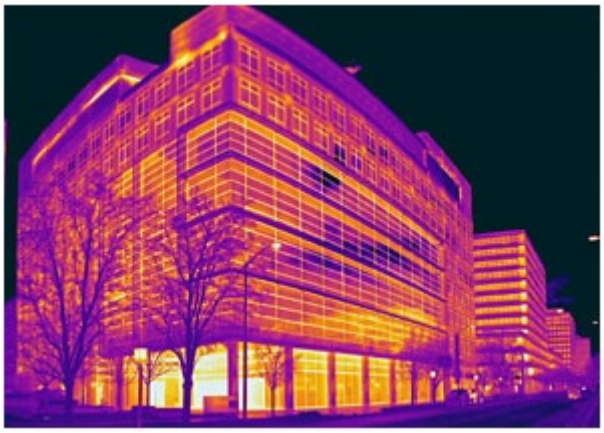
Building Energy Usage



Heating and cooling of buildings

This part of the energy supply is responsible for the most CO2 emissions. The challenge here is really twofold:-

1. Buildings need to be better insulated so as to not get too hot in the summer or too cold in the winter
2. The heating and cooling supplies need to be powered off renewable electricity

Again the challenges vary by country. Countries in the tropics have little need for heating but do need air-conditioning. In the UK, our challenges are:-

1. Houses that pre-date 1920 do not have cavity walls that can be insulated, so need to be retrofitted with external or internal solid wall insulation.
2. Most houses are either heated by natural gas or oil
3. 15% Hydrogen in natural gas supply is still being trialled. 100% Hydrogen necessitates a swap out of existing boilers
4. Tradesmen will need to be re-trained in large numbers in order to facilitate the transition to solar, heat pumps or hydrogen as well as solid wall insulation.
5. Externally insulating houses often needs to be carried out for entire streets, otherwise it does not look good aesthetically. In some cases, external wall insulation will stick out further than the roof eaves, so the roof would need to be adapted.
6. Internally insulating houses is very disruptive to households and would meet a great degree of resistance.

Potential solutions for buildings are a combination of:-

1. Solar Panels
2. Battery Storage
3. Heat Pumps
4. Hydrogen
5. External Wall insulation
6. District Heating Schemes e.g. burning municipal waste and using the heat to keep a district of a town warm.