



# HISTORIC REFRIGERATION FACTORY IN DANGER OF DEMOLITION

**A**n irreplaceable piece of our industrial refrigeration history may soon disappear. The former Grimsby Ice Company factory building in Grimsby, North East Lincolnshire, England may soon be demolished to make way for development.

Built in 1900 and at one time the largest ice factory in the world, The Grimsby Ice Factory is the only remaining building of its type in the UK. The derelict structure houses Britain's last surviving samples of early 20th century refrigeration equipment including several J&E Hall four-cylinder ammonia compressors from the 1930s.

The Ice Factory has been listed by the English government as a Grade II landmark, which places it within the top 6% of listed buildings in England. Giles Proctor, a Historic Buildings Architect for *English Heritage*, an organization that is roughly equivalent to the U.S. *National Trust for Historic Preservation*, says, "The reason for the high grading of the Ice Factory is that the building retains its original machinery. It is our view that to separate one from the other would severely compromise the special interest of the whole. We are therefore

pushing for a new use for the building which allows at least a substantial part of the machinery to remain *in situ*."

The ice factory played an important role in the growth of the refrigeration industry. Grimsby was at one time the biggest fishing port in the world. To keep the fish cool, ships from Grimsby harvested ice from the coast of Norway. In the early years of the 20th century, the leaders of the fishing industry and the leaders of the nascent refrigeration industry realized they could achieve greater economies of scale by combining their operations so that the fishing fleets would have a dependable supply of ice to ensure the freshness of the fish from the moment they were caught to the point of sale.

Sometime after 1900, Grimsby's Hagerup-Doughty Ice Factory, Ltd. and The Grimsby Joint Ice Factory combined with the fisheries to form the Consolidated Steam Fishing and Ice Co., Ltd. The company took over the tasks of building, maintaining and operating the steam trawlers that composed Grimsby's fishing fleet. It also provided ample supplies of ice for the ships' holds and cold storage warehouses for the catch. The availability of fresh fish was no longer dependent on imported ice and this early experiment in vertical integration proved a model for the food processing industry.

Photo: <http://www.geograph.org.uk/photo/390198>; Image Copyright David Rogers.

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A 1933 article in *Nature* magazine described the wide-ranging industry that the Factory made possible:

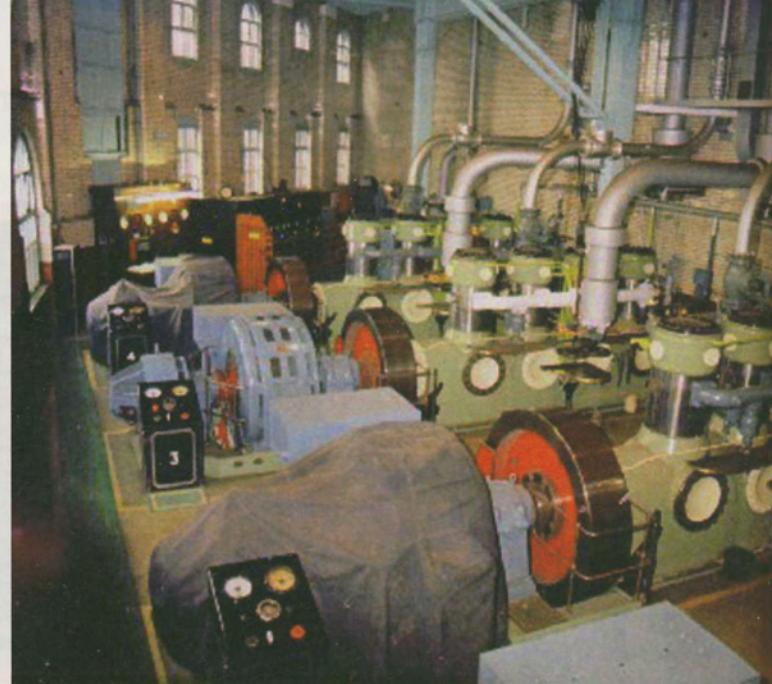
The Grimsby Ice Company has now the largest ice factory in the world. The trawlers of Grimsby fish in the North Sea and off the west coast of Greenland. All the six hundred trawlers take supplies of ice when they set off for the fishing grounds, each boat taking about 15 tons when going to fish in the North Sea and four times as much when fishing in Icelandic waters.

To support this burgeoning frozen fish industry, the Factory underwent several major renovations. Output soared from an initial 300 tons a day in 1901 to 720 tons in 1926 and, in its heyday, the factory produced about 1,250 tons of ice each day. In a 2001 report on the site, *English Heritage* noted that the factory's original equipment consisted of "four ice tanks that ran in conjunction with four Pontifex horizontal double-acting ammonia compressors driven by vertical triple-expansion steam engines. Six Lancashire boilers generated steam, and condensers of the atmospheric type, seated on the roof of one of the buildings and utilizing dock water for circulation, were also part of the original plant." Two Linde double-acting ammonia compressors driven by vertical Cole, Marchant and Morley steam engines were added later along with additional ice tanks.

The Ice Factory, which had been powered by steam, switched to electric power in 1930. The steam plant and compressors were scrapped and four 4-cylinder electrically-driven vertical compressors took their place. In ACR News (November 2009), Neil Everitt reports that "these 16.5 inch diameter, 15 inch stroke machines were designed to run at 250 rpm, each powered by 600 hp, 6,000 V motors supplied by the Metropolitan Vickers Electrical Company of Manchester."

From the compressors, ammonia gas passed into a heat exchanger on the roof of the building and the heat from the superheated gas was used to thaw the canned ice so that it could be removed from the moulds and stored. After leaving the heat exchanger, the ammonia gas entered two oil separators and then two sets of atmospheric condensers which were cooled by water from the docks. The system also had an electrical control system which incorporated automatic start, stop and safety devices. ACR News' Neil Everitt writes, "In addition to earlier Pontifex condensers, a new array of condensers had been added to the roof. This huge array consisted of 12-inch bore Staffordshire iron pipes in 34 stacks, 54 pipes high — a total run of 44,200 feet or well over eight miles."

These upgrades did not fundamentally alter the basic operations. The Grimsby Heritage web site reports that "Water was taken from local bore holes and placed in moulds containing



Grimsby Ice Factory – Compressor Room; Image Copyright David Vinter.

brine. When the ice was required conveyer belts took the three-hundred weight [Editor's note: a hundred weight is a British measurement equal to approximately 112 lbs] blocks to a crusher. The crushed ice was then taken by another conveyer belt to the quay side where it was dropped into the fish room of the trawlers via a chute." The Ice Factory employed as many as seventy people and ran 24 hours a day, 365 days a year.

When the Ice Factory finally closed in 1990, the ice tanks and all their associated fittings were left where they stood in the original tank house. Local historian Garry Crossland says that the equipment left inside the building includes "the four compressors installed in 1933 together with the later addition in 1954," along with "the heat exchangers, atmospheric condensers, nozzles, measuring vessels and crushers, the majority of the frames and associated cans."

The building has been vandalized and the equipment inside it has rusted. In October 2008, *English Heritage* put the Factory on its At Risk register — the list of the UK's most endangered sites. *English Heritage* is working to get the local government and the owner of the property, Associated British Ports (ABP), to save the building and have the portion with the ice machinery in place restored as a museum. Suggested uses for the remainder of the building include a tourist center, a cultural center, a brewery or an ice skating rink. Developers of the property, however, say that renovating the factory is too expensive and that demolition of the building is inevitable. The factory's future hinges on the results of a feasibility study by Grimsby's City Council which will be presented next year. **iar**

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