



GONE FISHIN' FOR REFRIGERATION

Table of Contents

- Morey’s Seafood Hauls in Zero Zone Parallel Rack System..... 1
- Trolling for Reliability.....2
- Fishing for Efficiency.....3
- Landing a Smooth Transition.....5



Morey's Seafood International

Morey's Seafood Hauls in Zero Zone Parallel Rack System

Morey's Seafood International, based in Minnesota, processes and packages all kinds of fresh, frozen, and prepared fish. In the words of Vice President Mike McFee, "We work with shellfish, finfish, flatfish, ocean, lake... Pretty much if it comes out of the water, we have a way to get it."

As a Midwest leader in seafood, Morey's Seafood takes pride in being on the forefront of the industry. Their personnel serve on committees and contribute to regulations, and the company holds the highest certifications in the industry. They recently expanded one of their facilities to accommodate their growing business. "This is one of the finest food facility plants around," McFee declared. Their expansion required a reliable, efficient, and future-proof refrigeration system, with an extra emphasis on a smooth transition.

Morey's Seafood got their new refrigeration system through Russ Lindback of Applied Sales, who is an independent sales representative for Zero Zone, Inc. According to Lindback, Applied Sales and Zero Zone have worked together for nearly 20 years. "It's been a fantastic company to work with. They are very responsive to their customers, and we operate the same way, so it's been a really good team and partnership."

Join us as we take a look at the great system that Morey's Seafood caught in their nets.

Trolling for Reliability

System Facts:	Rack A (Low Temp)	Rack B (Low Temp)	Rack C (Medium Temp)
Compressors	Five (5) 44-HP reciprocating compressors	One (1) 34-HP reciprocating compressor & two (2) 22-HP reciprocating compressors	One (1) 4-HP reciprocating compressor, one (1) 9-HP reciprocating compressor, one (1) 12-HP reciprocating compressor, & two (2) 23-HP reciprocating compressors
Condensers	Large air-cooled condenser with 1,175 kBtu/h total heat of rejection	Large air-cooled condenser with 520 kBtu/h total heat of rejection	Large air-cooled condenser with 897 kBtu/h total heat of rejection
Metering Device	Electronic expansion valves (EEV)	Electronic expansion valves (EEV)	Electronic expansion valves (EEV)
Evaporators	10 low temp evaporators (-10°F) at 567 total kBtu/h	6 low temp evaporators (-10°F) at 260 total kBtu/h	24 medium temp evaporators (22°F) at 531 total kBtu/h
Refrigerant	R-448A	R-448A	R-448A
Additional Components on Each Rack: Accumulator, CPC controller, head pressure controls, horizontal receivers, hot gas defrost, leak detection, oil level regulator, oil reservoir, oil separator, UPS battery back-up power.			

The refrigeration equipment at food processing facilities must be online at all



Rack A (Low Temp)

times for food safety. Zero Zone and Applied Sales focused on durability and dependability when specifying the refrigeration equipment. “We decided to use three large industrial rack systems due to the size of the expanded facility and the proximity of the refrigerated spaces,” explained Russ Lindback. “This is a much larger facility than they’ve had in the past.” Each rack is designed with redundancy and extra capacity, which provides additional protection for the facility’s operations.

On the theme of protection, Lindback commented on the large, industrial-grade accumulators that are factory installed between the evaporators and compressors. The suction line that feeds into the compressor may carry liquid refrigerant along with the vapor refrigerant, but liquid refrigerant will damage the compressors. Compressors are often referred to as the heart of the refrigeration cycle, and it is costly and

time consuming to replace them. To protect the compressors, an accumulator collects liquid refrigerant so it can boil to vapor before entering the compressors. Zero Zone designs provide a means to protect the compressors from large amounts of liquid if a major system upset occurs by automatically adjusting the system operation to bring conditions back to normal. “Given the nature of processing plants, the load tends to fluctuate quite a bit,” Lindback commented. “We want to be able to protect those compressors and our system throughout the year as their process changes.”

Morey’s Seafood also needed a reliable system to keep stable room temperatures to maintain conditions in compliance with food safety

regulations. "They watch temperature very closely for quality control," Lindback said. The Morey's Seafood team has confirmed that the temperature regulation has been steady, saying the systems require very little adjusting.

Applied Sales and Zero Zone helped Morey's Seafood select reliable, proven components. Those familiar with industrial refrigeration systems will not be surprised by their decision to use reciprocating compressors or air-cooled condensers. However, while these components may be fairly typical, that was important to Morey's Seafood to ensure they got a dependable and reliable system.



Fishing for Efficiency

The core components used in the systems at Morey's Seafood may be typical, but the extra features were chosen with an emphasis on efficiency. "We wanted a super-efficient system that was going to do exactly what we wanted with no hassles," Mike McFee said. "We needed the right tool for the right job."

Hot gas is utilized for defrosting the evaporator coils. This helped Morey's Seafood save on installation costs, field wiring, and operating electric consumption.

Morey's Seafood also set their eyes on the future. Refrigeration regulations are changing. The last of the HCFC refrigerants are banned, and, sooner or later, the end will come for HFC refrigerants. Lindback helped Morey's Seafood choose R-448A, an HFC/HFO refrigerant blend. Lindback explained, "We decided to use R-448A for this facility because it has been a proven refrigerant on past industry projects similar



in scale to this. We've had great success with it, so we knew it would be right for them." R-448A is one of the best replacements for super-popular R-22 or R-404A due to its reduced global warming potential (GWP) and high efficiency. The temperature glide for R-448A (7-10°F) is larger than R-404A (1-3°F), but it has similar operating set points, making it simpler to switch from one refrigerant to the other. Lindback confirmed that R-448A has "been fantastic for them."

The evaporators are paired with electronic expansion valves (EEVs). EEVs with factory-installed programming efficiently manage the flow of high-glide refrigerants like R-448A, simplifying the process of commissioning the system in the field. EEVs are more energy efficient than traditional thermostatic expansion valves, primarily due to more precise control. Precise control of the refrigerant at the individual evaporators improves the efficiency of the entire refrigeration system.



One of the features that Vice President Mike McFee is most pleased with is the heat reclaim system. Refrigeration systems are designed to remove heat from a conditioned space—like a cold storage warehouse or processing plant—to cool the room. That heat must go somewhere, though, and it is typically released to the outside air by the condenser. All of that heat leaves the facility and provides no benefit to the facility. However, at Morey's Seafood, a heat reclaim system repurposes that waste heat to serve the facility.



Rack C (Medium Temp)

The heat reclaim system from Zero Zone goes to the subfloors and hot water at Morey's Seafood. Mike McFee described the feature as "spectacular." In fact, McFee says that their backup water heaters "have never kicked on. Our floor stays at 64°F. I couldn't be happier with it." While he didn't have an estimate for how much energy the heat reclaim system saves, he confirmed that the efficiency of the new facility is a huge improvement over their old facility.

Landing a Smooth Transition

Morey's Seafood needed their new facility running as soon as possible, so the transition was one of the keys to success. Russ Lindback says the foundation of a smooth transition is collaboration. "Morey's Seafood, Quality Refrigeration, and Zero Zone have all been fantastic with communication and responsiveness, and that's why we were able to turn this over on time." Applied Sales has partnered with Quality

Refrigeration on many projects, citing their loyalty and reputation for smooth installations.

Mike McFee was very pleased with the support from Zero Zone and Quality Refrigeration. "The commissioning was far less painful than we thought. They were like buying a kitchen refrigerator. Plugged them in, and they went. We couldn't have asked for any better installation, from Zero Zone to Quality Refrigeration to people running our piping. It was a super smooth transition. It was harder to commission the front offices than it was our processing facility."

The ease of installing the equipment convinced McFee that he had made the right decision. "If I was to build another facility, I would do exactly the same thing. You haven't gotten any phone calls from me, so obviously things are going just fine. The support's been great. The installation was great."

At the end of the day, the thing that matters most is satisfying customers. Mike McFee praised Zero Zone for doing "exactly what they said they were going to do." Equipped with new refrigeration systems, Morey's Seafood International will continue to process their catch efficiently and safely, reeling in new satisfied customers as they navigate the turbulent seas of retail.



Rack B (Low Temp)

For more information about this Case Study, contact:

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