

Ingenuity in Marination & Injection with High Viscous Brine



Protein Processing with JBT
**Significantly Increasing Yields, Reducing Labor,
Maximizing Uptime**

Mother Nature's Protein Gets a Boost

Consumer demand for low-sodium, clean-label products has become the new normal. This reduction in functional ingredients has greatly affected the water retention of fresh marinated products forcing producers to lower injection levels to control purge. Meat protein, or functional meat protein brines, bind water naturally.

JBT and Proteus have come up with ways to marinate fresh products with low sodium, or even no added salt, that do not purge.

Reduce labor requirements while increasing throughput:

- Inject muscles for jerky, slicing onto trays or oven belts
- Reduce water and increase solids; locking-in the important flavor components

Plant based protein is a growing category, HVB offers solutions to inject thicker marinades that improve retention, texture, and flavor of the product.

Enter JBT Polar Fusion

Backed by years of primary, secondary, and further processing knowledge, the experts at JBT recognized the need for improved technology High Viscous Brine (HVB). Not only does JBT offer its core base of industry-proven food processing equipment, we've taken it steps further to increase profitability. Each of the products offer a wide range of benefits.

Increase yields of fresh meat

where higher injecting levels will not purge in the package

Increase cook yields

from improved water binding with natural meat proteins

Enhance sensory attributes

with improved texture from decreasing phosphates or hydrocolloids while maintaining juiciness even when overcooked

Significantly minimize labor

Precise product weights & dimensions

More throughput

Mechanical advances

that reduce maintenance while improving uptime

Seamless integration

into your current processes

Advanced technology

USES

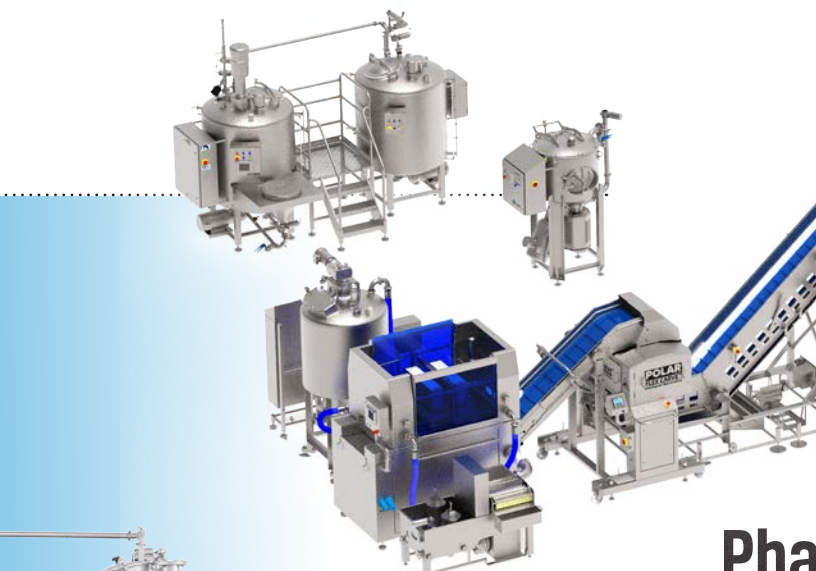
Jerky	Poultry
Deli Meats	Proteus Functional Protein Brine
Alternative Meat	Fat Injection
Fresh Meat	Fish & Shrimp



Brine Preparing | Homogenizing | Injecting
 Return Milling | Storing | Macerating
 Massaging | Cooking | Freezing

	Brine Preparing	Meat Trimming	Homogenizing	Injecting	Return Milling	Storing	Macerating	Massaging	Cooking	Freezing
JBT Wolf-tec™ Polar Fusion Dissolver	✓									
JBT Wolf-tec™ Polar Fusion Homogenizer			✓							
JBT Schröder IMAX HVB Injector				✓	✓					
JBT Wolf-tec™ Flexcarve Macerator							✓			
JBT Wolf-tec™ Polar Massagers								✓		
JBT Stein CM II Charmarker									✓	
JBT Stein JSO IV Impingement Oven									✓	
JBT Stein GYRoCOMPACT Spiral Oven									✓	
JBT Frigoscandia GYRoCOMPACT Self-Stacking Freezer										✓
JBT Northfield™ CleanFREEZE										✓

The JBT Polar Fusion High Viscous Brine System in 3 Phases



Phase I

The initial high viscous brine is prepared and applied to the protein substrate

BRINE PREPARATION

Base brine is mixed and chilled prior to addition of all-natural ingredients



1

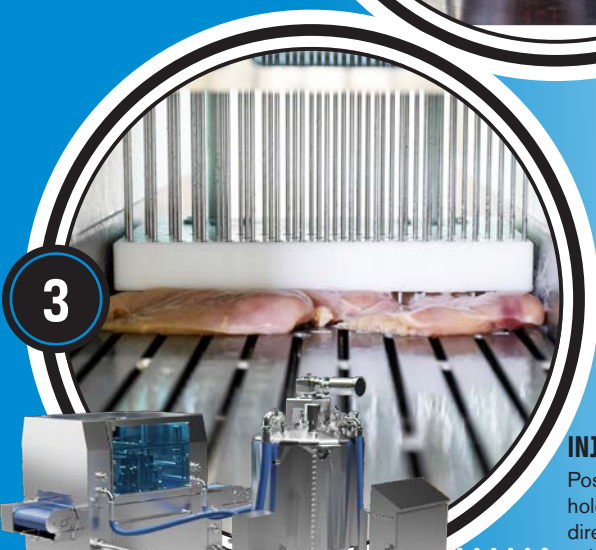


HOMOGENIZATION

All-natural protein trimmings are added to the base brine and then mixed/sliced until the brine reaches a uniform, highly viscous consistency



2



3

INJECTION & RETURN MILLING SYSTEM

Post-homogenized solution is transferred to a holding tank, where it can then be accessed and directly injected into whole-muscle protein substrates. After injection, excess solution is collected, run through a mill to re-filter the solution and then cycled back into the saddle tank for further use.



Phase II

Additional ingredients are added and the brine is applied to the protein substrate

MACERATION

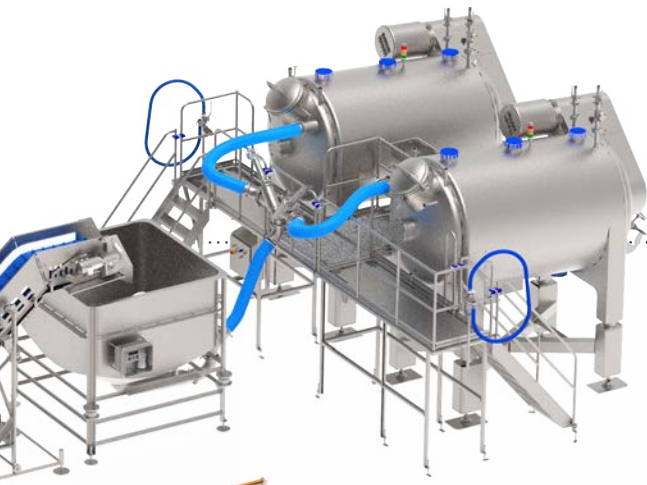
Depending on the product, additional ingredients may be added to the brine and the protein substrate is marinated through the system

4

MASSAGING

Depending on the product, additional ingredients may be added to the brine and the protein substrate is massaged through the system

5



Brine Preparing | Macerating
Massaging | Cooking | Freezing

Phase II



Final secondary processing steps applied to improve product yield even

Phase III

The product is fully cooked or sent to final processing stages

MACERATION

At application, a maceration step is added to help achieve specific product characteristics or increase cumulative product yield through surface preconditioning



COOKING

Product passes through 1 or more oven stages to fully cook the protein substrate. A variety of oven styles such as spiral, impingement, char-marking, etc. can be utilized on their own or in conjunction with each other

FREEZING & FURTHER PROCESSING

Fully cooked product is either frozen or sent for additional processing like smoking or freezing.

MASSAGING

At application, a massaging step may be added to significantly improve product binding and nutrient distribution. Combining this with marination enhances this even further.



Char-Marking



Impinging

6



Steaming, Roasting, Baking



Cooking, Frying



Freezing

7



Packaging

Wolf-tec™ Polar Fusion Dissolver PDM/PDH 250

Phase I

Step 1

Brine Preparing



During Brine Preparation, the Base Brine is Mixed and Chilled Prior to Addition of All-Natural Ingredients

CONSISTENT BATCH, EVERY TIME

- Manage ingredient order, temperature, mix time and velocity for consistent brines batch after batch

ELIMINATE CLUMPING

- Automated eductor valves allow for dry ingredient addition without brine clumping

MIX CHALLENGING INGREDIENTS

- Optional high shear mix head provides a competitive advantage when dealing with difficult ingredients such as starches or gums

Polar Fusion Dissolver PDN/PDH 250

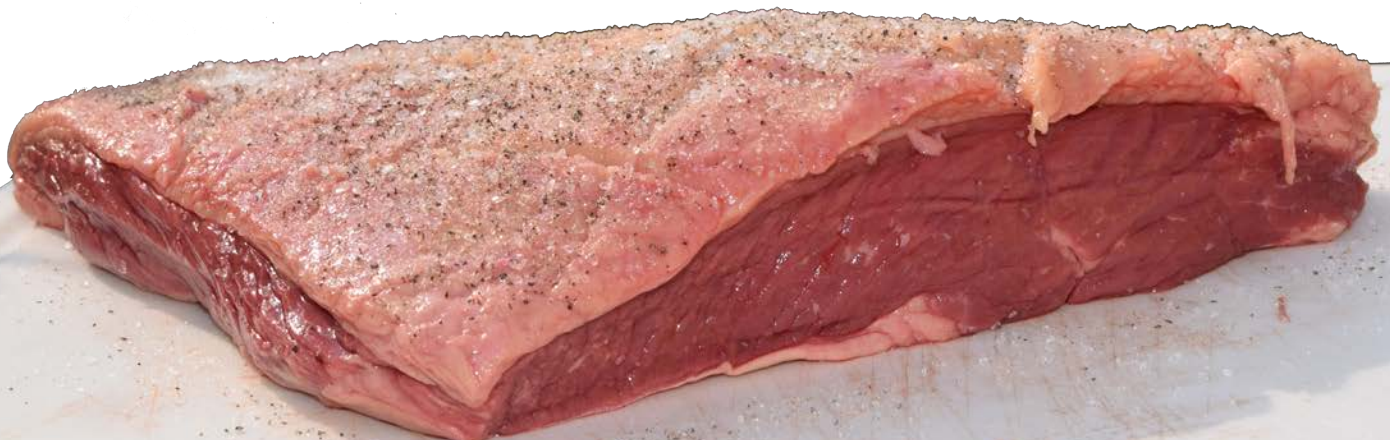
ATTRIBUTES & OPTIONS

100% temperature control: Accommodate a wide variety of brine specifications with the ability to precisely control temperature during the mixing process.

Consistent mixing: Eductor allows for ingredients to be introduced directly into the liquid stream to eliminate clumping during the mixing process.

Touchscreen controls: User-friendly controls reduces operator error and simplifies recipe management. A recipe programming option is available.

Modular design: Tanks sizes are available in 250, 500, 800 gallon and more. Suitable to easily expand your operation.



Wolf-tec™ Polar Fusion Homogenizer



Phase I Step 2

Homogenizing

During homogenization, all-natural protein trimmings are added to the base brine then mixed/sliced until the brine reaches a uniform, highly viscous consistency

ELIMINATE OR REDUCE ADDITIVES

- Incorporation of all-natural meat trimmings eliminates or reduces additives such as sodium & phosphates

INTRODUCE MULTIPLE PROTEIN TRIMMINGS

- Capable of handling a variety of different whole-muscle trimmings such as white & dark meat poultry, turkey, beef, and pork

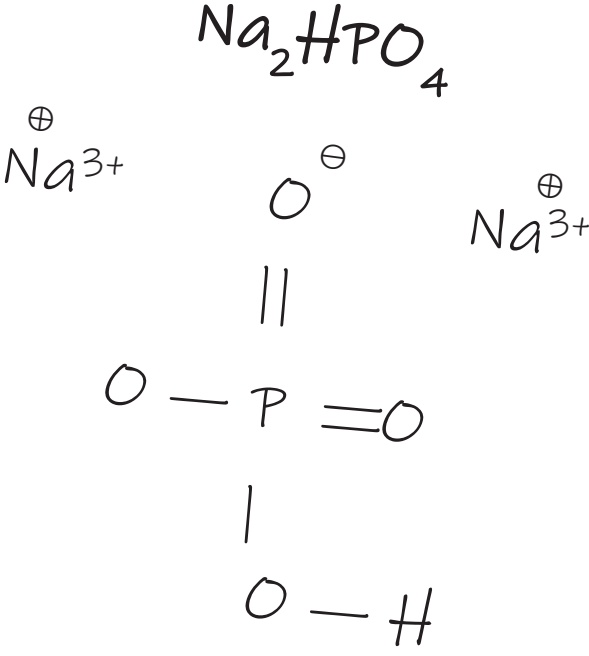
Polar Fusion Homogenizer

ATTRIBUTES & OPTIONS

Standard pre-cutting: The pre-cutting knife improves mixing consistency and increases operator control while the meat trimmings are added during homogenization.

High-speed slicing: Secondary slicing system utilizes a high-speed knife with 'hole plate' to transform protein trimmings into a uniform, highly viscous brine.

Recipe controls: Touchscreen controls make recipe monitoring precise, consistent, and easy from batch-to-batch.



Schroeder IMAX 630 HVB Injector

Phase I Step 3

Injecting & Return Milling



Post-homogenized solution is transferred to a holding tank where it can be accessed and injected into whole-muscle protein substrates. Then, excess solution is collected, run through a mill to eliminate needle clogging (*like a filter*), then cycled back into the saddle tank for further use

INCREASE PRODUCT MOISTURE

- Injection of all-natural ingredients is more effective at retaining product moisture than non-protein binders

EXTEND BRINE LIFE

- Incorporation of a return milling step allows for excess solution to be filtered and re-introduced back into the Polar Fusion System

IMAX 630DH-HVB Injector

ATTRIBUTES & OPTIONS

Specialized needles: Specially designed needles have wider openings to accommodate thick, highly viscous brine.

Brine pump: High-capacity brine pump is capable of handling 7-65 psi (.5-4.5 bar) pressure.

Needle manifold: Needles in the retraction block allow injection for bone-in product.



Wolf-tec™ Flexcarve Macerator

Phase II

Step 4

Macerating



Flexcarve Macerator

ATTRIBUTES & OPTIONS

Adjustable blade depth: Easily adjustable blades allow for protein penetration at a variety of surface depths.

Adjustable Pneumatic rollers: Multiple roller configurations allow for single or double-pass maceration.

A maceration step may be added to help achieve specific product attributes or increase cumulative product yield through surface preconditioning

IMPROVE PRODUCT BINDING

- Surface treatment of product increases protein extraction for an improved product bind

ACCOMMODATE MORE APPLICATIONS

- Multiple macerator blade options provide a wide variety of surface treatments. Razor blades, castellated blades, Star blades, and blunt rollers available



Wolf-tec™ Polar Massagers

Phase II

Step 5

Massaging



A massaging step may be added on its own or in combination with maceration to greatly improve product binding and ingredient distribution

INCREASE INGREDIENT DISPERSION

- Patented massager paddle action provides more uniform dispersion of ingredients
- Improved ingredient dispersion forms a stronger water/protein matrix for yield improvement during cooking

IMPROVE MOISTURE ABSORPTION

- Optional or available “Temperature Guidance System” cycles product through multiple heating and cooling temperature bands to improve moisture, product color, protein extraction, and yield

Polar Massagers

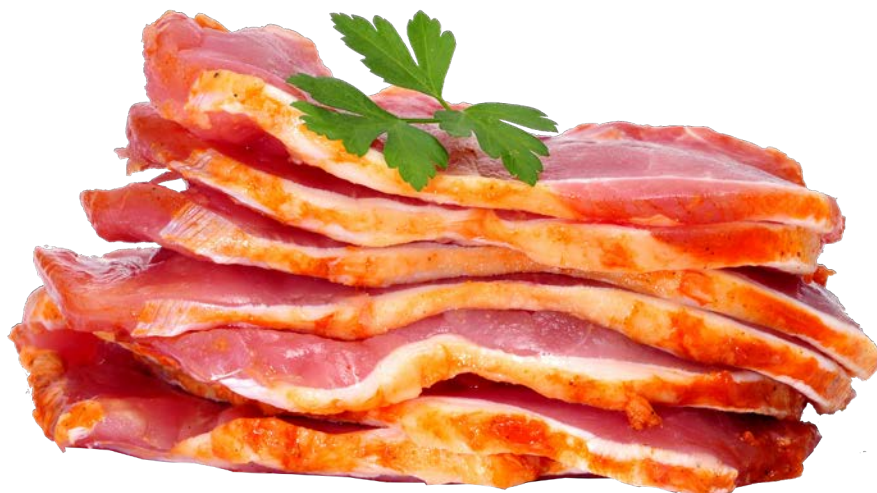
ATTRIBUTES & OPTIONS

Recipe-driven controls: PLC controller stores specific maceration settings by application and can eliminate costly user errors with simplified controls.

Accu-massage torque controls: Real-time product condition monitoring automatically reduces paddle speed if product becomes too dry; avoids over-working.

PolarVision Process Monitoring: Automated press controls ensure recipe specifications are met and allow remote monitoring and alerts.

Modular Vacuum Loading System: Can be incorporated with a Polar Massager to provide total, in-line automated loading of massaged product.

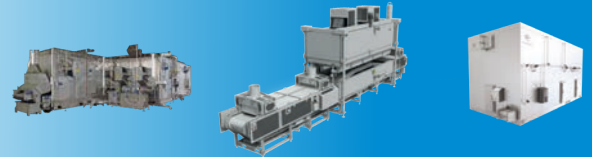




Phase III

Steps 6 & 7

Cooking | Freezing | Further Processing



COOKING

The Cooking process may involve multiple pieces of equipment to reach your desired product attributes

INCREASE YIELD

- Combining cooking with process optimization during Phases I & II can achieve overall yield increase as much as 5%!

IMPROVE OVERALL FLAVOR PROFILE

- All-natural ingredients create a firmer bite and better-tasting end-product when fully cooked

ACCOMMODATE A VARIETY OF PRODUCT ATTRIBUTES

- With a wide selection of oven options, JBT can help you obtain your ideal color, texture, or surface treatments

FREEZING & FURTHER PROCESSING

After the cooking stage, product is either frozen or sent to subsequent further processing stages

FREEZE OR CHILL PRODUCT TO VARYING DEGREES

- From slightly chilled to fully frozen, JBT has a freezer option for your application

CUSTOMIZEABLE CAPACITIES

- Based on your specific operation, choose your freezer or chiller to perfect your product



JBT DSI™ Ingenuity in Protein Processing



JBT iOPS

A JBT iOPS service agreement is designed to give you access to industry-leading machine monitoring solutions to optimize your uptime, maximize your machine output and yield performance, and ensure the production of best possible quality products for your customers. JBT experts are also available to provide insights to support your continuous improvement processes and to provide data-driven solutions for enhanced, predictive service support.



JBT Commitment to Safety

JBT Corporation accepts our responsibility to protect the safety of our employees, their families, our customers and the public. Our continued commitment to stringent safety standards in everything we manufacture is an integral part of our business to benefit you. Our equipment is engineered to achieve continuous and measurable improvement in safety.



JBT Hygiene by Design

Food processing boasts some of the harshest environments for electronics and mechanized parts. JBT equipment is specifically designed to flourish in just those conditions as well as to provide the most sanitation-friendly solutions that directly affect your bottom line.



JBT PRoCARE®

A ProCARE service agreement is designed to give you a predictable monthly cost based on your equipment use for each machine. Customize scheduled preventive inspections, maintenance, parts, and other benefits that offer peace of mind minimizing unexpected/budget-shattering costs.

JBT PROTEIN PROCESSING

PRIMARY

CHILLING | WEIGHING | PUMPING | CUTTING-UP | SKINNING | WATER RE-USING | ENHANCING FOOD SAFETY

STATE-OF-THE-ART EQUIPMENT DESIGNED TO YOUR SPECIFICATIONS FOR CHILLING AND INITIAL PROCESSING OF RAW MATERIALS LIKE POULTRY, MEATS & SEAFOOD INTO FOOD COMMODITIES FOR BOTH HUMAN AND ANIMAL CONSUMPTION.

SECONDARY

PORTIONING AND SLICING | BRINE PREPARATION | HOMOGENIZATION | INJECTION & RETURN MILLING | MACERATION | MASSAGING | TENDERIZATION X-RAY TECHNOLOGY | AUTOMATED TRAY LOADING

VALUE ADDED PROCESSING WITH GROUNDBREAKING JBT AUTOMATION, MARINATION AND INSPECTION SOLUTIONS THAT IMPROVE YIELD, REDUCE LABOR, AND IMPROVE & VERIFY PRODUCT QUALITY.

FURTHER

COATING | FRYING & FILTRATION | PROOFING | COOKING | COOLING | CHILLING | FREEZING | REFRIGERATION | CLIPPING & PACKAGING SOLUTIONS | X-RAY TECHNOLOGY | HIGH-PRESSURE PROCESSING (HPP)

YOU'VE PAINSTAKINGLY DEVELOPED RECIPES AND MANUFACTURED FOODS DISTINCT TO YOUR BRAND. JBT OFFERS COST-SAVING EQUIPMENT UNIQUELY DESIGNED AND HAND-CRAFTED TO YOUR SPECIFICATIONS.



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We're with you, right down the line.™

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