

## Rattlesden Community Pavilion, IP30 ORT

Rattlesden, a busy and vibrant rural community comprised of both 'born and bred' residents and those who have moved here more recently, suffered from a lack of a central sports and social facility suitable for use by all sections of the community. The Pavilion Replacement Fund has been the key focus for the Community Council in recent years incorporating a thorough consultation with the whole village.

The Community Council cannot over-emphasise how important the provision of modern, safe and inclusive sports, recreation and community facilities are to our village.

The sports field has the unique attributes of being flat, free from flooding, with no road traffic anywhere near the field and building. The River Rat, flowing along the northern edge of the field, acts as a natural safety boundary from the road.

The building comprises main hall, kitchen, bar onto the hall and veranda, changing rooms, stores and galleried meeting room.

Key to the design was to incorporate technologies that worked well together to further increase the efficiency. As this building will be totally electric it was felt important to minimise the amount of electricity that would be used from the grid. Although the government have made a commitment to have 15% of energy consumption from renewable sources by 2020, at the time of the building design it was only 3% so anything we could do to reduce our usage would help in the short term.

### Overview

**Age, Type:** post 2000, Civic

### Cost of measures:

Whole building - £425,000  
Green measures - £77,000

### Energy usage:

~12,500 kWh hrs. pa.



For heating it was always the intention to have the building occupied as much as possible throughout the day and evening so it made sense to select a Heat Pump that maintains a constant background temperature within the building very efficiently. The use of Solar Photovoltaic panels with a Heat Pump maximises the on-site use of the electricity produced as it will potentially run as required 24 hours a day and crucially during daylight hours.

### Key features

- 8.6 kW Solar PV panels
- 4m<sup>2</sup> Solar Thermal Panels with Solar Accumulator
- Ground Source Heat Pump with 2 x 150m Boreholes
- Underfloor Heating Throughout on Both Floors
- Heat Recovery Ventilation Throughout
- Automatic Light Sensors in All Ancillary Rooms



A Weather Compensated Ground Source Heat Pump was chosen as they are the most efficient form of Heat Pump because the ground temperature is much more consistent than the air temperature throughout the year. When heating is needed the most, the energy required to heat the building is therefore minimised. Equally, boreholes were chosen as they would minimise the impact on the playing field and they are able to recover over 2.5 times the energy per meter compared to horizontal ground loops.

Underfloor Heating is the most efficient distribution system for a Heat Pump as it enables a lower water temperature to be used which again reduces the energy required to heat the space. In addition, with a high ceiling in the hall, it enables the space to be heated from the floor up rather than from the ceiling down as with all forms of radiator convection heating. This has a huge reduction in the energy required as the air temperature naturally reduces with height making it comfortable at head height without unnecessarily heating the space above.

Solar Thermal panels were specified because of the need for hot water for washing and showers. However, the use of an accumulator and associated heating controls enables the energy from the Solar Thermal Panels to be used for the space heating as well.

Heat Recovery Ventilation has been installed in all the heated rooms spaces and extracts the stale damp air from the changing rooms, toilets and kitchen and recovers potentially lost energy to fresh incoming air to the main hall and meeting room. Even modern buildings can lose 25% of heat due to uncontrolled ventilation and air leakage – the average bathroom contains 600W of heat energy and is exhausted twice every hour wasting 1.2kWh heat. The Pavilion has no extractor fans and very low air leakage, even the air from the cooker extractor hood is recovered.

Automatic light sensors have been installed in all the ancillary rooms to minimise the change of lights being left on any longer than necessary.

## Funding

- Suffolk Youth & Connexions Service
- COMMA
- National Lottery Awards For All
- Landfill Communities Fund - Biffaward
- Suffolk Environmental Trust
- Suffolk Acre – Rural Economy Scheme
- Community Sustainable Energy Programme
- Henry Smith Foundation
- Suffolk Corporate Regeneration
- Alfred Williams Trust
- Low Carbon Buildings Program
- Mid Suffolk District Council
- Suffolk County Council
- Suffolk Green Fund
- Plus fundraising and numerous donations from individuals and organisations

## Green Lifestyle

A key aim of the building was to encourage regular use for sports and recreational activities by local residents from Rattlesden and the surrounding villages without them having to drive further afield. The building is now being used for activities ranging from various keep fit classes to corporate meetings, birthday parties to wedding receptions. We are also actively encouraging the use of the building during quieter periods by subsidising the hire to new local groups in activities that are not currently catered for locally.

## Evaluation

The building was only handed over to Rattlesden Community Council in June 2011 but we estimate that incorporating the renewable technologies has resulted in a carbon emission reduction of over 14 Tonnes per annum. In addition, to heat the building to a similar level with oil would cost an extra £1,200 per annum, roughly double the electricity cost for the whole building.

## Professional Contacts

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If you have any specific questions about this case study, these can be directed to the building owner via the website

[www.greensuffolk.org/sgbn](http://www.greensuffolk.org/sgbn)