

How are sustainable energy initiatives incorporated into new build projects.

Derbyshire County Council's in-house design and engineering team have extensive knowledge and experience stretching over many years, across numerous projects, of sustainable energy initiatives, not only in terms of design but also in terms of installation and maintenance of such systems.

Having been at the cutting edge of school design when achieving a BREEAM (Building Research Establishment Energy Assessment method) Very Good rating was mandatory for all new schools funded by the Department of Education, this requirement is no longer there, but despite this the Council remains committed to ensuring sustainable energy initiatives are at the core of all building design and construction. Over the years and with tightening capital budgets available to fund new buildings, the in-house design team has concentrated on the most cost effective sustainable energy solutions and in so doing has moved away from the expensive 'bolt-on' solutions on every new build, only including such installations where circumstances require them.

Fabric First and Good Design Principles.

It is accepted across the building construction industry, that the first and most cost effective position for any sustainable building design strategy is to ensure the outer fabric of the building, namely the floor, wall, windows and roofs are as well-insulated and air-tight as possible. Ensuring the optimum design is reached here is the most economical way of achieving sustainable energy performance. Other factors such as building orientation, efficient design solutions for lighting, heating and the use of passive ventilation, all contribute to achieving a holistic sustainable energy solution.

In order to achieve Building Regulations and pass Part L, energy calculations (SBEM calculations) have to be prepared and submitted to Building Control by the building design engineers. This process often requires a menu of sustainable initiatives to be included in the buildings energy design strategy. These often include photovoltaics (PV's) and Air Source Heat pumps. The latter being commonly used in modular classroom buildings. Air Source Heat pumps work by taking warm air from the outside and pumping it into the building- working essentially in reverse to an air conditioning unit. The PVs installation allows a building to generate and use its own electricity, thus reducing the buildings reliance on taking energy from the national grid.

Recent completed major school extension projects include Aldercar Secondary School and Dallimore primary school, where both schools are benefitting from on-site electric generation through a significant array of PV's, whereby the surplus is also passed back to the national grid. A similar installation is planned for Glossopdale new secondary school, which is currently on site, and the next phase of Aldercar Secondary School which is currently in design.

The councils approach is never a 'one size fits all' but a bespoke solution that best suits the specific location and function of the building. There are many factors that contribute to efficient and sustainable building design starting with an understanding of the needs of the users.

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