



Passive building

With the speed of climate change accelerating, attention is turning from how to provide buildings with efficient heating to efficient cooling. In hotter climates, air-conditioning accounts for up to 80% of utility costs, and changes the patterns of energy use throughout the day.

In order to avoid increased costs for cooling as well as heating, building designers are increasingly drawn to using passive techniques. Some are well known and tested in warmer regions, others are mixing state of the art management systems with more natural construction methods.

[Passivhaus](#) construction, started in Germany, has spread and one can see examples in many countries. Most of the development interest to date has been in residential buildings. However, increasingly, [a number of office developments](#) have utilised similar techniques to manage heating, cooling and air quality. [Some hotels are aiming for zero energy status](#). New techniques are allowing for retrofitting of existing buildings and [digitisation to boost energy savings](#).

A report for the [Urban Foresight Laboratory](#) suggested that energy costs can be reduced in commercial properties by 30-40% by implementing just a few technologies. These include efficient lighting and controls, building services, and management systems. As [70% of current building stock will still be in use in 2050](#), these retrofitting technologies remain important.

Retrofit

It seems that retrofitting old buildings not only makes environmental sense, by reducing the new resources needed and increasing the lifespan of the structure, but is also the preferred [option for many tech-savvy employees](#). [At a recent conference on London's commercial retrofit market](#), it was argued that older buildings with character and a sense of place were a way of creating difference in the search for discerning staff.

Surveys of office workers have found that almost three quarters want eco-friendly buildings with more communal areas. The agenda is shifting to thinking about sustainability, wellbeing, character and style.

Green Walls

Green walls, also known as vertical planting systems, vertical gardens, plant walls or vegetated walls have been successfully implemented around the world over the past 15 years. In 2004, [a four-story plant "biowall" was installed at the University of Guelph-Humber Building](#) in Ontario, Canada. With plant life visible from nearly every floor, the wall acts as an indoor air purifier, pulling air through the wall and into the mechanical air ducts. According to the University, the biowall could supply all of the building's fresh air intake needs. Irrigated by a vertical hydroponic system, it naturally cools the building in the summer and humidifies in the winter. Today, architects and design teams are specifying brilliant walls of live greenery with functions ranging from fully scrubbing the air to simply humanising windowless and 'nature deficient' indoor spaces.

Implications for Gwent

In the UK, the examples of truly innovative building design are few and far between. Where they do exist they tend to be in high-specification and bespoke residential development. Commercial (short-term cost) considerations have limited the application of new technologies into larger buildings. Planning policy has a role to play in encouraging such development and local authorities