

Birds Eye Lowestoft

Replacement Cooling Towers And Condensers With Virtually 100% Casing Corrosion Protection And 55% Reduction In Energy Consumption...

Birds Eye, part of Europe's largest frozen foods business Iglo Food Group Ltd, relies on efficient cooling to ensure that their high standards of food production are maintained across their global food factory locations 24 hours a day, 365 days a year. At their UK Lowestoft site in the East of England they have recently made the decision to replace a number of ageing evaporative condensers. The factory faces the North Sea coastline and therefore operates in a highly corrosive environment.

Pic 1: Original Installation



The old evaporative condensers were constructed from coated mild steel and had suffered from severe corrosion. Birds Eye was keen to avoid this on the new installation to keep maintenance and running costs to a minimum and extend the lifespan of the units.

Vistech had already delivered a refurbishment project for an existing unit to extend its life and were one of several companies asked to prepare proposals for replacement of these existing units with two new ones.

Birds Eye engineers had identified a number of key requirements important to the successful completion of the new installation.

1. The units must offer a high degree of corrosion resistance
2. Have easy access for cleaning and maintenance
3. Reduce energy consumption. The plant operates on a 24/7 basis so any savings would have a major impact on operating costs
4. Offer low maintenance requirements
5. A turnkey installation with the successful contractor undertaking all aspects of the project from start to finish
6. The project had to be completed to a strict deadline. Birds Eye could not afford to lose production

Speaking to Daniel Boudier, their Vistech Representative, they were introduced to the concept of GRP condensers which had not been considered before. It was explained that this would be a much better option to cope with the very aggressive environment than the traditional mild steel equivalent.

In terms of a cost comparison with a like for like replacement the GRP option from Vistech's EWK range of towers proved highly competitive, and in terms of consumed energy it was also 30% more economical to achieve the same level of condensing capacity – critical for a 24/7 operation.

(For comparative purposes, Vistech also presented a like-for-like stainless steel evaporative condenser similar in design to the existing units).

Birds Eye completed their due diligence (including visiting one of Vistech's previous evaporative condenser installations) and conducted what they refer to as a 'concept convergence' which compared Vistech's costs and other decision making criteria, against their original standard for evaporative condensers.

After considering the various options, Birds Eye opted for the Vistech GRP unit as this was more economical, had less corrosion potential, and was more energy efficient.

Here's what **Colin Newson, Technical Services Manager for Birds Eye**, had to say:

"I would say they are very professional in what they do and they are very structured and organised. Technically, from a sales point of view they know what they are selling.

They didn't try and sell us anything; they asked 'what are you looking to achieve' and they knew what they were talking about. They understand cooling towers and evaporative condensers very, very well.

Very technically capable of understanding what it is you need, and demonstrating the qualities of their solution."

The biggest challenges in the replacement project were both the limited time-frame available, and the fact that the original units had to be lifted from the roof and needed a significant crane with 350 tonnes of lifting power. Cranes of this size are also dependent on good weather conditions.

Pic 2: Lifting out original towers



It was necessary to complete the installation within a tight timescale between the end of winter and early spring, because the colder weather means that the factory processes can cope with less condensing capacity (unlike the summer when every degree of capacity is needed).

The plan was to replace one unit in February, and one in March. The biggest risk factors were the weather, and the removal of old units and installation of the new units which were adjacent to other operational plant that couldn't be shut down, with only a few millimetres of tolerance to spare.

According to Birds Eye, one of the key successes of the job was the coordination and communication stream from Vistech - at all stages, from the initial concept and technical discussions, to the installation on-site, and planning and safety aspects.

“Certainly the guys on their installation team were very aware of site requirements in terms of health and safety, and environmental conditions, and working with us as a team to tight time-frames.

And at all stages there was a very good communication and a structured organisation that was behind them. There was no making it up as the job progressed.” **Colin Newson, Technical Services Manager**

Have energy savings actually been delivered?

The connected load on the conventional condensers was for two 18 K Watt fans + 1 x 1.5 kW of pump. However, the efficient axial flow arrangement of the Vistech EWK towers requires a single 1 x 15kW fan and 2 x 4.5 kW pumps so the new installation has cut the installed power by over 50%. This considerable decrease in the connected power has resulted in a significant reduction in operating costs.

Pic 3: New GRP towers in situ with new GRP access platform



Because the new units are more efficient and more effective, these condensers have become the 'lead machines', and the older condensers will only be used periodically as additional cooling is required.

How have the condensers performed since installation?

Here's what Colin had to say:

"The condensers are doing exactly what they are designed to do - we've had no issues at all.

The new units are an 'induced draft' type where the fans sit on the top of the units, and they actually suck the air through, inducing a draft. And this is one of the reasons that the energy efficiency is better - you need less energy because it's basically creating a vacuum.

One of our initial concerns was having one big fan sitting on top of the condenser, and we were worried about noise levels, but that has been nowhere near the levels we anticipated. They are doing a very good job for us."

Project Summary

Vistech managed the complete project from the initial enabling works that were carried out during the Christmas shutdown period through to removal of the existing condensers and installation of the replacement GRP units including crange, refrigeration pipe work modifications, support steelwork, final electrical installation and access platforms.

The EWK GRP towers provide the high level of corrosion resistance and low maintenance sort by Birds Eye, the GRP being 100% resistant to chloride attack found in most biocides and the aggressive saline environment of the North Sea coast.

Pic 4: New GRP towers –final installation



The new cooling towers were installed and operating within the time schedule set by Birds Eye, despite interruptions caused by adverse weather conditions that threatened to delay completion.

During the delivery phase of the project Birds Eye placed a further order with Vistech for a similar project at their Hull plant.

The final word:

“Absolutely we’d use them again, in fact we’re now looking to use them to carry out a lot of refurbishment work on some of our other condensers.

I would say that they are now our preferred first point of call for anything to do with cooling towers and condensers.” **Colin Newson, Technical Services Manager, Birds Eye**