

## The potential and Readiness for sherbet Ice installation Onboard a Thai fishing Vessel



Sherbet ice system is a new technology for hygiene fish cooling applications at sea. Sherbet ice system is the process of combining, the production of ice, and its mixing into seawater. Sherbet ice

can be pumped directly over the product to be cooled or into the fish hold where the chilly water can be further circulated as required. In case of ice is required in dry form, the mix of seawater can be drained throughout the drainage providing hold. Fish can be brought in boxes or trays with drainage holes. The fish is placed in the tray as it is caught. Sherbet ice with about 25 to 40% of ice consistency is immediately pumped over the fish, chilling its quickly from an initial temperature of 24 to 27°C cold down to approximately -4°C.

In other cases, sherbet ice is produced and stored in a fish hold for hours before catching the fish. As the fish is hauled onboard, it is placed directly into the fish hold with the supper chilly (sherbet ice). It rapidly cools fish and preserves them until the vessel is back several days later. The crystal ice acts to suspend and protect fish, thus reducing breakage and bruising. If additional chilling is required afterward, more slush ice can be produced and added to the fish hold.

### The advantage of sherbet ice

- 1) No salts additional are required indeed to reduce operation costs.
- 2) Eliminate handling and reduce labor costs.
- 3) Crystal ice is soft and fully surrounds the fishes cause better heat-eliminating efficiency.
- 4) Increased product yield and reduced water loss/uptake.
- 5) Reduces post-harvest loss, handling equipment, and handling periods.
- 6) Retards bacterial growth rate, good appearance, and prolongs freshness.
- 7) Seawater sherbet ice is at a temperature of approximately -4 °C.
- 8) Compact size and easy to install in the tightest of spaces, system components can be placed independently of each other.

### Sherbet Ice installation Onboard a Thai fishing Vessel needed a good insulation fish hold

In modern vessels, the insulating material usually chosen is polyurethane foam. The primary function of thermal insulation materials used in fishing vessels using sherbet ice is to reduce the transmission of heat through fish hold walls into the place where chilled fish or ice is being stored. By reducing the amount of heat leakage, the amount of ice melting and so the efficiency of the icing process can be increased. As has already been discussed, ice is used to remove heat from the fish but also heats leaking through the walls of the storage container. The insulation is used to prevent the amount of heat gained from the wall surfaces

and so reduce the amount of ice needed to keep the contents chilled.

### sherbet Ice installation Onboard a Thai fishing Vessel needed Power Take-off (PTO)



Power take-off is a method for taking power from a prime mover, main engine, or motor and transmitting its power to applications e.g. the refrigeration compressor.

To utilize engine power and save energy on the sherbet ice system onboard. The compressor for producing the sherbet ice recommends driven by the propulsion engine. Whenever the fishing vessel leaves the fishing port to the fishing ground or fishing period, it will take time to operate the engine. Therefore, the main engine drive will result in energy utilization without needing sources from a diesel generator.

### sherbet Ice installation Onboard a Thai fishing Vessel needed Non-CFC Refrigerant



New refrigerant with non-CFC is suitable for the current situation on reducing the risk of accidents such as overpressure, blow out or explosion, and installation in confined spaces, heat gain, and operational at sea condition, including the expertise of ship

personnel by changing dryer-strainer components to having the ability to filtrate the fine particular and more moisture. To ensure sustainable fishing and covers energy efficiency, reducing the occurrence of environmental impact. Climate change will affect fishermen, both directly and indirectly. The situation affects global warming through the increase, in the number of Greenhouse Gases which the main reason is the ozone layer was destroyed. Therefore, a good refrigerant must not destroy the ozone layer and the potential for global warming at a low level.

### Summaries

- 1) Thai fishing vessels can be installed on sherbet ice onboard, but the user onboard must understand the working principles of such systems as well.
- 2) All types of fishing vessels can be installed sherbet ice system onboard.
- 3) Sherbet ice is suitable for preserving high-value fish. Which is necessary to select the fish species to store via sherbet ice.
- 4) The fishing vessel must have sufficient space to install the sherbet ice system.
- 5) Fishing vessel owners need to be interested in modern technology and open-minded to change and development to increase the high-value fish to be able to sell for the best price.
- 6) There needs to be support from government agencies.
- 7) The refrigeration system must have high performance.
- 8) The system control needs a precise control system required to prevent damage to the system and equipment.

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