



CASE STUDY

INFRARED VILLAGE HALL HEATING

BUCKINGHAMSHIRE | UK

THE EXISTING SITUATION.

Having been built in 1921 Denham Village Memorial Hall is not a well-insulated building. The 20+ year old convection-based heating system was coming to the end of its life and the Committee were looking to replace it with a more comfortable, energy efficient and controllable system.

The existing heating system consisted of 125 kW gas boiler used to heat the main hall via a heat-exchanger and warm air blowers situated under the stage and at the back of the hall. The stage area, changing room and corridor used traditional wet radiators. The kitchen, toilets and meeting room were heated with old 2kW electric fan heaters controlled by manual on/off switches without thermostatic controls.

THE CHALLENGE.

The village hall is regularly used for a variety of activities by local clubs, societies and private hirers. The Committee was therefore looking for a heating system which could easily be controlled whilst on or off site; accommodate the different heating requirements of the various activities and have minimal ongoing maintenance.

The convection heating system in the main hall meant most of the energy consumed was used to 'overheat' the space above the 'occupied zone', because it struggled to heat the main hall (700m³) with the warm air blowers. The air quickly rose towards the 4.7m ceiling, leaving those at the rear feeling cold despite the two air blowers beside the entrance door. The temperature difference between floor and ceiling was 15°C which meant it was taking a long time for the hall to feel comfortable and costing more than necessary to heat. The rising warm air also created convection currents which sucked-in cold air under the doors, causing an unpleasant draft around the side of the hall.

THE SOLUTION.

Two different types of ETHERMA infrared heating products were specified for the new heating system. In the Main Hall, with a 4.7m high ceiling, medium-wave infrared heaters were used whilst in the other rooms with lower ceiling heights (<3m) long-wave infrared panels were installed. Ceiling-mounting the infrared heating will prevent accidental damage, avoid cold spots and keep the floor space free for seating and activities.

By directly warming the occupants, not the air, the 'warm-up' time of an infrared system is much quicker than a traditional heating system (e.g. radiators or air blowers). Absorbing the infrared into the skin is also a particularly relaxing and comforting experience - just like sitting in the sun. Direct heating with infrared also equalises the temperature difference in a room and avoids wasting energy overheating the unoccupied space near the ceiling; equalising the temperature difference can reduce heat losses by as much as 30%.

The ability to precisely control the infrared heating allowed the building to be divided into five separate heating zones, each heated to a different ambient temperature, saving operating costs, avoiding the waste of valuable energy and improving thermal comfort for those using the hall. The eNEXHO wireless home automation system allows the five individual heating zones to be easily configured and controlled by smart devices both on and off site by multiple users.

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THE SOLUTION IN DETAIL

The main hall infrared heating comprised of 8 ETHERMA EZ 2kW double panel infrared heaters. These were installed in two rows of four on the ceiling. In the meeting room, the infrared heating system used four ceiling mounted LAVA® BASIC-DM 750W panels and in the other areas (kitchen, toilets, corridor and changing room) either ceiling mounted LAVA® BASIC-DM 500W or 350W panels.

Each heating zone is controlled by a wall-mounted eNEXHO-CL thermostat and regulated by the eNEXHO home automation system. This fully automatic system allows the programming of zones and daily/weekly programmes.



PRODUCT BENEFITS LAVA® BASIC-DM

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

PRODUCT BENEFITS ETHERMA EZ

- + Full area heating or zone heating
- + Hygienic room climate
- + Dark radiator
- + Rust-proof housing
- + Straightforward installation
- + Surface structure optimises radiation



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With ETHERMA you have a competent partner for your heating solutions with more than 35 years of experience. ETHERMA relies on constant innovation, highest product quality and modern design. We support you with a comprehensive service to ensure you use the most suitable product solution for your project. ETHERMA is an Austrian company with international reputation, producing high quality electrical heating systems for our clients, custom-made and manufactured right here.

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