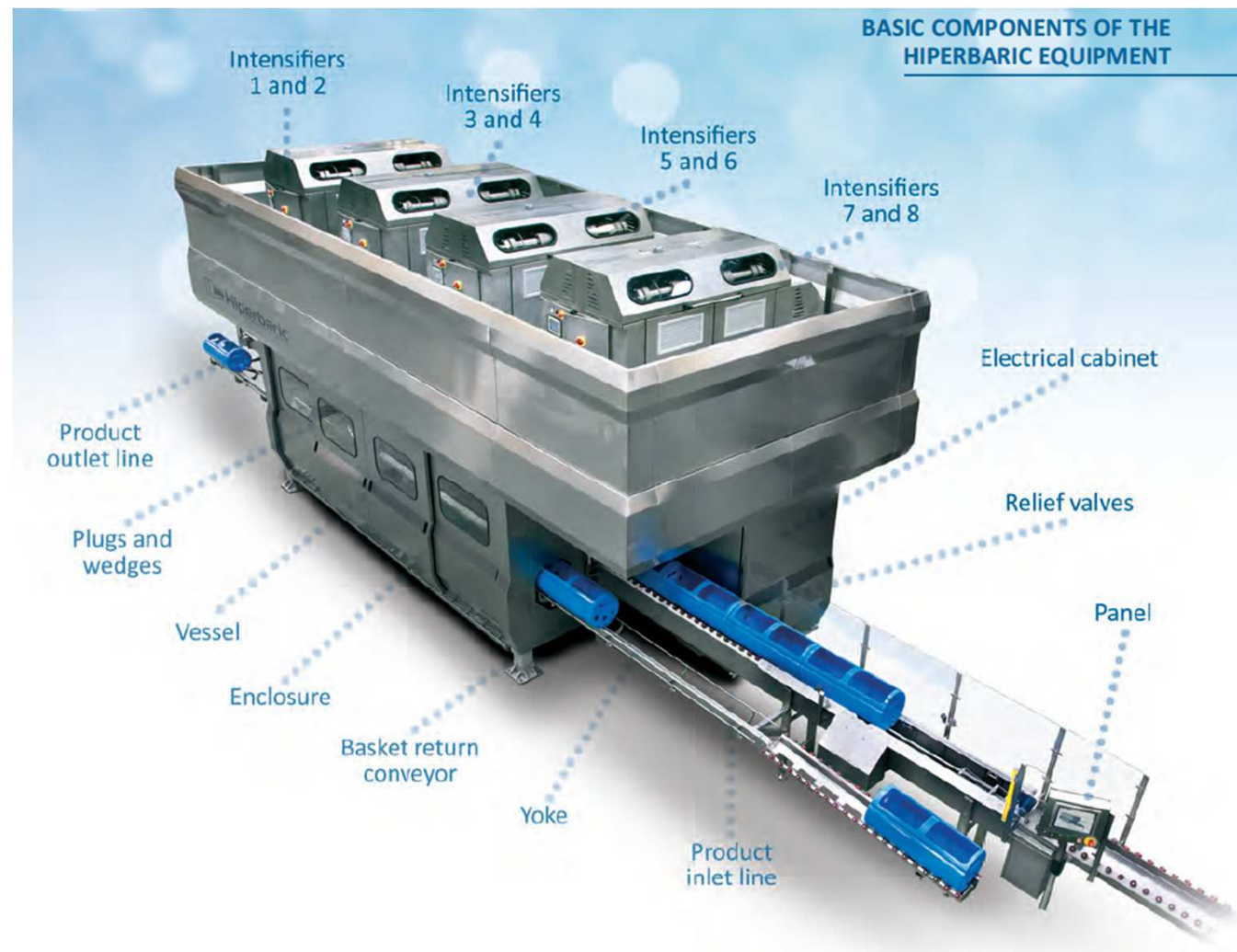
Slow transmission
Temperature gradients
Not uniform



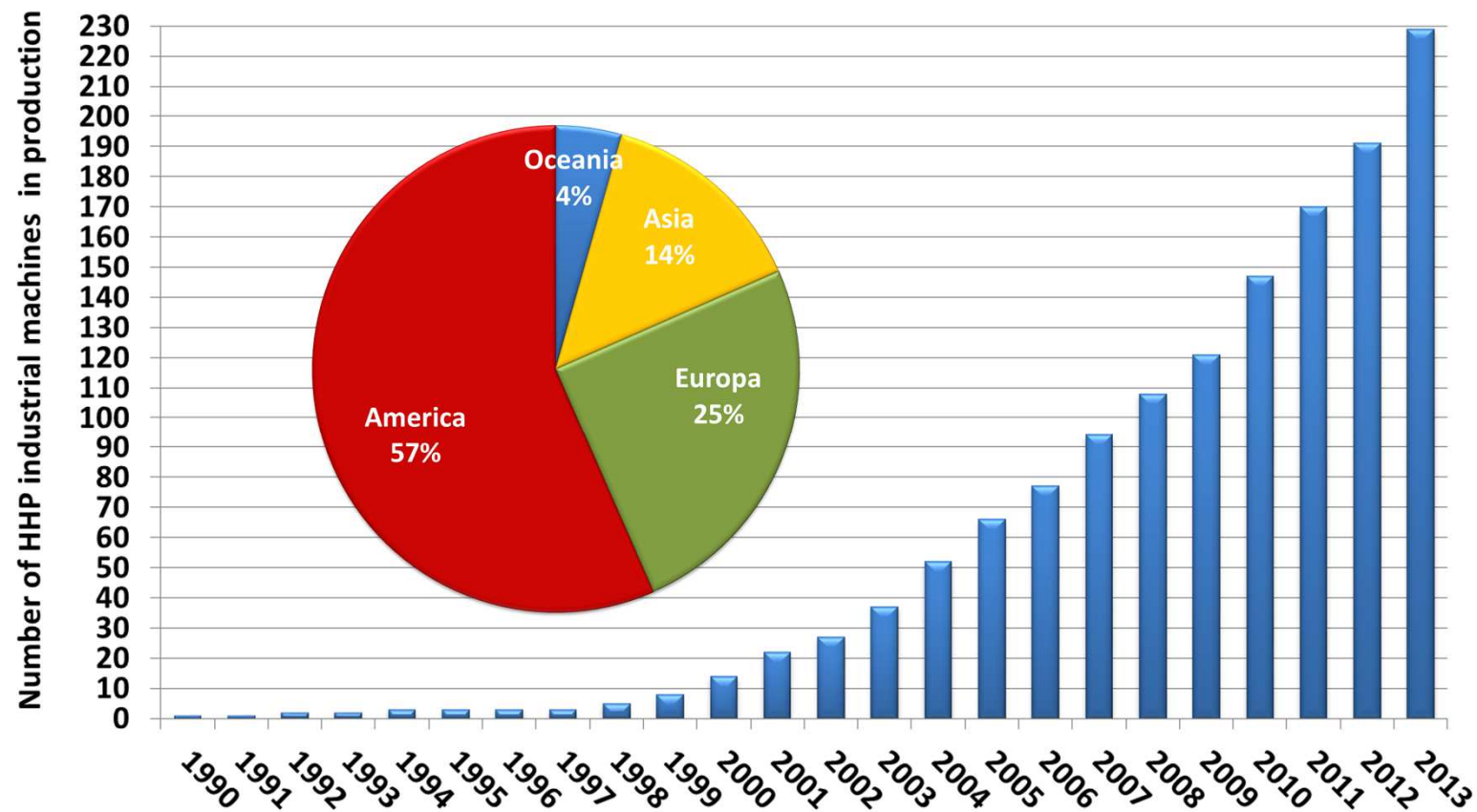
How does an industrial HPP equipment work?



Main components of HPP equipment



Evolution of number of HPP machines



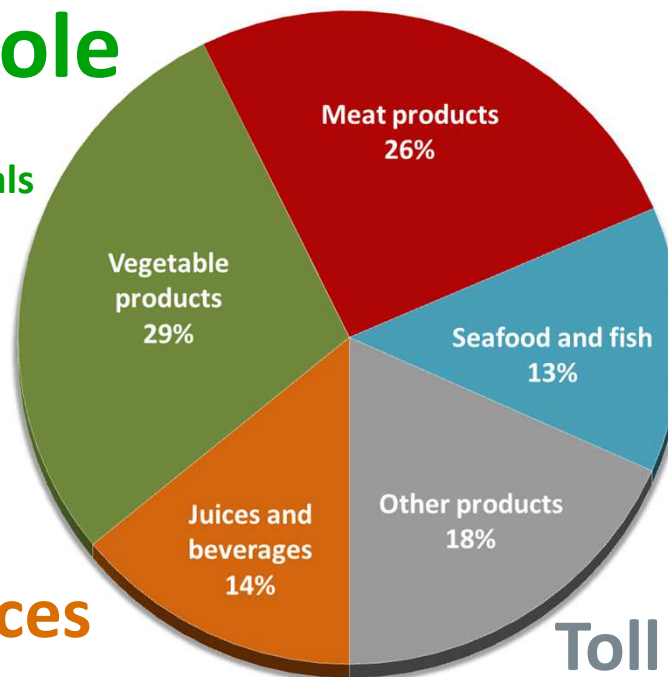
Total number of HPP production machines, end of 2013 : 229

(Not counting 15 machines already dismantled – all of them installed before 2003)

Industrial HPP machines share by food sector (2013)

Guacamole

Wet salads
RTE vegetable meals



Fruit juices

Smoothies

Vegetable juices

Pathogen-free sliced cooked meats

Preservative-free deli meats

Listeria-free dry-cured products

Raw beef products

Preservative-free sausages

Oyster shucking

Lobster meat extraction

Clams & mussels shucking

RTE seafood meals

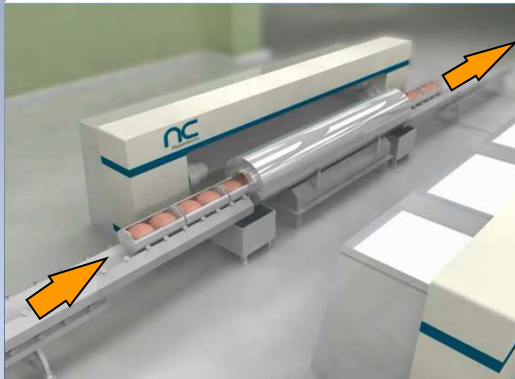
Toll processing

Cheese products

Global HPP food production in 2012 : 350,000,000+ Kg / 770,000,000+ lbs

Horizontal design

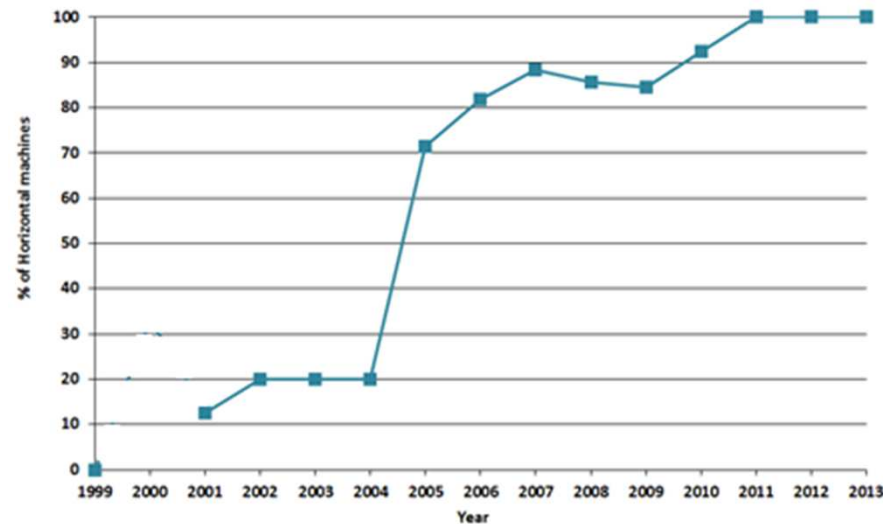
Improves product traceability



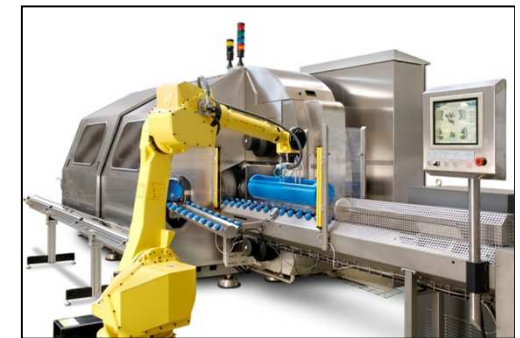
Easier to install



Evolution of % HPP horizontal equipment

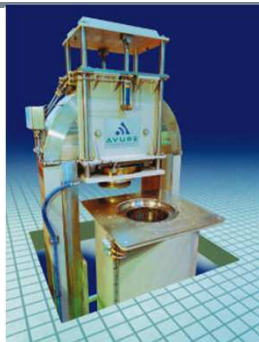


Facilitates loading , unloading, automation...

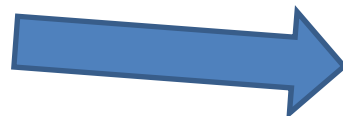


EVOLUTION: SIZE, VOLUME

2001



215 l



300 l

2004



350 l

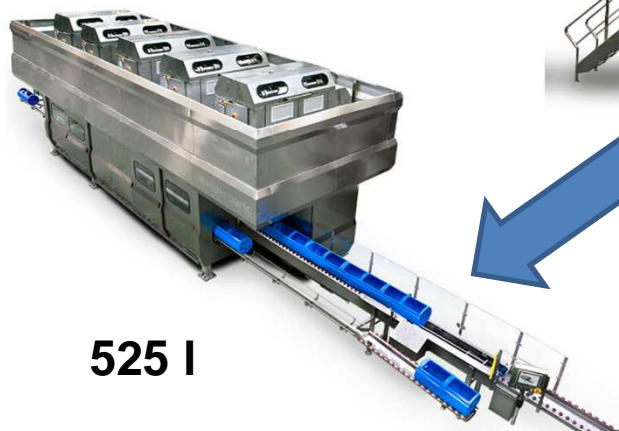


2008



420 l

2010



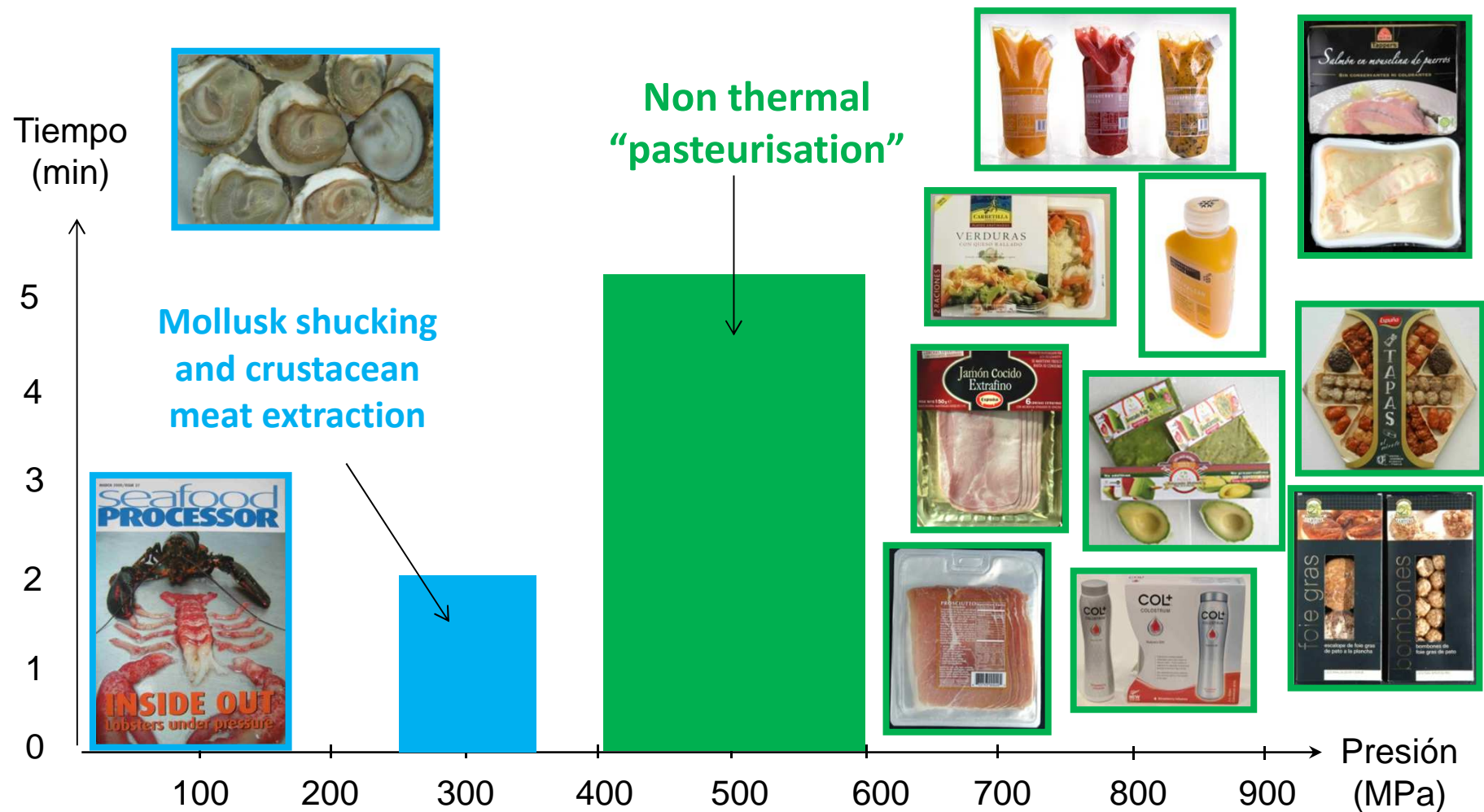
525 l

2013

EVOLUTION: SPEED

		Hiperbaric 300, 2004	Hiperbaric 300, 2007	300, 2010	Hiperbaric 300, 2013		420, 2010	Hiperbaric 420, 2013
CYCLE	Units							
Vessel filling ratio		0,5	0,5	0,5	0,5		0,6	0,6
Machine time *	min	3,4	2,9	1,45	1,33		2,05	1,72
Pressure come up time	min	6,5	5,3	3,1	2,79		2,35	1,95
Holding time	min	2	2	2	2		2	2
Total cycle duration	min	11,9	10,2	6,55	6,12		6,4	5,67
Hourly production	Kg	769	882	1374	1471		2363	2667
Hourly production	pounds	1696	1945	3030	3243		5209	5880
Daily production	tons	12,3	14,1	22,0	23,5		37,8	42,7
Yearly production	tons	3692	4235	6595	7059		11340	12800
COST PER LITRE OR KG		0,120	0,103	0,081	0,078		0,061	0,057

Two major uses of HPP technology



Commercial HPP Products

Meat products

- Pathogen destruction and brand protection
- Shelf life extension
- Products with less or no artificial preservatives, less salt etc



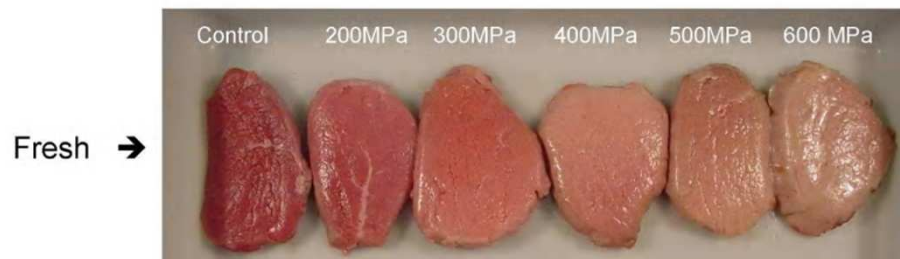
Country	Year	Products
Spain	1998	Sliced cooked ham and "tapas"
USA	2001	Sliced cooked products and prosciutto ham
USA	2001	Poultry products
USA	2002	Pre-cooked chicken and beef strips
Spain	2002	Sliced cooked meats products, Serrano cured ham
Italy	2003	Prosciutto ham, salami & pancetta
Germany	2004	Cured and smoked sliced and diced ham
Japan	2004	Nitrites-free bacon, sausages and sliced meat
USA	2005	Ready-to-eat meat based products
Spain	2005	Cured meat products & Serrano ham
Canada	2006	Cured & cooked meat products
USA	2006	Whole roasted chicken
USA	2006	Sliced cooked turkey and chicken
Canada	2006	Ready-to-eat meat meals
USA	2007	Chicken sausages
USA	2008	Cooked pork & beef sliced products
USA	2008	Pet food
Canada	2008	Sausages and bacon
Canada	2009	German style cooked meat products
USA	2009	Sliced RTE meats
Canada	2010	Prosciutto ham and cured meats
Australia	2010	Sliced and diced preservative free poultry products
Switzerland	2011	Cooked pork sliced products and sausages
USA	2011	Prosciutto ham and cured meats
USA	2011	RTE sliced meats
Rumania	2011	RTE pork products
Spain	2011	Serrano ham and cured meats



Effects of HPP on raw, fresh protein

Color and texture of raw protein: beef, pork, poultry, fish is modified at $P > 200$ or 300 MPa due to denaturation of protein and modification of polysaccharides

❖ Beef samples opened 30 min after HP treatment (5 min)



Modification of beef color with increasing pressure
 (Serra, 2008)

Changes of native pork and poultry meat by HPP



Color of turkey, chicken, pork meat
 (Heinz, 2007)

But no modification takes place on further processed protein
 –cooked, cured, etc!

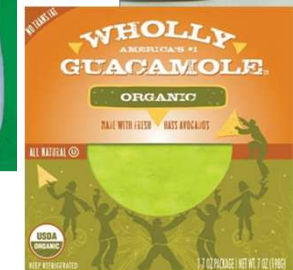
Commercial Products

Vegetable Products

- Cold “pasteurisation” and shelf life extension
- Color, flavour and nutrient retention.
- Inactivation of PPO in avocado.
- Rice starch modifications.



Country	Year	Products
Japan	1990	Fruit jams and fruit and vegetable sauces
Japan	1994	Pre-cooked & hypoallergenic rice
USA	1997	Avocado products : guacamole, sauces
Italy	2001	Fruit jams
USA	2002	Avocado products
Mexico	2003	Avocado products
Mexico	2003	Avocado products
Mexico	2003	Avocado products
Canada	2003	Apple products : jam and sauce
USA	2004	Tofu
Spain	2005	RTE vegetable meals
USA	2006	Tomato sauces
Australia	2008	Fruit pures & coulis
Mexico	2008	Avocado products
Peru	2008	Avocado products
Chile	2008	Avocado products
USA	2009	Wet salads and soups
Peru	2010	Avocado products
N. Zeland	2010	Avocado products
China	2010	Fruit jams
Mexico	2010	Avocado products
Spain	2011	Avocado products



Commercial HPP products

Juices & smoothies



COLD
PRESSURISED
NEVER
HEAT PASTEURISED



AGUA DE COCO FRESCA VILLA DE PATOS



- Shelf life extension
- Retention of flavor and nutrients
- Pathogen destruction



Country	Year	Product
France	1994	Citrus juices
Portugal	2001	Apple & citrus blended apple juice
Italy	2001	Fruit and vegetable juices
Czech Republic	2004	Broccoli & apple, beetroot, carrot juices
USA	2007	Juices and superfood smoothies
Spain	2007	Smoothies & juices
Australia	2008	Smoothies & juices
Northern Ireland	2008	Wheatgrass & broccoli sprout juices
The Netherlands	2009	Smoothies & Juices
USA	2010	Citrus juices
Mexico	2010	Agave juices
Korea	2010	Juices and smoothies
Italia	2010	Smoothies
UK	2011	Apple juices
USA	2011	Coconut water
USA	2011	Super fruit and vegetable juices
Korea	2011	Citrus juices

Commercial HPP products

RTE Seafood

- Cold “pasteurisation” and shelf life extension
- Reduction of cooking process
- Reduction of additives and acidity of seafood salads
- Sandwich fillings without additives...



Our Equipment in production

Natural



MRM (Spain)

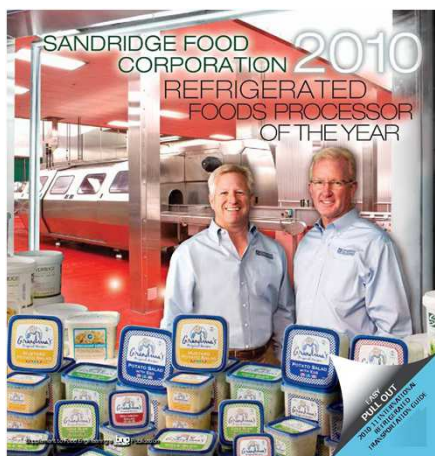
Hiperbaric 55 – All Natural RTE meals



Our equipment in production

Sandridge (USA)

Two Hiperbaric 420 for wet salads, soups, chowders



New Premium Seafood Salads and Dips Available

Sandridge launches Pacific Coast Cuisine, delivering seven new seafood items.

MEDINA, Ohio (Oct. 4, 2011) – Sandridge Food Corporation introduces seven new premium seafood salads and dips in its latest product line—*Pacific Coast Cuisine*. The flavor-packed salads are made with smoked salmon, tender shrimp and premium surimi crab and are



available in the following flavors: Coastal Seafood Salad, Crab and Dill Salad, Shrimp and Crab Salad, Crab Slaw, Cajun Crab Dip, Honey Smoked Salmon Dip, and Low Country Crab Dip. The Sandridge Culinary Team developed these new Pacific Coast Cuisine Premium Seafood Salads and Dips with the consumer in mind. The recipes are made with recognized and trusted ingredients and are small-batch mixed—a philosophy that has built Sandridge's reputation, and the finished product and ingredient statements reflect this.

Additionally, Pacific Coast Cuisine premium seafood salads and dips are designed to have seafood listed as the first ingredient on the back-of-package ingredient statement—an important detail when marketing premium seafood salads and dips.

<http://www.youtube.com/watch?v=BBnNxJ2DV2o>

Hiperbaric.com

Our equipment in production

Shelf-life increase
Pathogen-free

Rodilla (Spain)

Hiperbaric 135 for sandwich fillings
(tuna, surimi, smoked salmon)

Rodilla



MITI (France)

Shrimp and mussels



MITI Restauration

Respect du produit et du goût

TOUT NOTRE **SAVOIR-FAIRE** AU SERVICE DU

RESPECT
DU PRODUIT
ET DU GÔÛT

NOS ATOUTS

- RÉACTIVITÉ, FLEXIBILITÉ, ADAPTATION
- INNOVATION
- SOURCING SÉCURISÉ ET TRACABILITÉ TOTALE

NOS PROCÉDÉS EXCLUSIFS




• MITI GRILL
• BIOPRÉSERVATION

A VOTRE ÉCOUTE

- SERVICE COMMERCIAL SPÉCIALISÉ RHF
- SERVICE R&D À VOTRE DISPOSITION

LA HAUTE PRESSION

- DLC LONGUE SANS CONSERVATEUR OU SANS ACIDIFIANT
- TEXTURES ET SAVEURS PRÉSERVÉES

LES PRODUITS DE LA GAMME RHF





MOULES PICANT

400G - 4 BARQUETTES / COLIS
DLC : 24 JOURS - DÉPART USINE
CODE EAN : 3 760 070 013 306
MOULES CUITES DÉCOQUILLÉES MARINÉES AVEC UNE SAUCE RELEVÉE À BASE DE POIVRONS, PIMENT ET AIL.

- Texture et goût authentiques
- Sans acidifiant

UTILISATION
FROID POUR ENTRÉE OU COCKTAIL



MOULES AIL ET PERSIL

400G - 4 BARQUETTES / COLIS
DLC : 24 JOURS - DÉPART USINE
CODE EAN : 3 760 070 013 313
MOULES CUITES DÉCOQUILLÉES MARINÉES AVEC UNE SAUCE AIL ET PERSIL

- Texture et goût authentiques
- Sans conservateur

UTILISATION
FROID POUR ENTRÉE OU COCKTAIL



MOULES NATURES

400G - 4 BARQUETTES / COLIS
DLC : 24 JOURS - DÉPART USINE
CODE EAN : 3 760 070 013 320
MOULES CUITES DÉCOQUILLÉES

- Texture et goût authentiques
- Sans conservateur

UTILISATION CHAUD OU FROID



ENCORNETS AIL ET PERSIL

400G - 4 BARQUETTES / COLIS
DLC : 24 JOURS - DÉPART USINE
CODE EAN : 3 760 070 013 337
TRONÇONS D'ENCORNETS GEANTS MARINÉS AVEC UNE SAUCE HUILE D'OLIVE, AIL, PERSIL ET CITRON

- Texture tendre
- Sans colorant

UTILISATION
FROID EN SALADE, CHAUD À DORER À LA POÊLE OU À LA PLANCHA



CREVETTES CRUES DANS L'HUILE

350G - 4 BARQUETTES / COLIS
DLC : 24 JOURS - DÉPART USINE
CODE EAN : 3 760 070 013 344
CREVETTES DÉCORTIQUÉES CRUES CONSERVÉES DANS L'HUILE

- Texture inédite : crevettes croquantes et intenses
- Sans conservateur

UTILISATION
CROQUANTE ET JUTEUSE APRÈS CUISSON (PLANCHA, POÊLE...) FONDANTE ET SUCRÉE EN TARTARE

Fresh fish: future application

Sea bream in skin pack – 600 Mpa – 4 min



Microorganisms (cfu/g)	C	HPP	C	HPP	C	HPP	HPP	HPP
Days of storage at 4°C	0	0	5	8	12	15	25	35
Mesophilic	$6 \cdot 10^3$	21	$2 \cdot 10^5$	99	$4 \cdot 10^8$	48	48	$5 \cdot 10^7$
Psychophilic	230	<3	$2 \cdot 10^5$	<3	$9 \cdot 10^7$	<3	<3	$3 \cdot 10^7$
Enterobacteria	570	<3	$6 \cdot 10^4$	<3	$4 \cdot 10^7$	<3	<3	<3
Clostridium sulfito-reductor	<3	<3	<3	<3	<3	<3	<3	<3
<i>Listeria monocytogenes</i>	P	A	P	A	P	A	A	A

LEGEND: C : control, HPP : High Pressure Processed, P : Presence, A : Absence

Commercial HPP applications

Opening/shucking of bivalve mollusks

Pressure denatures the adductor muscle



- Opening at cold temperature
- Hand labor savings
- Yield improvement
- Inactivation of virus and bacteria (Vibrio)
- Oysters, mussels, cockles, clams...



Manual shucking in raw



HPP Shucking



Our equipment in production

Future Cuisine-Export LTD (New Zealand)

Hiperbaric 55 for greenshell mussels



Mussels ready to HPP



4 minutes



HPP MUSSELS,
shucked.
Unloading stage



Tip onto shaking table



Shaking and meat-shell
separation



Our equipment in production

Mitsunori (Japan)

Hiperbaric 55 for clams, lobster, whelk



http://www.youtube.com/watch?v=OYSbc1_I7tM

HPP commercial products

Crustacean meat extraction

Crustacean flesh is compressible, but the shell is not!

- Easy meat extraction
- “Raw” quality and flavor profile of meat retained
- Yield improvement around 20%
- Lobster, Homard, king crabs...



Our equipment in production



Ocean Choice (Canada)

Hiperbaric 300 for American lobster meat extraction



Ocean Choice International Inc.

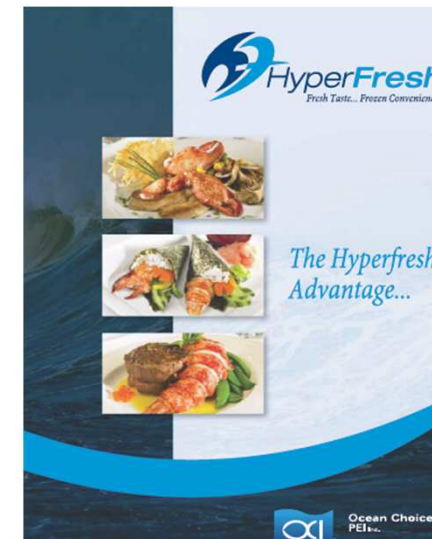
Hiperbaric.com

Ocean Choice (Canada)



HYPERFRESH CULINARY ADVANTAGES

- ♦ **ENHANCED SAFETY** – The HyperFresh processing system dramatically reduces food safety risks by destroying virtually all bacteria during the high pressure processing.
- ♦ **ENHANCED QUALITY** – HyperFresh technology ensures a higher level of tenderness while retaining sweet flavor and snappy texture.
- ♦ **CREATIVITY** – Less handling and preparation time means more time for menu creativity and presentation.
- ♦ **DINING EXPERIENCE** – Whole meat and claws results in a more impressive meat extraction from the whole boiled lobster, providing a more pleasurable dining experience for customers.



HYPERFRESH COST ADVANTAGES

- ♦ **PRICING** – Cost certainty means stable menu pricing and cost forecasting.
- ♦ **YIELD** – 100% meat yield! The HyperFresh process ensures that virtually 100% of the meat can be easily extracted from the shell.
- ♦ **DISTRIBUTION** – Seamless! HyperFresh provides fresh live quality and is distributed through traditional broadline frozen distribution systems reducing regional price variances and higher freight costs.
- ♦ **LABOR** – Easy meat extraction! Because the HyperFresh pressure process separates the meat from within the shell there is minimal preparation time and handling.
- ♦ **HOLD TANKS** – HyperFresh technology delivers fresh live quality without the need for lobster tank investment – eliminating costly tank maintenance and improving inventory yield.
- ♦ **SHELF-LIFE** – HyperFresh Lobsters and Lobster Meat are cold-pasteurized and vacuum packed prior to freezing. This improves shelf life after thawing.

Our equipment in production

Hautes pressions

Cinq Degrés Ouest en action

En mai dernier, nous vous annoncions la création d'une unité de traitement hautes pressions destinée à décortiquer les homards et les crustacés. Voici en images, la solution développée par la jeune société Cinq Degrés Ouest.

La cellule hautes pressions HC Hiperbaric, 55 L installée dans l'atelier de Cinq Degrés Ouest chez l'industriel Cadoret.

Après traitement hautes pressions, le homard se décortique facilement sans perte de matière.

Les queues tout juste décortiquées sont disposées sur un film plastique qui va les convoier à l'intérieur du tunnel de surgélation Linde.

Après cryogénie, les queues sont mises en poche avant d'être conditionnées sous-vide.

C'est à Riec, au bord de la rivière du Belon, dans une partie des bâtiments des Huitres Cadoret, que la jeune société Cinq Degrés Ouest réalise une première en France : le traitement par hautes pressions des homards et coquillages.

Dans le local, des ogives sortent d'une enceinte, elles contiennent des « bleus », des homards bretons. Ils viennent d'être traités par hautes pressions. Ils sont aussitôt déchargés sur des tables où les opératrices coupent les élastiques des pinces, les pinces et sortent la chair de la carapace, aussi facilement qu'un esquimau de son étui !

Les corps sont déposés sur le tapis d'un tunnel de surgélation Cryoline de Linde. A la sortie, ils sont conditionnés sous-vide un par un. Il aura fallu moins d'une demi-heure pour décortiquer et emballer les queues de homards.

Hautes pressions, haute qualité

Ainsi, depuis quelques mois, Cinq Degrés Ouest crée de la valeur ajoutée grâce à son cycle de traitement hautes pressions breveté et à la cryogénie. L'association de technologies permet de restituer dans l'assiette les qualités organoleptiques des homards, à l'identique d'un produit sorti du vivier.



LA PAROLE À Alexis Taugé, gérant de la société

Nous travaillons, pour les restaurateurs, du homard de pêche reconnaissable aux antennes longues, à la carapace dure et bien remplie.

Les queues de homards, traitées ce matin-là, ont été expédiées vers la cuisine d'un grand restaurant parisien. « Les chefs ont été saisis par la qualité. Le produit reste dans son jus tout au long du traitement, il conserve le goût et la texture du frais », souligne Alexis Taugé, créateur de Cinq Degrés Ouest. Ce qui ne surprend pas puisque dans les procédés hautes pressions, c'est l'eau qui est le vecteur de la pression. Et dans cette application, c'est de l'eau de mer qui est utilisée. Pour le moment, seuls les coques et les homards sont traités ainsi.

Actuellement, les Canadiens sont les principaux fournisseurs du marché français (30 à 35 tonnes) mais Alexis Taugé espère prendre 15 % de parts de marché. Et déjà, il envisage d'autres types de produits. Un projet Valorial, avec le fabricant de plats cuisinés Guyader vient de commencer avec des applications pour les produits traités. Une ouverture vers d'autres marchés.

ISABELLE DULAU

Cinq Degrés Ouest (France)

Hiperbaric 55 for lobster, clam, oyster

ouestfrance-entreprises.fr

Exposition aux côtés de

Produit du jour

Mercredi 15 février 2012

L'art de décortiquer le homard... à froid

La jeune société finistérienne Cinq degrés ouest, à Riec-sur-Belton, a déposé des brevets pour lancer une technologie innovante. Elle commercialise aussi les coquillages.



Le 7^{ème} Samedi 17/09/2011
Saveurs Jean-Claude Ribaut
Homard sous pression



cinq degrés ouest

Technology between innovation & tradition

The pleasure of eating fresh and healthy seafood is the reason for existing. At Cinq Degrés Ouest, this is achieved only by using the most advanced technology available to us.

The ready tradition, that of the Finistère, one of the most beautiful and fertile regions of France, is the source of our products. They give us the pleasure of eating fresh, healthy and delicious seafood.

OUR LOBSTER

The lobster is taken from the sea and distributed each day to our customers. It is then processed in our high-pressure chamber. This process does not melt the lobster and keeps it fresh and delicious. It is then packaged in a vacuum bag and frozen.

THE FLESH OF OUR SHELLFISH

From the water to the plate, the lobster is always fresh. The quality of pressure cooking is the guarantee of fresh products. The shell is not damaged and the lobster is ready to eat.

OUR HALF-SHELL OYSTERS

The fresh half-shell oysters are taken from the sea and distributed each day to our customers. They are then processed in our high-pressure chamber. This process does not melt the oyster and keeps it fresh and delicious. It is then packaged in a vacuum bag and frozen.

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OUR RANGE

- Our Lobster
- Our Shellfish
- Our Oysters
- Our Crabs
- Our Prawns
- Our Scallops
- Our Mussels
- Our Seafood

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Shucks Maine Lobster (USA)



WILD CAUGHT SUSTAINABLE - INNOVATIVE

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Raw In The Shell



HPP'd Tails in Shell



Split Maine Lobster



Whole Frozen Lobster

Raw Shucked Maine Lobster



'Naked' Maine Lobster




Raw Claw/Knuckle meat



Raw shucked tails meat

Animal welfare

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September 17, 2013
PETA says Maine lobster processor has cruel 'kill' method
 But it's unclear whether the practice is outside the industry's norms, and unproven that crustaceans feel pain.
 By Eric Russell erussell@pressherald.com
 Staff Writer

A controversial animals-rights group is targeting a Maine lobster processor for what it considers inhumane slaughtering methods, although it's unclear whether the methods are outside the industry's standards.

People for the Ethical Treatment of Animals plans to release video footage Tuesday that it says was taken in a processing plant in Maine, the state that's synonymous with lobster.

The organization, which has conducted and publicized hidden-camera investigations into factory farming of chickens and dairy cows, among other animals, called the methods shown in the video cruel. It said it plans to file a complaint with local authorities Tuesday alleging that the lobster processing plant violates Maine's animal cruelty statute.

However, there are no state or federal laws that govern how a lobster should be killed during processing, and it has not been established whether crustaceans feel pain.



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Weekly Circulars

CONCLUSIONS

Although there is no direct evidence of welfare of crustacean processed by HPP, available scientific literature suggests that meat extraction by HPP does not lead to suffering during processing. The process is conducted at room or chilled temperature and high pressure induces, in few seconds, changes in neurological processes at cellular and physiological level which inhibit pain and distress of animals.



THE BEHAVIOR OF CRUSTACEANS DURING HIGH PRESSURE PROCESSING



ABSTRACT

High Pressure Processing (HPP) is a non-thermal food processing technology that allows for food products with a longer shelf-life and safer, while preserving nutrients and their fresh taste and appearance. Industrial applications use high pressure to extract meat from crabs and lobsters.

Several studies have shown crustaceans have the capacity to suffer and to experience pain. European Food Safety Authority (EFSA) classified decapods in Category 1 status, animal who are able to experience pain and distress after concluding that largest of the decapods have a pain system.

Pressure induces different physiologic responses in crustaceans (low metabolic rate, reduced activity), depending the species and pressure level. Exposure above 7,348 psi (50.6 MPa) is lethal in many marine animals. At cellular (neuronal) level high pressure induces several changes, reducing influx of Ca^{2+} , inhibiting neurotransmitter release, which affects presynaptic response. These changes are related to high pressure does affect N-type Ca^{2+} channels, key mediators of nociceptive signaling. Nociceptive (high intensity stimuli) mechanism is associated to pain experience. It is possible to suggest that HPP would not induce pain in crustaceans, since the inhibition of these channels induced by pressure would lead to an analgesic response.

Although there is no direct evidence of welfare of crustacean processed by HPP, available scientific literature suggests that meat extraction by HPP does not lead to suffering during processing.

Document redacted by Diego Wilches, PhD. Applications and Process Development
 Document verified by Carole Tonello, PhD. Applications and Process Development Manager
 Hiperbaric

Hiperbaric.com

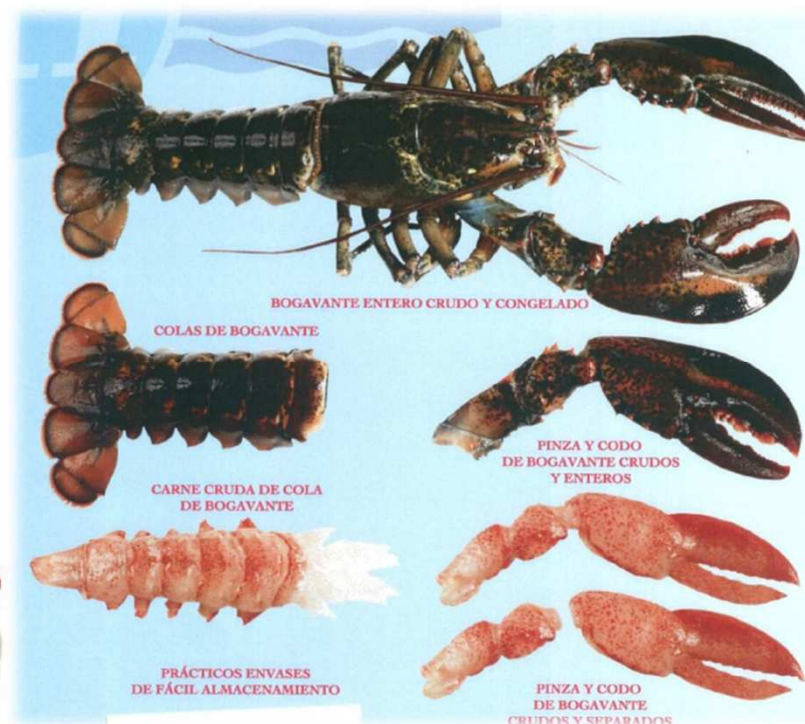
Maresmar (Spain)

maresmar



Maresmar presenta en Conxemar
el **bogavante Hyperfresh**.

Es “la combinación perfecta
entre negocio y placer” ya que su
presentación permite ahorrar
tiempo de elaboración, de
preparación y espacio de
conservación y “**sabe y resulta
exactamente como el bogavante
fresco vivo**”.



¡La carne es compresible pero la cáscara no!

Schmidt Seafood (The Netherlands)



PASCALISATION

OYSTER AND LOBSTER REINVENTED



A cutting-edge approved preservation process known as pascalisation makes it possible to enhance food safety by means of preservation using water pressure. It allows food to be kept longer and also has certain other advantages for chefs and consumers: oysters will open without having to use a knife, and lobster will loosen from the shell so that more lobster meat can be used and be processed raw as well.

Michelin two-star chef Moshik Roth has been studying the phenomenon of pascalisation for a number of years and conducted a series of tests in collaboration with food design company Top BV and production company Chez Pascal BV in Wageningen, The Netherlands, in order to achieve the very best results. New opportunities are presenting themselves!



Reactions from chefs of top restaurants are full of enthusiasm:
... a fuller and more refined texture ... new possibilities for preparation ... cooking at low temperatures ... oysters can now also be grilled... the juices are fully drawn into the meat ... It gives lobster a deeper colour ... tastier ... it's now easier to process it raw ...



THE ONLY FISH FRESHER THAN OURS IS STILL SWIMMING.




WHAT IS PASCALISATION?

Pascalisation is a new preservation method in the Netherlands. Food is naturally subject to decay, but can be kept longer by using preservation methods such as pasteurisation (heating briefly), sterilisation (prolonged heating) or adding preservatives. The disadvantages of these ways of preservation may be a loss of nutritional value, vitamins and taste.

With pascalisation, packaged foods such as meat, fish, fruit and vegetables are

Our equipment on site

Canadian Centre for Fisheries Innovation (Canada)

Minister Dalley with Robert Verge, managing director, Canadian Centre for Fisheries Innovation during a tour of the centre's High Pressure Processing unit.

<http://www.mi.mun.ca/news/title,9905,en.php>



AZTI-Tecnalia (Bilbao)

La cocina de lo imposible en Madrid fusión

Una feria gastronómica en Madrid nos trae sabores con imaginación, limones con sabor a manzana, platos que cambian de color o lo último para combinar los sabores de un plato y a la vez percibir los olores que nos inspiran.

Me gusta 74 Twitter 1 +1 0 Compartir 0 Comentarios



En febrero 2011 en esta revista, Azti-Tecnalia mostró su procesador de altas presiones de 55 litros, Hiperbaric, y sus buenos resultados. Aquí ampliamos el tema, y nos apartamos totalmente del tratamiento térmico, que Azti-Tecnalia llaman 'Esterilización térmica asistida por presión'.



Fig.2. Procesador de 55 litros de AZTI-Tecnalia.

Tratamiento de altas presiones para el desarrollo de nuevos productos



La alternativa al tratamiento de pasteurización por calor con mejores propiedades sensoriales



HPP TOLL PROCESSING AND COPACKING

**25 tolling companies, 4 technology centers,
30+ machines in total**

- **USA:** Millard Refrigeration, Ameriquel, APC, Safepac, Quantum, GL Foods, Universal Cold Storage, Eddy Packing, HPPFS, Fresh Bev
- **Canada:** Natur+I XTD, CDBQ
- **Taiwan:** Kee Fresh
- **Benelux:** Pascal Processing
- **England:** Deli 24
- **Italy:** SterilParma, Hybartec, Parco ASDI
- **Spain:** APA Processing, MRM, Rodilla, CENTA-IRTA, ITACyL



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You are welcome!

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