randell

Eliminating Ice

Addressing the challenges of safe,
cost-effective seafood storage

Addressing the Challenges of Safe, Cost-Effective Seafood Storage

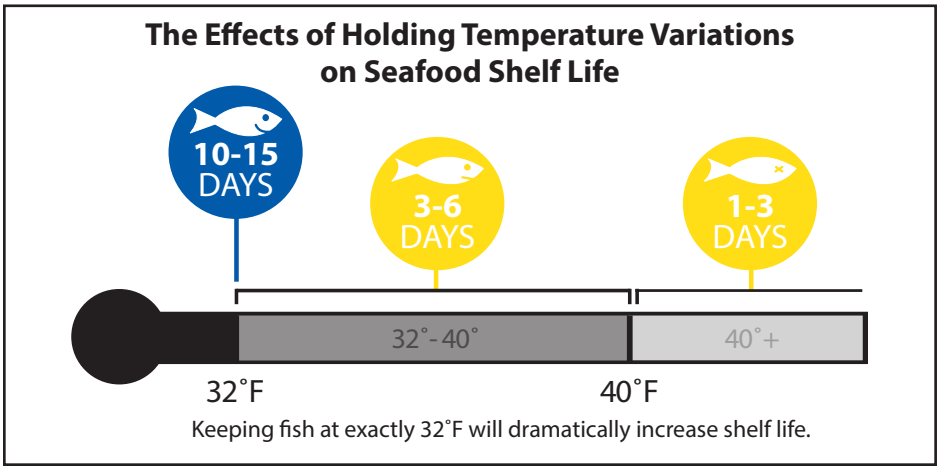
In today's foodservice industry, ice is universally used for the storage of fresh seafood because its ability to consistently hold a constant 32˚F temperature. When ice remains at that constant temperature, it will transfer to the items around it — chilling most efficiently when it melts in direct contact with the seafood itself.[1]

Fresh Fish Threat
The greatest threat to fresh fish is temperature abuse.

Not only is ice expensive to produce, it is also expensive to transport, handle and clean up. Despite owners and operators constantly looking for ways to maximize efficiency, ice has remained a costly but necessary reality due to the lack of viable storage alternatives.

The need for proper seafood storage, however, is undisputed — both in preserving quality and freshness as well as preventing waste. In fact, the greatest single threat to fresh seafood is temperature abuse. As the graphic below demonstrates, holding temperatures in a range above 32˚F can reduce shelf life significantly.

[1] Infinite R. "Regulates Building Temperatures." Infinite R. March 2014. http://www.phasechangetechnologies.com/pcm-works/regulates-building-temp/. Date of access: September 2015.



Sanitation Challenges With Ice

The Challenge With Ice

Ice has the potential to contaminate seafood.

So what about the challenges that ice poses to fresh seafood? What about the flavor — and what about the immediate environment, including the risk of contaminated ice machines?

Recent studies have shown that bacterial, viral, coliform and mold contaminations have been found in restaurant icemakers throughout the U.S. and the world — and while ice provides an efficient source of cooling for seafood, it has the potential to contaminate seafood and even cause food poisoning under unsanitary conditions.[2]

[2] Government of Western Australian — Department of Fisheries. "Guidelines for Seafood Retailers." February 2012. http://seafoodacademy.org/Documents/SeafoodRetailersGuidlelines.pdf. Date of access: September 2015.

Shelf Life From Harvest to Table (in days) & Relative Rate of Spoilage

	32°F / 0°C		41°F / 5°C		50°F / 10°C	
	Shelf Life	RRS	Shelf Life	RRS	Shelf Life	RRS
Crab Claw	10.1	1	5.5	1.8	2.6	3.9
Silver Salmon	11.8	1	8	1.5	3	3.9
Halibut	18	1	9	1.9	4.5	4
Pacific Cod	12	1	8	1.5	3	3.9

Assumes product was chilled immediately, handled gently, and held under clean conditions at each step of harvesting processing, shipping, and storage. Seafood Shelf Life as a Function of Temperature, Alaska Sea Grant Marine Advisory Program, http://seafood.oregonstate.edu/.pdf%20Links/Seafood-Shelf-Life-as-a-Function-of-Temperature-1995.pdf. Date of access: December 2015.

Note: Shelf Life at 0˚C divided by Shelf Life at x˚C equals Relative Rate of Spoilage (RRS). The higher the RRS, the shorter the shelf life of the fish.

Solutions in Today's Marketplace

Now that we have established 32˚F as the ideal temperature for ensuring the longest shelf life, a brief survey of today's marketplace reveals that two of the storage solutions are capable of maintaining this safe range —but both require manual labor and a significant supply of ice.

1 **Walk-in Ice Bins:** Where They Fall Short

These two-part container systems feature a perforated insert that allows water to collect in the bottom of the tub, preventing excessive moisture contact with the seafood. This configuration requires a layering approach where food and ice are alternately stacked, then kitchen staff must constantly monitor the ice throughout the day.

This storage solution presents some obvious challenges — chief among them for owners and operators being the labor and maintenance required due to the use of ice, as well as the amount of valuable space required for this type of unit. As ice is replaced, temperatures also inevitably fluctuate, putting the seafood at risk for early spoilage. And with drain line availability at a premium, these systems do not provide the efficient cabinet sanitation and drain maintenance required to maintain ideal conditions.

2 **Fish File Drawer Systems:** Where They Fall Short

Closely resembling an office file cabinet, the fish file system holds a set of pans in each drawer — one perforated and one solid to collect the melted ice. Special drains are built in to the rear and connected to a floor drain, automatically removing moisture from the areas where seafood is stored.

These systems require significant ice maintenance as well as thorough, frequent cleaning to remove particulates that can clog the drain outlet. Failure to properly clean and maintain these systems can result in accumulating bacteria, unpleasant odors and ineffective draining.

More importantly, however, the open/close drawer design of these units inherently affects the holding temperature of the seafood — meaning that while fish file drawer systems save space in the walk-in freezer, they do not address the core issue of temperature consistency and extended shelf life.

Refrigerated Drawer Systems: The Right Solution

By employing the use of insulated tub drawers, refrigerated drawer systems promise both an alternative to ice and a consistent temperature-holding capability.

But just like other seafood storage units, not all drawer systems are created equal, so its important to evaluate all the available features to ensure the operator chooses the best one for their specific application.

Pour Out Effect

Traditional units can swing up or down 10 or more degrees.

FX series® only varies 2 or less degrees.

Can the operator set specific holding temperatures? For applications where multiple types of seafood need to be kept at varying temperatures, ensure the unit has the ability to set specific holding temperatures. Some units offer a wide range — from -4˚F to 40˚F — giving operators the power to specify down to the single degree and even assign different temperatures to multiple drawers.

Does this capability come in a cost-effective, energy-efficient design? Some models can operate at full freezer levels all day and use less than 1.99kW of power per drawer. That translates to daily energy cost savings that go straight to the operator's bottom line.

Does it minimize or eliminate the "pour out effect"? When typical refrigeration units are opened, there is a so-called "pour out effect" where cold air rushes out from inside the unit — causing major temperature swings beyond the typical fluctuation seen in many commercial refrigeration configurations. With refrigerated drawer systems, that effect is significantly decreased and in some cases, completely eliminated.

A unique thermal imaging view (on page 6) shows how the pour out effect can quickly affect the temperature inside a standard unit compared with a Randell FX Series® refrigerated drawer system. While other drawer units can experience a fluctuation of 12-18˚F when warmer ambient air fills the cavity, the FX Series surrounds food

completely with cold air, limiting variations to just 1-2˚F while accessing product. With no ice, no significant temperature fluctuation and no wasted energy or food, refrigerated drawer systems solve the age-old challenges presented by ice storage — and gives today's operators the flexibility to store what they want, when they want, all while feeling confident that they are serving the freshest seafood available.

Fortunately, all this innovation and capability comes in a cost-effective, energy-efficient design. In fact, the FX Series can operate at full freezer levels all day and use less than 1.99kW of power per drawer. That translates to daily energy cost savings that go straight to the operator's bottom line.

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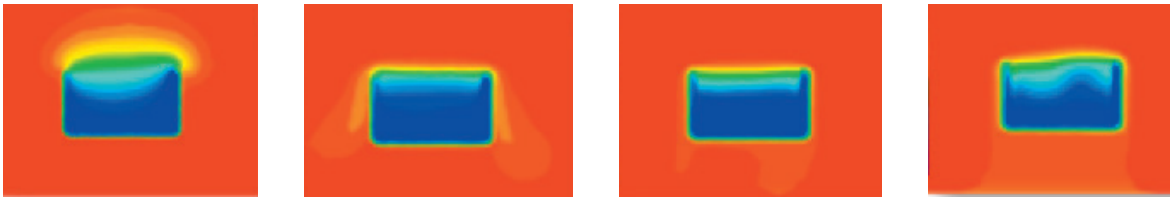
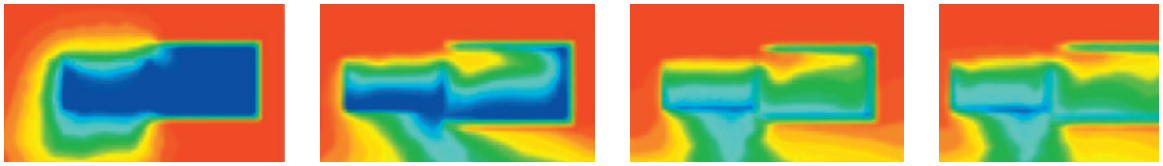
Thermal Imaging View of "Pour Out Effect"

FX Series



Side view of FX Drawer (left to right) shows the drawer in the open position as time elapses. The cold (blue) stays with the food and does not pour out of the cavity (no pour-out effect).

Traditional Drawer



Side view of traditional drawer (left to right) shows the draw with standard pans in the op position as time elapses. The cold (blue) pours out until hardly any cold surrounds the food (maximum pour-out effect).