21st Century Heating
CENTRAL HEATING WITHOUT PIPES
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21st Century Heating Electric Central Heating Systems

Data Sheet 3:01 - BSRIA Test – Detailing the parameters of the test and the findings:

Room type : Lounge	Room size: 4m x 4m	Ceiling height : 2.7m
Floor type : Solid, insulated	Wall type : Cavity wall insulated. U value = 0.6	U value = 0.6
No. Of o/s walls : 2 outside walls	Window area : 3.7m2	Room above : Heated room above at 18 o C
Air changes : 1 ½ per hour	Outside air temperature : -1o C	Surroundings : Normal suburban situation
Required room temp. 21 degrees C		

Maximum Heatloss Calculation : 1775 watts.

At **BSRIA**, the test room is constructed using 100 mm Urethane insulation with steel finish materials in a fabricated sheet form (manufacturers stated U-value of 0.19 W/m2K). Around this is a second insulated chamber that can be kept at a constant temperature, to minimise heat transfer through its surfaces. The inner test room is airtight enough to prevent any significant flow from or to the buffer chamber outside. A fan coil unit is installed in the test rig to control the heat loss. **This is a static test scenario and in real circumstances a room would never usually have a constant heatloss.**

Temperature T-type thermocouples were used to monitor temperatures for measurement and control purposes in and around the facility. The accuracy of the thermocouples is ± 0.5°C. Signals generated by the thermocouples are converted in a multi-channel microprocessor based data acquisition system, by applying the appropriate relationship, into units of temperature (°C). Platinum resistance thermometers (1/10 DIN PRTs) were used to monitor space temperatures in the room. The accuracy of the PRTs is ± 0.1°C. The PRTs was connected to a multi-channel microprocessor based data acquisition system. Resistance signals generated by the PRT's were converted in the processor, by applying the appropriate relationship, into units of temperature (°C).

Data was transmitted directly to a personal computer, firstly to enable more comprehensive on-screen monitoring, and secondly for data analysis within a spreadsheet and graphical presentation software.

Electrical power
The electrical power consumption of the heater being tested was measured using a Yokogawa kilowatt-hour meter. The electrical consumption (instantaneous in W and kWhrs) was logged at approximately 5-minute intervals for the duration of the tests.

Calibration
All equipment significant to measurements is regularly serviced and maintained according to the manufacturers' instruction and is regularly calibrated in accordance with BSRIA's quality requirements. Operated by BSRIA's test engineers, a rigid system is in force, which records the calibration history of each instrument and prompts re-calibration prior to each work programme.