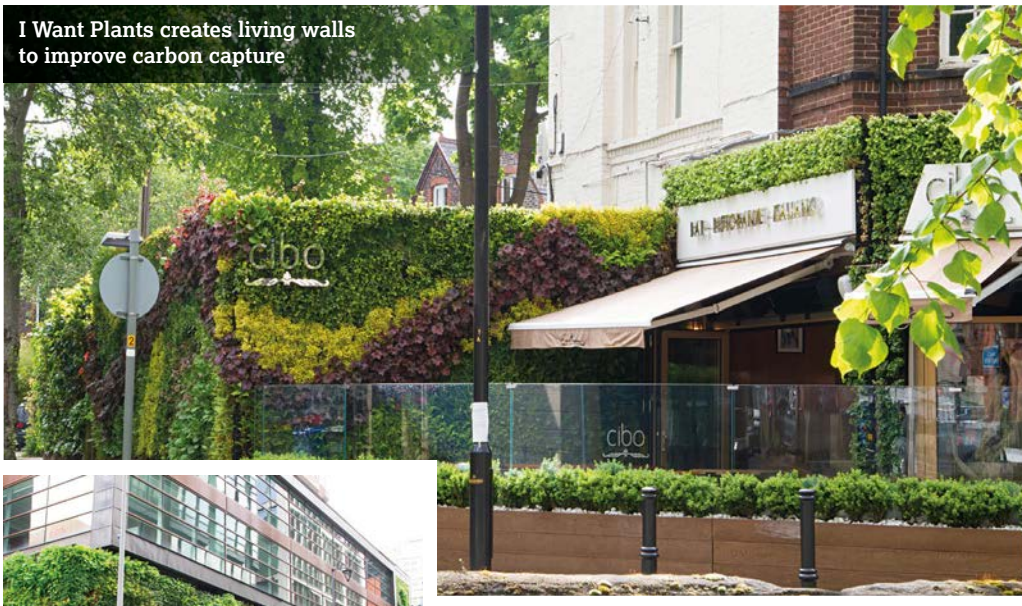
CONSTRUCTING A ZERO-CARBON FUTURE

Pressure is mounting on businesses across the North West to reduce their carbon output, particularly in the construction and building sectors. We explore some of the innovative products and techniques being introduced to support decarbonisation

ROBYN HEWSON

Across the North West, several areas have set ambitious goals around net zero, ahead of the government's target of 2050. Manchester is set to become a zero-carbon city by 2038, Liverpool by 2030 and Cheshire East and Oldham as early as 2025. With 39 per cent of carbon emissions coming from the built environment, according to the World Green Building Council, the construction sector has a big part to play in the region's journey to decarbonisation. *Insider* speaks to companies leading the way when it comes to zero-carbon methods of construction.



I Want Plants creates living walls to improve carbon capture

INNOVATIVE PRODUCTS

Green infrastructure and biophilic designs are becomingly increasingly popular for developers working on zero-carbon projects. One company at the forefront of this is I Want Plants, which makes and supplies horticultural displays. Three years ago, managing director Richard Rowlands invented a new product, the HYVERT living wall, which he describes as a "living skin for a building".

He says: "If you're a developer looking at building on a piece of land, there is essentially no way for you to get that land back. A developer said to me recently it had taken two years to get planning permission to put eight trees on a street in Manchester. So by building vertically [with a HYVERT living wall], you can negate some of those issues."

After installing HYVERT living walls with 18,000 plants at Bruntwood Works' new workplace development Bloc, Rowlands says: "There are now insects, wildlife, bees and flowers. Before that, there wasn't a single tree on that road. From a planning point of view, if you implement this and say we're going to attract these species, it tends to be more favourable to the planners."

Joseph Rouse joined the I Want Plants team as scientific research and development lead, as part of a knowledge transfer partnership with Manchester Metropolitan University. He tells *Insider*: "Even a small HYVERT wall of 200m^2 would draw down 220kg [of carbon] a year, which is before you incorporate the energy savings created through its insulating properties. This rate actually outperforms the carbon capture ratio of some forest scenarios."

Looking forward, Rouse says the team have been working on "novel sensing technologies". He adds: "This will allow us to have environmental reporting systems integrated into the walls."

Rowlands and Rouse agree the industry has made progress towards reducing carbon, but more needs to be done. Rowlands stresses: "Post-Covid, decarbonisation is being seen as a necessity rather than a luxury and if you're not doing it now, you're going to be dead and buried in no time."

One serious contributor to carbon output is the use of fossil fuel heating systems, responsible for 66 per cent of emissions in commercial buildings, according to the UK Green Building Council. Wirral-based manufacturer and carbon reduction specialist Fleetsolve is on a mission to change this.

Chief executive officer Keith O'Connor tells *Insider*: "As the need to decarbonise the built environment grows, private sector businesses and public sector bodies alike

HYVERT | IWANTPLANTS®

GREENER AND HEALTHIER CITIES

Plants – a formidable natural force

Family roots

Proud to be a Manchester family business established almost fifty years ago, our original service continues to this day; providing rental and outright purchase of plants to businesses, along with regular after-care by our horticultural service technicians.

We're now a team of 46 and over the years, we have installed live planting schemes within the work-space, hospitality, healthcare and retail sectors but besides these green infrastructure projects we now install 'custom installations' too.

Unique to each client, we supply and install artificial plants and floral displays, bespoke custom-made trees and our signature 'I Want Plants' artificial living walls which we can add extra artificial foliage to – they look incredible! All our artificial products are sourced for their authenticity.

Design lead

I have worked for I Want Plants for almost twenty years as design director so it's my job to keep ahead of the next interior design trends. I love being involved from the out-set; having the opportunity to design live green infrastructure displays or custom installations for our clients. The Biophilic Design movement has had a huge impact on interior design and last year, we experienced increased enquiries for live plants – no doubt triggered by greater awareness of both a building occupant's wellbeing, increasing sustainability and the desire to reduce negative environmental impact.

Some of our custom installation projects

Nonetheless, with hospitality leaping back into action post-covid, I've also had great pleasure working on some amazing, life-like artificial greenery and floral custom installations too. From botanical abundances of trailing greenery to create green ceilings to our stunning custom made trees, festooned with lights, creating a twinkly canopy overhead. There's literally no surface off-limits!

Working across the UK both directly with the client or collaboratively with their interior designers/ architects, our past and current clients include AutoTrader, Bruntwood, Bentley Motors, McGoff Construction, Mowgli, The Co-Op and San Carlo Restaurant group.

Jessica Rowlands, design director

Green innovation

It's also been a natural progression to add living green walls to our services and such is our expertise with plant development and root structure, we have invented a unique living wall system; HYVERT which is UK design protected and patent pending.

HYVERT's rise and development as a nature based solution for more sustainable cities has been meteoric, especially since we formed a Knowledge Transfer Partnership (KTP) with Manchester Metropolitan University (MMU), where our HYVERT living wall system has been under scientific scrutiny in laboratories.

Consulting with our construction clients, we know that simply saying "HYVERT living walls capture carbon", is no longer enough. There needs to be an accurate datum line and this is the objective of our scientific research. Not just carbon absorption, we're taking a holistic approach to HYVERT's research which also includes measurement of noise abatement, rainwater re-utilisation, energy performance, biodiversity net gains and more.

We're very excited about the way science is taking us to a new level and ultimately 'accredited' data that is validated by MMU.

'I Want Plants' core objective has always been 'placing plants closer to people' and with every project we complete, we're helping to make the environment we live in, greener and healthier for the next generation.

We believe that nature based solutions are key to making a real difference to our cities – everything we do creates positive change and I couldn't feel prouder of I Want Plants.

0161 928 4546 | ruby@iwantplants.co.uk | www.iwantplants.co.uk

Coppice Farm Barn, Ashley Mill Lane, Ashley, Cheshire WA14 3PT

are looking for alternative, sustainable fuel sources. Our biofuel CHPs and generators work exactly like a conventional CHP system, but they are fuelled using a range of biofuels produced from end of waste materials – such as oils, fats and greases. When correctly designed and installed, this will provide a significant carbon reduction."

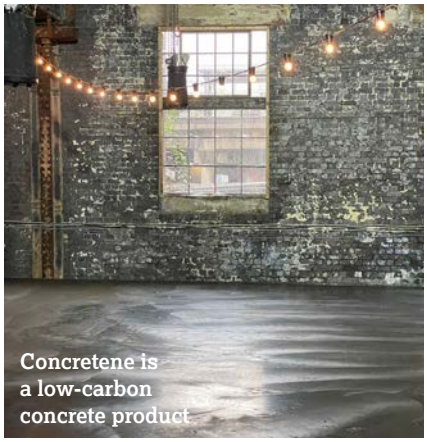
According to O'Connor, there is no "silver bullet" when it comes to decarbonisation. "The key to success in reducing emissions across the built environment is collaboration. By working closely with the whole built environment supply chain – from consultants, designers, specifiers, construction companies, facilities managers and onsite energy teams – across the design, installation and ongoing operational phases, we can immerse ourselves in every detail of the project."

Alongside living walls and biofuel generators, there is another North West export causing waves in the construction sector. Concretene is a low-carbon concrete product, developed by The University of Manchester's Graphene Engineering Innovation Centre (GEIC) and Nationwide Engineering. The revolutionary concrete is made using graphene, a 2D material first isolated at the University of Manchester, and has been shown to cut carbon emissions by 30 per cent. Given that concrete is responsible for 7 per cent of global carbon emissions, Concretene opens up exciting possibilities for carbon reduction in the built environment.

> "Post-Covid, decarbonisation is being seen as a necessity rather than a luxury and if you're not doing it now, you're going to be dead and buried in no time."
>
> **Richard Rowlands** managing director, I Want Plants

The first commercial use of Concretene in a suspended slab was at Mayfield Depot in Manchester, where the material was used to lay a mezzanine floor for a roller disco rink. Julian Broster, founding director of Civic Engineers, tells *Insider*: "There was an idea to try out Concretene in Manchester, where graphene was invented, and Mayfield looked like a great opportunity."

Adding graphene to the concrete mix, according to Broster, has "significant improvements on the hydration process. [Concretene] achieves its strength as a concrete material far quicker than a traditional concrete mix would. This allows you to put less cement into the mix. The carbon-intense element of concrete is cement itself."



Concretene is a low-carbon concrete product

While zero-carbon methods of construction can cost more than traditional methods, there are in fact financial benefits to using Concretene. Broster says: "There is a cost to putting graphene into the mix, but that cost is offset by a number of things. One is a reduced amount of cement, then potentially a reduced amount of reinforcement in the mix, and thirdly if the product dries out and hardens quicker than a traditional mix, that speeds up the construction process and anything that is quicker to build costs less."

NEW BUILDS VS RETROFITS

As well as introducing carbon reduction initiatives into the design of new developments, it is also becoming increasingly important to adapt historical and listed buildings to make them carbon neutral. Structural and civic engineering firm Sutcliffe has found there are several benefits to repurposing historical buildings.

"Sutcliffe is working within the industry to recycle and reuse as many buildings as it possibly can, in order to reduce carbon usage throughout the UK. Working at the iconic Tobacco Warehouse in Liverpool, we realised that by saving materials, we were not only keeping 20 million bricks which can now be reused, but also embodying enough energy to heat a city like Liverpool for the next three to four months."

Retrofitting existing building stock is crucial when it comes to reducing embodied carbon in the built environment, as demolition and rebuilding releases high levels of carbon. Broster says: "The most sustainable building you can have is the one that already exists."

A proposed addition to building regulations, known as Part Z, will regulate the

Fleetsolve creates sustainable power solutions for buildings

intelligent building group

INTRODUCING IBG SMART TECHNOLOGY - YOUR FIRST STEP TO NET-ZERO IN OPERATION

Up to 80% of the UK's buildings will need of retrofitting in the future to meet environmental targets, and every new-build development has to achieve higher Minimum Energy Efficiency Standards (MEES) from 2023. The time to take action and pursue Net Zero Carbon solutions for your construction project is now.

One of the best and most effective ways to reduce the carbon emissions of your building, whether a new-build or retrofit, is to unlock the vast potential of smart technology to make it efficient, sustainable, totally connected, and future proof.

Building owners and managers are struggling to run their buildings efficiently and in the most environmentally-friendly way because they cannot capture accurate, circuit-level energy usage data from their existing buildings. This is a problem which can be fixed easily during the construction or retrofitting of a building.

Integrating smart, networked PropTech into your building allows you to generate live, accurate energy usage data digitally every 30 minutes to identify inefficiencies and understand what factors affect it. For example, energy usage can vary due to the seasons, changes in the outside air temperature, the orientation of the property, its occupancy level and much more.

Capturing consistent and accurate data over a period in time means you can negotiate the best rates for energy procurement from green-only energy providers and consolidate the entire building's usage. By understanding how, when and where your building is consuming energy down to the finest detail, you can reduce its carbon footprint to the lowest possible level.

You can't fix what you can't measure, and the road to Net Zero Carbon and sustainability for your new-build or retrofitted building must start at the beginning. By using smart technology such as smart metering, sensors, automated controls, decentralised energy and more, you can achieve total control of your building.

These digital data capture and communication systems are extremely cost

effective for both new builds and when retrofitting an existing building. Often the actual fitted cost can be lower than traditional communication specifications such as Cat-5, and they ensure the building is fit for purpose and as future-proof as possible.

By embedding technology into your buildings during construction or retrofit, you can ensure that costs are lower, your communications infrastructure is best in class, and the systems generate measurable revenues for the landlords.

Who are IBG?

Intelligent Building Group (IBG) is a PropTech company that helps you create sustainable, totally connected, and future-proof buildings.

Through the integration of various SMART building technologies; these properties run at maximum energy efficiency, helping clients along their managed route to Net Zero Carbon in operation as part of a wider Environmental Social Governance (ESG) strategy. We also offer high-level security systems that can sit on the same network, including Fire Safety, CCTV, Access Control, and Intruder Alarms which we design, install and maintain.

Our technologies are modular and open-protocol, and include the tools that property experts need to ensure that the performance and efficiency of their buildings is optimised.

Finally, our centralised, 'one stop shop' approach means we're able to achieve this while offering an exceptional return on investment. We have a close working relationship with a specialist Green Fund which allows us to offer no-capex options for any green initiative including EV Chargers, Battery Energy Storage Systems (BESS), Solar PV etc.

With IBG and the Green Fund, you can start your journey to Net Zero immediately and allow the efficiencies created to fund the capital cost over three-to-five years.

0161 713 0346 | info@ibg-uk.com | www.ibg-uk.com

amount of embodied carbon emitted while building. According to Broster, this will make a big difference in the number of developers opting for repurposing old buildings over new builds.

"If designers, developers and builders are told you cannot spend more carbon than you need to, new buildings will be more carbon efficient and it will incentivise developers to use the existing building stock we have, rather than just demolishing and rebuilding. That's what we need to be doing much more of going forward."

BALANCING NET ZERO WITH AFFORDABILITY

One key challenge for businesses looking to invest in low-carbon initiatives is overcoming high prices and cost increases. Richard O'Brien, design director at housebuilder Northstone, describes it as a "constant balancing act between making sure we're using the latest materials and methods that cut carbon from our homes, but also making sure that the new builds don't become unattainable".

He adds: "There's no point in having lots of low-carbon homes that are, for the moment, expensive to build and out of reach to your average house-hunter today. Of course, pioneering new technologies is important but in the meantime, we're on sites across the North West making sustainable, energy-efficient new build houses accessible to regular families, not just the climate-conscious. These are homes that go way beyond building regulations as standard, that cut waste, reduce heat loss and are fitted with tech geared to reduce both carbon and energy bills."

This is echoed by Tom Fenton, project director at developer FEC [Far East Consortium]. FEC and Manchester City Council are responsible for the Victoria North development, which is set to create 15,000 homes over 15 years. Fenton says: "[Net zero] is definitely where we're heading, but it's what we can achieve within the viability parameters in the early stages. One of the things we've tried to carefully manage is that balance between the council's aspiration for 20 per cent net additional affordable homes, place-making contributions to create a sense of place and then more recently the net zero carbon ambitions. At the moment it's impossible to provide 100 per cent of all those things."

Northstone aims to make greener homes more affordable

> "There's no point in having lots of low-carbon homes that are, for the moment, expensive to build and out of reach."
>
> **Richard O'Brien**
> Northstone

ZERO-CARBON IN THE WORKPLACE

It's not only businesses in the construction or property sector that need to start thinking about zero-carbon initiatives. Any company operating out of an office building will need to consider ways of reducing carbon output if the North West is to hit its ambitious net zero targets.

What's more, employees are putting pressure on employers to ensure their workplaces are zero carbon. At a recent *Insider* round table event, Dan Hyde, development director at MEPC, commented: "People are becoming a lot more educated on net zero. Interestingly, it is occupiers and employees driving that conversation. We're seeing a new generation of employees coming through that are a lot more sustainably-minded, and they're not going to work for companies that are green-washing." So implementing a carbon reduction strategy has the added benefit of showing staff that sustainability is high on the agenda, in turn encouraging them to stay at the company.

As well as incorporating low-carbon designs into the projects it works on, construction firm Seddon is redeveloping its headquarters in Bolton, with the aim of achieving net zero.

Peter Jackson, Seddon's managing director, tells *Insider*: "The redesign will take a considered approach to reductions in energy, beginning with energy and thermographic studies into how the building has operated and performed for the last 18 years. Building services improvements includes removal of gas from the campus, new air conditioning, LED lighting and lighting controls and an air source heat pump cylinder, all of which will improve the quality of the work environment and reduce energy costs and their carbon emissions."

By investing in green infrastructure in the workplace, companies can not only reduce their carbon output, but also save money on energy usage in the long run, mitigating ever-increasing price surges. Jackson explains: "Payback periods are important to make a judgement call on the CAPEX and cash expenditure vs OPEX savings. Seddon has always taken the long-term view and the refurbishment of its Bolton Campus is no exception – and with energy prices soaring, payback periods are reducing all the time right now." ■