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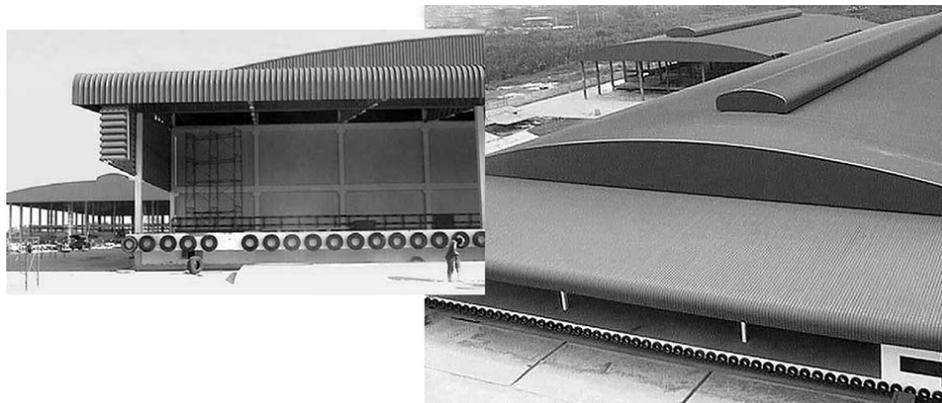
Intelligence

# Design of a state-of-the-art seafood processing plant in Thailand

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By Brad Kelly

## New Thai Royal Frozen Foods facility signals industry's modernization



Thai Royal Frozen Foods built its new processing plant near Bangkok.



Production floor area of 11,000 square meters is available for processing a full range of value-added products.

Thailand first began exporting frozen seafood in the 1960s. Since that time, seafood exports from Thailand have increased at an exponential rate. Thailand's traditional seafood exports have been raw shrimp, fish, squid, cuttlefish, and clam products – either in block form or individually quick frozen (IQF).

Over the past 10 years or so, there has been an increase in demand for more value-added and ready-to-eat seafood items. This is a direct result of Thailand's reputation of being able to produce top-quality seafood products. However, the increase in value-added production has required strict food safety and quality-assurance programs. Due to these stringent controls and exacting specifications from customers, Thai food processors are continually upgrading their production facilities.

## Keeping pace with growth

Thai Royal Frozen Foods Co., Ltd. recently made the commitment to construct a large, state-of-the-art processing facility in Mahachai, Thailand. This new plant, with over 11,100 square meters of production floor space, was designed to process a full range of value-added items, as well as block and IQF products.

The concept was to place under one roof all of the production steps, from receipt of raw material to cold storage of the final products, in order to improve efficiency and cost effectiveness of the process flow. To assure adequate cold storage during the crucial peak packaging months, when cold storage space is at a premium, the new facility was equipped with over 5,500 square meters of cold storage space.



A comprehensive solution for the wild seafood supply chain.

- ✓ Crew rights
- ✓ Food safety
- ✓ Environmental responsibility

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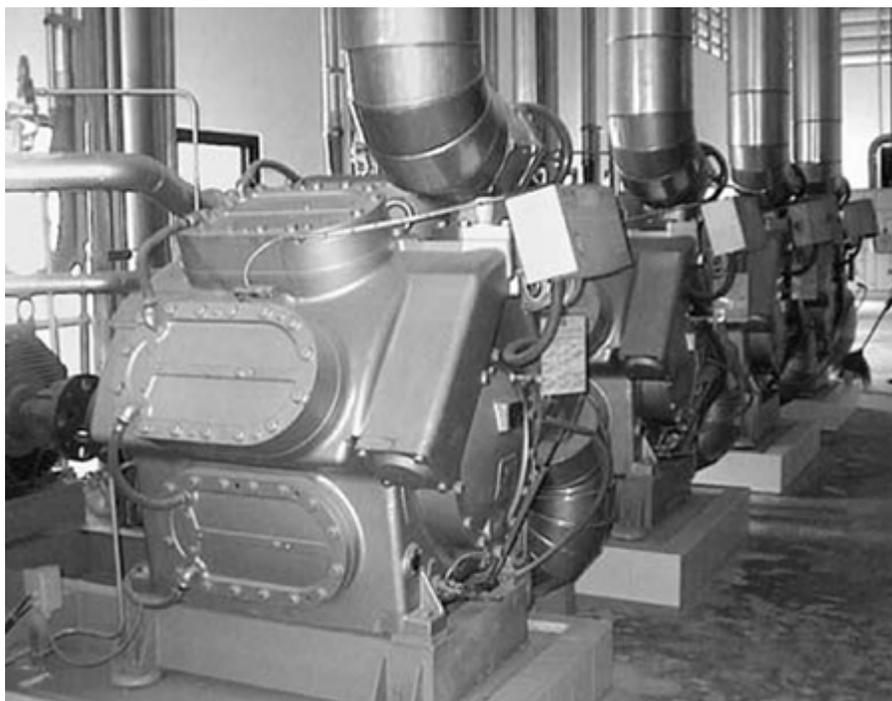
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## Design aspects

### ***Walls, ceiling, and floors***

The walls and ceiling in the production areas are insulated with Isowall panels, which sandwich a 7.6-mm thick core of insulation between two sheets of painted sheet metal. Due to the tropical outside temperatures in Thailand, Isowall panels with a thickness of 25.4 mm are used in the cold storage rooms. The smooth surface of the panels is very easy to clean and facilitates proper hygiene. The production room flooring is terrazzo with no seams or joints, which also contributes to efficient cleanup.



Ammonia refrigeration compressors.

## ***Refrigeration***

Ammonia was chosen as the refrigerant for the plant, due to its efficiency, dependability, and environmental compatibility. The 270-hp compressors were imported from Europe.

## **Freezing equipment**

Two types of cryogenic freezing are used in the IQF freezing lines. Thai Industrial Gas supplies the liquid nitrogen and Praxair Thailand Co. supplies the carbon dioxide.

## **Ice supply**

All ice is made on site. To avoid cross-contamination between the high and low-risk production areas, two separate ice plants were installed. The capacity of each plant is 41 metric tons (MT) per day.

## **Cooking equipment**

Inline, steam-injected cooking tunnels are used. Each tunnel consists of three individually controlled cooking zones, which ensures thorough, uniform cooking.



This corridor serves cold storage rooms with a total of 5,500 square meters of space.

## **Water treatment**

All water used in production is pretreated with chlorine dioxide. Chlorine dioxide has proven to be one of the safest, most effective methods of ensuring the water is always free of harmful microorganisms. The compound is produced on site in a Bello Zon chlorine dioxide generator, supplied by ProMinent Fluid Controls. The generator creates a chlorine-free solution of chlorine dioxide through the reaction of sodium chlorite solution with hydrochloric acid. The dosage rate is automatically monitored, so there is no fluctuation in the residual chlorine levels.

## **Conclusion**

Since 1995, Thailand has been the world leader in producing and exporting seafood products of the highest quality. Major seafood companies are showing their faith in the future of the Thai industry by investing in ever-larger, more efficient and more stringently controlled processing plants. These are

essential steps in the growth and maturity of the aquaculture industry.

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