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# building services design

t factors and guidelines. Ant Wilson and Katie Marsden of AECOM highlight some of the key issues

the remit of the Target Zero ([www.targetzero.info](http://www.targetzero.info)) initiative, sponsored by the British Constructional Steelwork Association and Corus.

These results showed there is considerably less difference in thermal variation between concrete and steel frame schools than was previously thought.

The Target Zero initiative is designed to provide guidance on designing zero-carbon buildings in five main sectors – though it's worth noting that zero-carbon for non-domestic buildings hasn't yet been officially defined. Nevertheless, the initiative provides very useful information because it takes account of embodied carbon as well as the performance of the buildings.

The first Target Zero report to be published focuses on the

schools sector and it makes a number of interesting points. Not least of these is its conclusion that the most cost-effective route to true zero-carbon operation is to use a combination of on-site energy efficiency measures along with off-site and on-site low or zero carbon (LZC) technologies. It also notes, based on the recently constructed Christ the King Centre for Learning secondary school in Merseyside, that the steel composite structure had a 14% lower embodied energy content than the alternative in-situ reinforced concrete flat slab structure.

## Changing face of renewables

As with just about every sustainable project, it's important to consider LZC technologies in general, and renewable energy sources in particular. In this respect, the



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recently introduced feed-in tariffs have dramatically changed the return on investment scenario. Suddenly photovoltaics (PVs) and wind turbines are now much more viable and this sea changes needs to inform the building services engineers' decision-making process. For example, if a large area of roof is available for capturing solar energy, will it be more cost effective to install PVs for power generation, or is there a large base heating load such as a swimming pool that will make solar thermal more viable?

Nor is it just the face of renewables that's changing. Schools are now becoming a much more integral part of their local community, making swimming pools, sports halls, theatre facilities, classrooms and much more available to local people. Similarly, some authorities are now combining more educational facilities on a single site. The result is that it no longer makes sense to base design decisions on a relatively small site with usage restricted to 8.30am to

4.00pm, five days a week, 40 weeks a year.

In adopting low carbon designs there is also more potential to gain funding through the Building Schools for the Future and Primary Capital programmes. In addition, where a design can be shown to be at least 60% better than the Building Regulations Part L 2002 there is additional funding available for LZC technologies.

All of which means that building services engineers need to adopt a much wider view on school projects, taking account of not just the engineering issues but also financial aspects such as feed-in tariffs and funding opportunities. We may also consider how the building's design can be used as an educational tool to promote sustainability awareness.

Of course, there will always be some who think of these aspects as a distraction from the core role but we believe this is a great opportunity for building services to raise its game, its profile and its influence.



Schools are now becoming a much more integral part of their local community



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