

## Tricool chiller maintains aquarium temperatures at Sea-Life Centre

**Mullet, Smooth Hound and Trigger are all types of fish which normally live in different aquatic climates, but thanks to water cooled by one of Tricool Thermal's process chillers, they are co-existing quite happily at Sea-Life Adventure.**



Sea Life adventure park

The complex comprises two inter-linked buildings that contain 33 tanks on the main display floor and 30 in the other for quarantine, re-habilitation and breeding purposes. Three additional displays are home to the critically endangered Mexican Walking Fish or Axolotl. The other tanks in the sea nursery section are home to a variety of crustaceans including 'Freddie' a land hermit crab from Zanzibar who was captured in a Southend flat after unwittingly arriving in the UK via a shell brought back from the beach as a souvenir!

### The project

The Ocean Tank holding 195,500 litres of seawater is the largest tanks and is home to a mix of Mullet, Smooth Hound, Mackerel, Cod and a Trigger Fish called Daryl! Sharing the same area of water is unusual, as Cod tend to prefer cooler waters than the rest. The tank is replicating a natural environment as the Southend estuary is the point where the North Sea meets the Channel and provides a rich habitat for a wealth of varieties of fish, shell fish and plant life.

Temperature control is critical for the Ocean Tank. Although it is a standalone tank, like all the others

it is fed directly with sea water. Too cold and the fish become 'skittish' and easily startled, too warm and like humans they become lethargic and lose their appetite. Maintaining the temperatures to address the needs of all its occupants is a balancing act. Cod and Mackerel dictate requirements with temperatures maintained between 14-15°C.

Tricool Thermal was asked to design a solution whilst addressing, space limitations, energy efficiency and durability. Tricool Thermal customised a Series 2007 process chiller based on the Series 2000, which is specifically designed to cope for demanding environments.



Tricool Thermal's cooling plant

### Features

The unit features a titanium heat exchanger and electronic temperature control with non-ferrous wetted parts. Maintenance was also a key issue for Sea-Life's own engineers and a large easy to clean condenser with a special coating suitable for a saline atmosphere was also fitted. It was also designed to ensure maximum compressor capacity at high ambient conditions and condenser air is discharged vertically. Because of the unusual application, Sea-Life also requested a number of non-standard features to address their own specific requirements. These included a level fluid sight glass for the internal water tank, a three-way valve to provide 'straight line' control and the ability to adjust heat when necessary.



Tricool Thermal's purpose-built internal water circulation plant

Because of the working environment and close proximity to the sea, the chiller is subject to regular checks. Salinity levels are also closely monitored. Too much salt could damage the chiller system and prove detrimental to the fish. As Southend is so far down the estuary, salinity tends to be stable. Temperature fluctuations are the main concern.

The chiller really comes into its own during the summer. Then the sun beats down on the mud flats, accumulating heat and acting as radiators heating the water up as the tide comes in. It therefore takes a while to cool the water down and while regular sand filter backwashes are also necessary, we must be careful not too much warm water is added to the tanks.

Although the chiller has only been installed less than a year, it has proved a reliable workhorse. "Our business focuses on education, conservation as well as presentation of the sea's creatures and their habitats. Temperature control is prerequisite so that creatures like Daryl can be carefully displayed in as near to their natural habitat as possible."

Visit our website [www.tricool.com](http://www.tricool.com) for more information, or contact us on **0800 977 5709** or at [info@icstemp.com](mailto:info@icstemp.com).