ISSUE 154 | JULY / AUGUST 2015 | £5 €7.50

ISSN 0268-912X
barcode.co.uk
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# CHURCH building & HERITAGE REVIEW



COMPANY PROFILE

# JUPITER UNDERFLOOR HEATING


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**Background**

In January 2013, the Archbishop of Southwark placed the Catholic Church of the Most Precious Blood (MPB), into the care of the Personal Ordinariate of Our Lady of Walsingham. The Ordinariate was established by Pope Benedict XVI in 2011 to enable groups of Anglicans to join the Catholic Church while preserving elements of their liturgical and spiritual tradition.

The Church building, designed by Frederick Arthur Walters (1849-1931), was completed in 1892 and became Grade II listed in 2014. It is a handsome essay in Romanesque revival style, achieving grandeur in the face of economy situated close to Borough Market and "The Shard".

During the past 40 years the building has suffered from well-meant efforts to modernise it and a capital appeal to restore the interior is underway in preparation for its 125th anniversary in 2017. However, the long winter of 2013 convinced the new Rector of the Parish, Fr Christopher Pearson, that improving the heating was an urgent priority and that a failure to address the problem would inhibit the mission of the Church.

The Church fabric shows evidence of several previous heating systems. The underfloor ducts for the original coke-fired warm-air system are still in place along with sawn-off pieces of steel piping along the walls, presumably for radiators. The black soot and scorch marks on the walls show where overhead radiant gas heaters were situated; some members of the congregation vividly recall having warm heads and very cold feet!

Around 10 years ago, 8 individual gas-fired blown air heaters were installed in the church. With a total power rating of 112kW they struggled to heat the Church and the noise disrupted the worship.

In such a lofty building, which is open for prayer every day and with a weekday lunchtime Mass, underfloor heating (UFH) was the obvious choice. Indeed, most other systems had already been tried at MPB and found wanting. The potential capital cost was a concern, there being nothing in the bank, but initial enquiries made it seem achievable.

*Chris Kollmer takes up the story*:

In 2013 JUPITER Heating Systems were approached directly by the church to explore the possibility of installing an underfloor heating system over the existing floor. Unlike other church installations this project





was to be handled directly by the client which was refreshing and far more cost effective for the client. The building had been heated to this point with large, ugly, ineffective gas fired air blowers located at the perimeter of the building.

Installing a low level overlaid underfloor heating system on the existing floor would have created trip hazards so it was suggested that an initial 120mm layer of high compressive strength insulation be installed under the 50mm JUPITER system. Adding the insulation provided a sensible overall construction height that was more akin to a traditional step. Fortunately, the existing floor proved to be flat and level enough to accept the underfloor heating system without any additional preparatory work.

The 30mm underfloor heating panels installed had pipe centres at 125mm and, as with all our church installations was then covered with the 20mm Screed Replacement Tile (SRT) system. Unlike conventional screed systems one of the benefits of the SRT system is the quick drying time. Therefore the 315m² installation took only 2 weeks to complete and was immediately operational.

A single 70kW ATAG boiler in the undercroft powers the system. The controls are very simple, utilising weather compensation to control the boiler output. By automatically monitoring the external temperature this type of boiler increases the flow temperature as the outside temperature decreases.

The overall design and installation of the boiler was undertaken by Chris Flaherty of Vietec in Sittingbourne who very much understands the benefits of such technology. Employing such a heating engineer directly and cutting out the mechanical engineer certainly saved the client money.

This project has been the first church project that we have completed on which the running costs have been carefully monitored. The church has been using the 20mm SRT as the finished floor since the installation was completed back in 2013 and is now looking to install the final Purbeck stone finish. It will be interesting to see how the final floor finish will affect the output, response time and running costs, but so far the project has proved to be a success.

01 The impressively located Church of The Most Precious Blood © *Smith*

02 Primary insulation simply laid on existing floor © *Kollmer*

03 The underfloor heating system installed © *Kollmer*

04 The Screed Replacement Tile system being installed © *Kollmer*

05 The pews reinstated over the temporary floor © *Smith*

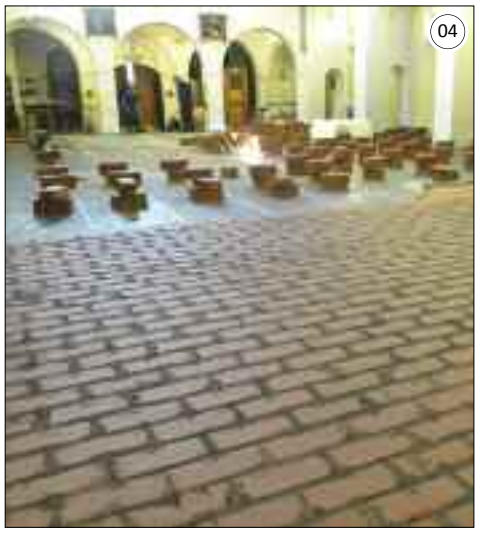
**Performance data**

Our aim is to make the Church feel warm to people as they enter the Church but not so warm that they remove their coats! For the casual visitor and the daily Mass attendee 16°C seems to be about right. On Sundays this is increased to around 19°C. Often the boiler is running at just 20-30% capacity, 40-50% on very cold days and the full 100% only during the initial 2 hour warm-up period for the UFH.

Fuel consumption for December to March 2014 and 2015 are shown below. **>**

| Month | Church gas consumption in kWh | Price per kWh | Total cost (excluding VAT) |
|---|---|---|---|
| **2013-14** | | | |
| December 2013 | 14,877.47 | 0.04323 | £643.15 |
| January 2014 | 13,446.23 | 0.04323 | £581.28 |
| February 2014 | 14,410.67 | 0.04323 | £622.97 |
| March 2014 | 7,490.57 | 0.04323 | £323.82 |
| **Total** | **50,224.9** | | **£2,171.22** |
| | | | |
| **2014-15** | | | |
| December 2014 | 15,056.19 | 0.04638 | £698.31 |
| January 2015 | 11,909.88 | 0.04638 | £552.38 |
| February 2015 | 13,534.09 | 0.04638 | £627.71 |
| March 2015 | 9,741.37 | 0.04638 | £451.80 |
| **Total** | **50,241.5** | | **£2,330.20** |

## COMPANY PROFILE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**Conclusion**
Heating a large Victorian Church for seven days a week is never going to be cheap but UFH is very effective, it heats the people in the pews rather than the pigeons on the roof. The running costs are affordable – we now budget £3,250 per annum and expect it to cost less.

- The UFH heating is able to produce comfortable temperatures for the congregation whilst minimising the effect on the environment and keeping the running costs under control
- We are careful to ensure that the Church is not overheated and humidity levels are regularly monitored
- Using the weather compensation directly on the boiler has worked very well and keeps the boiler running at peak efficiency.

Chris Kollmer and all the team from Jupiter Heating were extraordinarily efficient and easy to work with. The congregation are warm and comfortable in Church for the first time in living memory.

> “This project has been the first church project that we have completed on which the running costs have been carefully monitored. The church has been using the 20mm SRT as the finished floor since the installation was completed back in 2013 and is now looking to install the final Purbeck stone finish. It will be interesting to see how the final floor finish will affect the output, response time and running costs, but so far the project has proved to be a success.”

We are also very grateful to Colin Kerr of Kerr Molyneux Architects. He was light touch in his involvement, due to financial considerations, but he has been instrumental in bringing an uninviting, almost unusable, space into an environment for dignified worship. ■

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