

First Peruvian fishing vessel with a Vilter™ single screw compressor



Result

- The first Vilter single screw compressor installed in a Peruvian fishing vessel
- Compact refrigeration system with low ammonia refrigerant charge
- 240 tons of refrigeration capacity
- 3.13 coefficient of performance
- Complete automated control and data logging
- Higher efficiency than comparable technologies

Emerson Technologies and Services

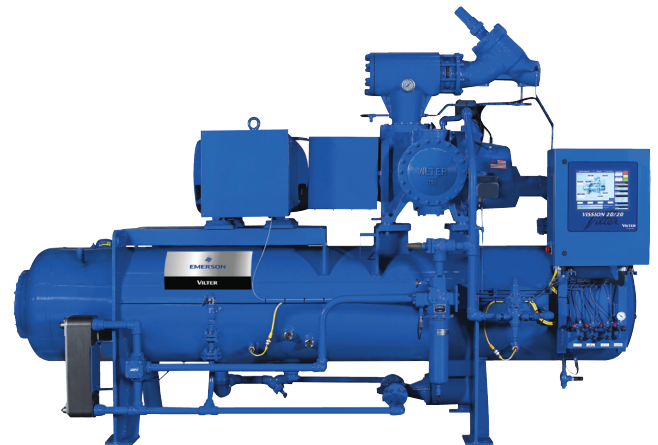
- Technical support to local distributor, Ingenieria de Sistemas de Fluidos SAC (ISF SAC), and customer
- Special designs of the Vilter single screw compressor to meet vessel requirements

Application

A closed recirculating sea water (RSW) refrigeration system for a 400 ton capacity fishing vessel. The system must keep the fish temperature in the storage tanks at 0 to -1°C to ensure high quality marine products.

Customer

The customer is a leading company in the Peruvian fishing industry dedicated to the production and exportation of high quality marine foods and ingredients, such as fishmeal and fish oil.



Challenge

Companies worldwide are constantly seeking to deliver higher quality products and lower maintenance and energy costs. Peruvian fishing companies are aligned to this tendency and are also seeking to upgrade their current RSW systems. In this context, the customer seeks to own a modern fishing fleet with a high refrigeration capacity, low maintenance and energy costs, reliable technology, and optimized working area due to the limited space on board fishing vessels.

The customer selected a particular fishing vessel for a complete renovation of its RSW refrigeration system that had been installed almost ten years ago. The old system was spread out in the machinery room and consisted of a Vilter reciprocating compressor driven directly by a diesel motor, two flooded evaporators (chillers) and large high and low pressure tanks.

The project required an ambitious and innovative design in order to meet the new criteria. ISF SAC, a Vilter distributor in Peru for more than 30 years and leading installer of RSW systems, accepted the challenge of designing, building, and installing the refrigeration system.

Solution

To reach the project goals, a 240 Ton capacity Vilter single screw compressor was selected. Two 120 ton Isotherm direct expansion chillers significantly reduced the ammonia charge on the system (less than other spray chillers and 80% less than flooded chillers) eliminating the need for high and low pressure tanks for operation. The Vilter Vission 20/20™ controls the compressor operation while an additional HMI touchscreen controls and monitors the operation of other equipment such as ammonia injection to the chillers and



temperature tendencies in the fish storage tanks. In order to optimize working area, ISF SAC designed a packaged refrigeration system where the compressor, chillers and condenser were mounted on a compact structure with interconnecting lines and refrigeration valves. The package was built and tested in ISF SAC's workshop and directly installed in the vessel as a single unit. ISF SAC also interconnected the sea water lines for the chillers and condenser to a main manifold with electrically powered butterfly valves.

The project's success and its current position as the best refrigerated fishing vessel in the customer's fleet, was due to a close collaboration between engineers, technicians, and operating crew. The system is reliable and capable of lowering temperatures in the fish storage tanks much faster than before. Operating, control, and data logging procedures have been vastly improved due to the Vission 20/20 technology and the complete automation of the RSW system. On board operators can now count on an efficient, reliable, and safe refrigeration system that will deliver high quality marine products for the world market.

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