

The rise of the façade engineer

There's a new science influencing the sustainability of our buildings

INDUSTRY VIEW

Industry is beginning to recognise the important contribution of engineers who understand precisely how a building's external surfaces can help moderate energy use. The façade of a modern building is fast becoming one of the most expensive and important elements of building construction; representing up to 35 per cent of construction costs. Façades are a creative expression of the architect as well the primary environmental modifier, significantly influencing internal conditions, energy use and comfort.

We all understand that insulation is important to prevent heat loss from a building, but this is not a general rule that applies to all constructions. Some buildings that have dominant air conditioning energy use might not necessarily benefit from very high levels of insulation when cool external weather

conditions might actually help depress warm internal temperatures.

In the future, building façades will need to be far more adaptive so that they work in the same way that the consumer might remove a coat and add sunglasses on a hot day. Clearly, we have the ability to open and close windows for ventilation purposes, but varying levels of insulation and window transparency will be required to further optimise building energy use.

Specially trained engineers

Façade engineering is a relatively new science, embracing the need to design and understand how building façades contribute to energy in use so that optimum forms of construction can be achieved with certainty. This requires specifically trained façade engineers. The Society of Façade Engineering in London defines the science as 'the art of resolving aesthetic, environmental and structural issues to achieve the



Façades can be creative and practical

enclosure of habitable space.'

The technical design and execution of sustainable buildings now requires properly skilled and talented engineers as part of a holistic design approach to inform this part of a building's construction in any properly sustainable building.

.....
Chris Macey is chief executive of Wintech Façade Engineers
01902 307430
www.wintech-group.co.uk

The debate

What makes a successful sustainable city?



Chris Macey
Chief executive
Wintech Façade Engineers

Sustainable cities can only be achieved by constructing truly sustainable buildings. All buildings consume energy and have a carbon footprint; the size of this being dependent on the energy expended in day-to-day use. This is largely governed by air conditioning to offset heat produced by people, equipment and sunshine through windows for commercial buildings – and often just heating and lighting in residential properties.

The energy consumed by heating, ventilation and lighting equipment to moderate the internal conditions is dependent on the energy that these services consume and also the flow of heat and light across the building's external surfaces, referred to as the façade, or envelope.

Truly sustainable buildings require balance between the energy used by the building and its occupants (services engineering) and the energy gains and losses across the envelope under varying weather conditions (façade engineering).

The science of façade engineering and its contribution to achieving truly sustainable cities is a new imperative in the whole design process.

01902 307 430
www.wintech-group.co.uk



Jeremy Greenwood
Managing director - ReadyMix
Lafarge Tarmac

Sustainable cities should provide healthy, efficient and economically viable neighbourhoods where people will benefit from a cleaner, greener existence. While in the current financial climate we are not living that reality, an ever-growing population means the need for sustainable cities has become even greater. However, for this to be realised, the interpretation of the term "sustainable" needs to shift from its perception as a green buzzword into a statement of how the demands on a city's resources are catered for in the long term.

With a nationwide requirement for more housing and better infrastructure, the sustainability of a city should reflect not only how efficiently these elements are provided but also the longevity of the services they provide. Whole-life cost needs to be considered fully alongside implementation, potential maintenance costs and carbon consumption to ensure a sustainable future is achieved.

.....
sustainablecities@lafargetarmac.com
www.lafargetarmac.com



Rob Gillespie
Service director
Hounslow Highways

The triple bottom-line of sustainability has long been defined as development that delivers economic, environmental and social benefits. While a long-term highways contract may not seem like a typical sustainability project, on closer examination, it is.

In mid-2012, the London Borough of Hounslow finalised a 25-year deal with Hounslow Highways – an organisation made up of VINCI Concessions, Ringway and Barclays Infrastructure Fund – and secured long-term funding for the borough's highways network and upgrade of the roads, footpaths and street lights. With more than £300m being spent on the borough's streets in the next five years, the infrastructure will not only be returned to a high quality, but will also be efficiently maintained for years to come.

Hounslow Highways works with the council's regeneration teams to align the project to the medium and long-term development aspirations of the council. A successful, sustainable city requires development that meets the needs of the present without compromising the ability for future generations to meet their own needs.

enquiries@hounslowhighways.org
www.hounslowhighways.org



Lynne Ceeny
Global head of sustainability
Parsons Brinckerhoff

Like a mirage, the vision of a sustainable city hovers tantalisingly on the horizon but hauntingly beyond reach. Many commentators focus on smart cities using big data and integrated technologies. But this presents massive scale challenges – technologies, governance, goal alignment, timetables and funding models, let alone investment.

We need a manageable process – individual building blocks to test the foundations of policy, investment and governance. A focus on specific systems, including energy, transport, water, and even carbon, allows us to test design and technology. Working at the scale of smaller towns or neighbourhoods can test integrated planning and governance.

Parsons Brinckerhoff is at the heart of this process, delivering smart systems for energy and transport, and other critical infrastructure projects. We are seeing the benefits of locality planning, integrated investment and infrastructure models.

Retrofitting our cities will not be done overnight. But the right bricks and mortar should help us reach the sustainable cities on the horizon.

020 7337 1700
services@pbworld.com



David Handley
Director, RES Advisory
Renewable Energy Systems

In the past year we have seen a positive change in the renewable energy sector, driven in part by a corporate sector better educated on the benefits of renewable energy. There is no reason why cities cannot follow a similar, smart trajectory, it is just a matter of scale and accessing the right expertise.

Smart cities should be following the example set by the leading corporates who have already completed extensive energy efficiency programmes and are now demanding the next step – utility-scale renewable energy generation assets. These steps would reduce the community's carbon emissions and improve security of their energy supply, and on and off-site renewable energy generation helps against fossil fuel price volatility.

Imagine a web of renewable energy sources that combines technologies integrated within the fabric of buildings with utility-scale projects (mainly based out of town). Embracing renewable energy at scale – both in and surrounding smart cities – can have a profound impact on emissions, energy security and cost.

01923 299 292
advisory@res-uk.com



High-return timber investments

£21,000 invested over 12 years is projected to **return £74,734** with the following payouts: Year 4 **£4,050** Year 8 **£11,234** Year 10 **£14,734** Year 12 **£44,716**

If you are considering investing, either for a savings plan or for children or grandchildren, it may be worth considering our high-return timber investments. As market leaders within our sector, we offer contemporary forestry investments and have a proven track record for growing, harvesting and delivering investors their projected returns. Additionally, our products are ethical and sustainable, giving environmentally conscious investors peace of mind and the reassurance that their investments are growing in safe hands.

- We have a proven track record for growing, harvesting and delivering investors their projected returns
- We own all of our plantations unencumbered

Order your free timber investment guide, which includes our returns, terms and conditions and risks associated with this investment described in full

0800 075 30 10

enquiries@ethicalforestry.com www.ethicalforestry.com

Calls to 0800 numbers are free from a UK landline. Mobile and international call costs may vary.

Important information: * The projections provided are for information purposes only and are based on our assessment of the amount of timber that can be grown and the market price, as explained in our brochure, following investment in Melina over 12 years (2013/2014). Actual returns will depend on the yield produced and the market price at the time of harvest. Returns may be higher or lower than projected and there is no guarantee that you will receive back the full amount invested. Any returns may be subject to additional costs and liabilities such as tax, which have not been factored into our projections.