



A Guide to SBEM Calculations & EPC's

SBEM calculations are a Building Regulations requirement for all new commercial buildings and some extensions. SBEM is a measure of the energy efficiency of a building and must be carried out by a suitably qualified company such as MES Building Solutions.

What does SBEM measure?

SBEM is the calculation of the monthly energy consumption for space heating & cooling, water heating, ventilation and lighting. It also quantifies the total CO₂ emissions from the property, measured in kgCO₂/m²/year.

Building Emission Rate < Target Emission Rate

SBEM sets an emissions target for all new commercial buildings based on a notional property of the same size, shape and use, built to pre 1st October 2010 Building Regulations, plus an improvement factor (TER), last updated 6th April 2014. The new building (BER) must produce lower emissions than the TER to achieve a Building Regulations pass.

What is involved?

- 1) *The Design Stage Calculation:* The initial calculations are done at design stage to ensure the property will meet the minimum SBEM requirements.
- 2) *The 'As Built' Calculation:* When the property is finished an air leakage test is carried out and the Design Stage SBEM calculations are updated to provide a final SBEM rating & EPC.

Other requirements

The building must also meet other minimum SBEM requirements including area weight U-values, heating and cooling system efficiencies, ventilation requirements, air leakage rates etc.

What do you need from us?

To produce SBEM calculations we require a full set of scale plans (inc. sections, elevations and a site plan showing North), preferably emailed in .pdf format. We also need our SBEM Form completing which we can send to you or it can be downloaded from our website.

What influences SBEM?:

- The shape & orientation of the building: south facing windows benefit from passive solar gain (but too many can lead to overheating issues in the summer)
- HVAC efficiency and type of fuel used
- Thermal efficiency of walls, floors and roof
- Thermal efficiency of windows and doors
- Controllability of heating & cooling systems
- Efficiency of heat recovery systems
- Types and controllability of lighting systems
- Solar panels, heat pumps, biomass boilers, certain wind turbines etc. can improve SBEM ratings
- Air tightness testing results (we are also commercial Air Tightness Engineers)

Conversions

All commercial conversions also need SBEM calculations to fulfil Building Regulations requirements. This is done in a slightly different way to new buildings but the principles are the same.

Highly glazed commercial extensions

Extensions with lots of glass (more than the equivalent of 25% of the floor area) must also have an SBEM calculation to ensure Building Regulations compliance.

Large commercial extensions

Where the proposed extension is more than 100m² and greater than 25% of the total useful floor area of the existing building the work has to be regarded as a new building. Therefore the extension will have to be designed, specified and built to fulfil the more stringent 'new-build' requirements.



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