

Case Study – Replacement Heating

All Saints' Church, Leek Wootton



What prompted the change?

The old heating system dated from 1892. 'Yes, it was old!' Originally a solid fuelled system with cast iron pipes around the church, it was modernised in the 1960's with a 35kW electric boiler. This looked like a 45 gallon oil drum and had immersion heater coils in it. The wet system had been failing over a period of six years, with leaks and other faults.

With a congregation of around 25 to 30 people (average age about 55 years) All Saints' Church wanted heating that would suit their patterns of meeting together in the main church on a weekly basis and they wanted to make occasional but better use of a smaller room behind the balcony.

What options were considered?

The church reviewed their options, including Oil, Gas (£7,000 to introduce a new mains supply into the Church), ground source and air source heat pumps. They looked at heated seats and cushions and individual PIR controlled heaters. One option discarded was short wave infra-red radiant bar heaters that glow red in use.

The preferred option for quite a while was the proposed installation of two replacement electric boiler plant and new radiators to provide space heating and hot water. DAC were not in favour of this, on environmental grounds.

In their investigations, the church found that they did have 3 phase electricity supply, each phase protected by a 100 Amp fuse. By selecting a renewable tariff, the church felt their best option was still to explore options for heating with electricity rather than using fossil fuels like gas or oil. This is based on sound reasoning as the UK's electricity grid is steadily decarbonising with the increase in use of renewable energy sources like wind turbines and solar PV.



How did All Saints proceed?

'We started looking again at infra-red heaters, and (found) different suppliers out there, some more helpful than others.'

[Connect Infrared](#) (known then as 'Jigsaw') visited. They completed a basic survey and provided an estimate of around £18,000. This looked encouraging as all other quotes were above £30,000. Several church members visited a Baptist church in Nottingham and were generally impressed with the system they had installed there, noting the neatness of the wiring etc and the easy-to-use control system which can be linked to an App.

The supplier offered to provide a heater on loan. This was suspended in All Saints' Church for people to get a feel of it in place. Due to power limitations, they located a 2.4 kW heater temporarily where they intended to put a 3.2 kW unit for the longer term. The heater was well received, it looked and felt good. Several people agreed that it provided a gentle warmth from above, but thought that it still felt chilly below knee height. At the time, there were old (pre 1965) tubular heaters under every other pew, and the church decided to replace all of these with new heaters and heater guards from [Thermotubes](#) in Taplow, Maidenhead. These are now used occasionally, in very cold weather.

Before putting in for Faculty (Diocesan approval), the Church Architect, the Diocesan Heating Advisor and the Diocesan Environmental Officer visited the church. This was invaluable. They saw the loan infrared heater in situ and discussed the proposal in more detail.

All Saints got a revised quote and Connect visited again with their preferred electrician Griff, to discuss in detail what the church was looking for and they agreed to split the heating into nine zones. Griff agreed to install the infrared heating at the same time as the new under-pew tubular heaters and remove redundant heaters from the kitchen, vestry etc., and they proposed how to balance the loads across the three phases of the incoming supply.

The final total costs of the new heating system, supply and install, were £21,068 incl VAT at 20%. (These are 2022 costs.)

How successful has the new heating been?

Early feedback has been very encouraging. People entering the church immediately feel the warmth from the heaters. The appearance of the new system is sympathetic to the heritage aspects of the building. The heaters are discreet and unobtrusive, suspended or placed above eye level. In use, there are a couple of areas where the church is planning to swap heaters around to deal with issues they've identified. The flexibility of the new system means that minor changes can be made with little disruption and at low cost.



Like many new technologies, the heating is controlled via an App ([Genius](#)) and there are seven temperature sensors around the church that give greater economy in use. *Early estimates are that the new heaters are providing savings between 30% to 40% compared to the old (and unreliable) system.* There have been minimal teething issues which have been addressed by making small changes (e.g. changing the wi-fi mobile router location) or with simple work-around options. A recent update to the App caused unintended disruption to the heating for a day.

The church agreed specific payment terms with the supplier and the installers. This helped with controlling the works and meant that minor snags were attended to promptly and satisfactorily.

What key lessons would you pass on to other churches who are considering their heating?

‘The heating system has to be right for the context of your building’s use. Our system delivers heat and savings and is easy to control. We will be fine tuning with changes and swaps but the overall system is a great improvement for our church over the old system.’

All Saints have even considered that as a contingency, the new infra-red heaters could be recommissioned in another church if that need ever arose.

Does the church have any other net zero ideas?

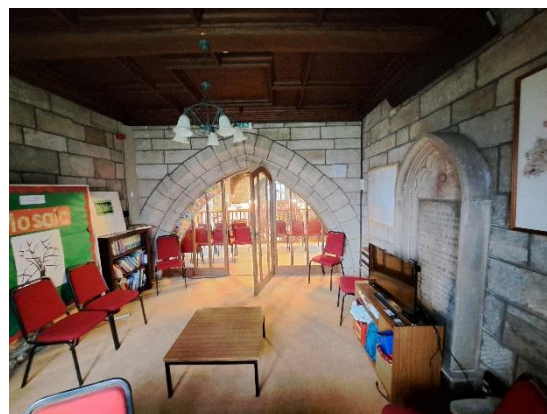
The church is considering a second stage of installing solar panels, not to power the heating system but to offset the electricity they would be using on a Sunday, with energy they could produce throughout the year. The assessment is not specifically financial, but they’re working on figures based on the amount of electricity they use. If there is scope to involve a local community-based energy initiative, then this could be a project to look out for!

How can I get more information?

Colin Angus holds further details from All Saints, Leek Wootton, including the contractor’s breakdown of charges. Sincere thanks to the Church Warden for making these available and for much of the content included above.

Jigsaw produced a promotional video which you can access [a here](#).

If you want to visit the church during service times, then you would receive a warm welcome. If you want to visit at other times, please make prior arrangements. (Contact details available on request.)



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