



## CASE STUDY

# INFRARED HEATING SOLUTION FOR HISTORIC BUILDINGS

Berrynarbor Manor Hall | Devon, UK

### THE EXISTING SITUATION.

The Hall was built in 1914 as an extension to the former manor house which dates back to the late 15th Century. The hall heating consisted of five 3kW electric convector heaters which were regularly left on by the hirers when they departed. There was also a central heating system with the gas boiler and controls located in the former manor house - now used daily by a pre-school. The restrictive access to the central heating controls meant the heating was often left on after the hall had been used or not turned on when it was needed!

The distance between the boiler and the radiators also led to significant heat loss as the water flowed through the extended pipework. As a result, the radiators never got hot enough to effectively heat the hall.

### THE CHALLENGE.

The Committee was looking for a heating system which would warm the Hall to a comfortable temperature in a relatively short time, thereby avoiding the need to heat the hall when it was not in use. The ability to accurately control the temperature was also an important consideration to avoid wasting valuable energy and to cater for the different temperature requirements of the various activities taking place in the Hall. The high pitched roof had been a problem for the convection heaters as the warm air produced was lost into the roof space giving little immediate benefit to the occupants. The toilets and a storage area also needed to be warmed but to a lower temperature than the Hall. It, therefore, made sense to divide the building into separate heating zones each with their own thermostatic controls.

### THE SOLUTION.

The ETHERMA EZ medium-wave infrared heaters provided an ideal solution for the Hall, whilst wall-mounted LAVA® BASIC-DM long-wave infrared panels were more appropriate in the toilets and storage rooms where the ceiling height was lower. Unlike the convection heating, infrared directly warms the occupants, quickly making them feel more comfortable. This allows the room thermostat to be lowered by a few degrees (e.g. from 21°C to 19°C) whilst still maintaining the same level of thermal comfort. A reduction of the temperature by 1°C results in an energy savings of up to 6%.

In rooms with high ceilings like Berrynarbor Village Hall, the temperature difference between the occupied zone and the ceiling is often significant, between 10-15°C. Equalizing the temperature difference using suspended infrared heaters can reduce this loss by as much as 30% while making optimal use of the heat which develops when the infrared waves hit a thermal mass, such as the floor, walls and people. The energy is absorbed and the warmed surfaces then heat the air in the occupied zone. As a result, the temperature difference between ceiling and floor is reduced.

The different rooms were treated as separate heating zones, each controlled by programmable thermostats. Precise control of the heating saves operating costs, avoids wasting valuable energy and improves thermal comfort. The use of radio-controlled, programmable thermostats avoided the need for new cable routes and simplified the installation process.

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## THE SOLUTION IN DETAIL

The Hall heating comprised of eight ETHERMA EZ 2 kW double-panel infrared heaters. These were suspended in two rows of four, 3.5m above the floor and controlled by a wall mounted eTOUCH eco thermostat through an electrical contactor.

The toilets required two LAVA® BASIC-DM 350W panels controlled by a wireless ET-14A thermostat and the Store, three LAVA® BASIC-DM 500W panels controlled by a wall mounted eTOUCH eco thermostat on a frost protection setting.

### PRODUCT BENEFITS EEZ

- + Hygienic indoor climate
- + Dark emitter (no visible light emission)
- + Rust-resistant housing
- + Straightforward installation
- + Surface structure optimises radiation



### PRODUCT BENEFITS LAVA® BASIC-DM

- + Very high proportion of infrared
- + Large infrared emitting surface
- + Lightweight design for easy ceiling mounting
- + Pleasant room climate thanks to comfortable infrared radiant heat
- + Magnetic field & maintenance free



LAVA® BASIC-DM 500W



## COMPETANCE AND QUALITY FOR OVER 35 YEARS.



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