



is powered by
Interseasonal Heat Transfer

Howe Dell School has been designed to incorporate the latest elements of environmental sustainability. It is the first building in the world to feature a revolutionary new heating system that uses the school playground to heat and cool its buildings.

The new heating system – Interseasonal Heat Transfer (IHT) – has been developed by ICAX Ltd. It works by capturing heat energy from the summer sun from a series of collection pipes just beneath the surface of the school playground. It stores the energy in computer-controlled thermal banks in the ground under the school, and releases it to heat the buildings in winter through a series of heat exchangers linked to the underfloor heating and ventilation systems.

The IHT system is also able to capture the frost of cold winter nights, store it, and use it to keep the building cool in the summer.

In addition to the IHT on-site renewable energy system, the school features:

- Solar panels to pre-heat water for use in the school kitchens and washing facilities.
- Photovoltaic panels to generate electricity from the energy in the sun's rays.
- A simple rectangular shape that enables the teaching areas – which are all south facing – to have dedicated external classrooms, allowing pupils direct access to the extensive and bio-diverse grounds.
- Strategically placed roof lights allowing natural daylight to flood into the centre of the building, minimizing the need for artificial lighting of deep plan spaces and allowing natural daylight to flow into the ground floor corridors.
- High performance windows to reduce heat loss and help control solar gain.
- A Termodeck fan-assisted ventilation system, which uses the thermal mass of the structure to stabilize the temperature in the building.

- A sustainably sourced sprung timber floor in the main hall and a bamboo floor in the dining room.
- Sustainably sourced timber play equipment.
- Classroom sink tops and splash backs made from recycled yogurt pots.
- A wind turbine capable of generating electricity from the energy in the wind and exporting surplus electricity to the National Grid.
- 'Living' sedum green roof areas to help manage water run off, insulate the building and promote bio diversity.
- Rainwater collected from the roof is used for toilet flushing, for the irrigation system and to top up the bio-diverse wetlands within the school grounds.
- A software system that allows pupils to monitor the various environmental systems and help them to understand how energy is generated by these systems, how energy is being stored, how it is being used, and how much has been exported to the National Grid. Visitors to the school can even see real time energy statistics displayed on an LCD screen in the main school entrance.

The Headteacher, Debra Massey, believes strongly in education for sustainable development, and the children are learning in a unique school which is the embodiment of it.

"The IHT Thermal Bank beneath the school is the foundation of a set of environmentally sensitive elements incorporated into Howe Dell School that brings alive the teaching of eco principles to the children," said Debra. "Our curriculum has sustainable education principles at its core, encouraging pupils to take responsibility for the future of their own environment."