

NEW PRODUCTS ♦ NEW TECHNOLOGIES ♦ NEW IDEAS

Prepared Foods®

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■ THE ULTIMATE QUALITY IN A PACKAGED FOOD. Idle Wild Farm's Lou Cooperhouse (seated) is surrounded by Denis Damion, senior product development chef; Jacques Nee, executive chef/R&D (left); and examples of sous-vide cuisine.

Idle Wild Farm:

WHY SOUS-VIDE MAKES SENSE

The food quality benefits of sous-vide tell only half the story. This process/packaging technology offers what no other chilled food manufacturing technique can, with advantages ranging from alleviating food safety concerns to reducing waste treatment costs.

The sous-vide processing/packaging of bulk meats at Idle Wild Farm, Pomfret Center, Conn., provides superior product quality, 20% to 30% improvements in yields, and corresponding cost savings. But that's only the tip of the chilled foods iceberg here, for what is essentially "bag cooking" of bulk meats is also a steppingstone to a grander goal.

"We've proved sous-vide works for our bulk meat operations," says Lou Cooperhouse, director of technical services. "Now we're preparing to take sous-vide into foods for retail sale."

Cooperhouse is bullish on sous-vide, and not only at IWF. "Sous-vide will be the predominant technology for chilled foods sold at retail by the year 2000," he says. This statement seems a heady forecast for a method that has

traveled a bumpy road in the marketplace and shares the chilled foods market with the more established technologies of cook/chill and controlled/modified atmosphere packaging (CAP/MAP). No major producer of branded foods has committed to sous-vide—yet.

But few know the chilled foods area as thoroughly as Cooperhouse. He

helped Campbell Soup launch a refrigerated product line in 1985, played a pivotal part in commercializing the product line of U.S. sous-vide pioneer Culinary Brands, and has consulted for other companies launching sous-vide products. He bases his projection on the technology's well-documented product quality pluses and its equally impressive manufacturing benefits.

■ SOUS-VIDE'S PRODUCTION PLUSES. Mike Benhase shows PF's Rick Lingle how retained juices from meat/poultry products save IWF more than \$5,000 a month in chemical costs at the waste treatment plant.



CLEANLINESS IS CRITICAL

■ Sanitation checkpoints at a chilled foods operation extend from the floor to the ceiling. This is especially true of an assembly room for controlled/modified atmosphere products, which require a clean-room-like environment.

PHOTO A: The microbiological monitoring program at Idle Wild Farm includes taking regular swab samples of processing equipment and floor drains to verify the success of the sanitation program. Training for workers includes microbiological finger-plating to demonstrate the important contributions of personal hygiene for food handling operations. After nine months of checks, IWF reports that not a single pathogenic organism has been detected in the plant.

PHOTO B: Idle Wild Farm's comprehensive sanitation chart lists more than 800 separate checkpoints to track conditions throughout the plant. Thorough sanitation in conjunction with a comprehensive HACCP (Hazard Analysis Critical Control Point) program makes essential contributions to the safety and high quality of the foods manufactured.

PHOTO C: Even with sanitized equipment and clean personnel, there is another potential source of food contamination: the air itself. While controlled/modified atmosphere packaging operations are more demanding than sous-vide in terms of room air quality requirements, improperly maintained air quality can undermine all other efforts to provide a hygienic environment.

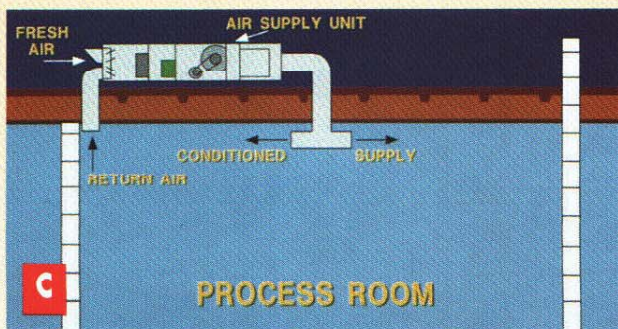
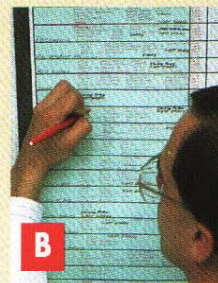


PHOTO COURTESY OF KING CO.

PHOTO A: SWAB THE EQUIPMENT. IWF microbiologist Maryam Tabatabaie swabs the blades of a meat slicer.

PHOTO B: CHARTING A CLEAN COURSE. Director of manufacturing Mike Benhase makes a notation on a small portion of IWF's detailed sanitation chart.

PHOTO C: AIR CONDITIONING. Air maintenance at chilled foods operations means more than cool air; it also means air purity.

Beginning in December 1991, IWF committed totally to internal utilization of sous-vide for its meat processing operations, about 2 million pounds of product a year.

"We're at every stage of negotiation with several companies in sous-vide development," says Cooperhouse of co-packer IWF, a supplier of frozen meals to non-retail markets including restaurant chains, airlines and institutions. Part of IWF's commitment to sous-vide includes refurbishing the former Kraft General Foods facility located adjacent to IWF's current facility, which housed production for Culinova and Chillery brands of chilled foods. IWF will use the facility as its sous-vide processing center beginning this fall.

Says Cooperhouse: "Several major food companies, now working on sous-vide, are going to make a dramatic impact in the market over the next 12



months. And, with the right package, sous-vide will take root in retail." IWF and Cooperhouse believe they have developed the right package, a prototype that Cooperhouse says is "the ideal sous-vide package for retail"—a vacu-

■ SOUS-VIDE PACKAGING.

Preformed plastic pouches and vacuum packaging machinery comprise the essentials of IWF's sous-vide packaging operation. IWF produces sous-vide meats in pouch weights from 5 to 20 pounds.

um skin packaged (VSP) tray. This approach combines the benefits of sous-vide methods in a package form—the tray—that consumers are familiar with. For its microwavable tray, IWF plans an easy-open peel seal.

VSP also provides high contact clarity, so the foods' visual appeal—enhanced because of the minimal thermal degradation afforded by the sous-vide technique—is maximized. The VSP tray negates other adverse quality connotations consumers perceive in CA/MA packages, including condensation and moisture migration.

A SOUS-VIDE BACKGROUNDER

■ Lou Cooperhouse traces sous-vide's origins to another Lou: Louis Pasteur. Cooperhouse says sous-vide has much in common with the canning process derived from Pasteur's finding. In fact, one sous-vide processor—Grace Culinary—uses a retort, commonly used for sterilization in canning operations, for its sous-vide processing.

French chef Georges Pralus is generally credited with developing sous-vide (pronounced "sue veed"), French for "under vacuum." In the 1970s, Pralus developed the technique to place raw

ingredients into pouches, seal the pouches under vacuum, cook (pasteurize) the product in the pouch, then rapidly chill it. Because cooking takes place within the pouch, the food retains superior flavor, appearance, moisture, texture, taste and nutritional value.

Several U.S. companies—Culinary Brands, Grace Culinary, Vie de France and Gourmet Fresh Foods—have since adapted sous-vide into the manufacturing environment.

Sous-vide has taken its lumps. For one, parent company Nestlé

pulled the plug on sous-vide producer Culinary Brands in 1991. On a related front, major chilled foods efforts such as Nestlé's FreshNes, Kraft's Chillery, and General Foods' Culinova have also failed.

Idle Wild Farm's Lou Cooperhouse would like to dissociate the process from the inaccurate term sous-vide; which makes no allusion to the cooking aspect. He proposes giving it a new, more literal identity—"in-pack pasteurization"—to which we add a footnote: What about vacuum-pack pasteurization?

BETTER THAN CAP/MAP

Technically, sous-vide is a CAP/MAP method. What sets it apart from other CAP/MAP methods is the post-packaging pasteurization step, which provides another advantage.

"A CAP/MAP product gradually deteriorates over time beginning with the day it's packaged. For a sous-vide food, product quality on day 21 is the same as it was on day one," says Cooperhouse. This also relates directly to food safety.

The benchmark 21-day shelf life used for many refrigerated foods is based on research contracted by Culinary Brands at the Universi-

ty of California-Davis in 1987-1990. Researchers determined that *Clostridium botulinum* spores inoculated at levels 10,000 times those ever found in nature didn't grow for at least 21 days and, in some cases, didn't grow after 60 days in sous-vide samples. It was also shown that the sous-vide process destroys listeria with a 6.72 decimal (D) reduction and salmonella with a greater than 8 D reduction.

"This reduces 10 million bacteria colonies to one. That's tremendous," says Cooperhouse. "You can't say that for a CAP/MAP product." He adds that incorporating "barriers" in the formulation (such as natural acidulants), in the process, in the packaging and in distribution temperatures will allow a sous-vide product to safely achieve a 60-day shelf life.

Because the cooking process occurs after the package is sealed, similar to canning, sous-vide has no post-process opportunities for contamination. The pasteurization time and temperature differ for each food, with the temperature ranging from 135° to 185°F, says Cooperhouse. The specific conditions, which meet or exceed USDA

cooking requirements, are different for every product.

MANUFACTURING YIELDS TO 100%

The sous-vide preparation room at IWF comprises meat processing equipment and vacuum pouching machinery. The double-sided unit is lowered to vacuumize and seal the clear, coextruded multilayer barrier pouch.

When yield goes up, waste goes down and cost savings increase. "From a manufacturing standpoint, the intent of sous-vide is cost savings and yields," says IWF director of manufacturing Mike Benhase.

"Preparing chicken breasts conventionally will give yields of 70%," explains Cooperhouse. "Preparing those breasts sous-vide brings yields to 95% or higher, with 100% yields achievable."

IWF further minimizes waste by hanging sous-vide pouches on trays in the chiller following pasteurization in the walk-in oven. Excess juice collects on one end of the pouch. On demand, the company may use its sous-vide prepared meats for entrees that are then frozen for institutional/foodservice use. The pouches are cut open

and the excess liquids can be easily drained and collected separately.

This juice collection method means less waste flowing to IWF's floor drains, which means less BOD/COD (biological oxygen demand/chemical oxygen demand) loading to the waste treatment plant. In just three months, IWF plant engineer Jeffrey Patzer documented \$15,000 in annualized savings attributed solely to chemical savings at the waste treatment plant as a result of converting to sous-vide. IWF then trucks these byproduct wastes in bulk to one of New England's largest pig farmers, which also reduces IWF's landfill costs.

One other advantage to sous-vide is that process times are faster. Benhase notes that the temperature of a sous-vide packaged product is reduced "dramatically faster" than the temperature of the same product unpouched. Additionally, the confining nature of the pouches reduces the material and manpower requirements to clean inside the ovens (used for pasteurizing) and inside the chillers.

With all those positives, sous-vide seems, indeed, to be a sensible approach to chilled foods.

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