CASE STUDIES FROM THE SECTOR

THE ROYAL ALBERT HALL

The Royal Albert Hall (RAH) is one of London's iconic music venues, built by Queen Victoria and a Grade I listed building, from an energy and sustainability perspective, it has its challenges.

The Hall are developing a carbon management plan for the venue which includes a set of KPIs for achieving net zero carbon.

Since 2016, the hall has been working to change all of the lighting in its 5,500 capacity auditorium to LED lighting, on average reducing energy consumption by 66%.

During the pandemic, the hall invested £900,000 in an upgrade to their ventilation system, which includes Variable Air Volume units which are able to sense CO2 levels in the air, which then automatically reduce fan speeds in rooms that aren't being used. This is projected to save a lot of energy in comparison to the previous system which ran 24 hours a day.

In addition, the RAH are introducing green riders to encourage artists to use the venues own PA system and lights to reduce freight and travel emissions. They have also invested in-house audio rig with an integrated power monitoring system which allows staff to log in and monitor emissions and power on a show by show basis.

THE ROYAL COURT THEATRE

The Royal Court Theatre have sustainability high on their agenda, and aimed to transition to net zero in 2020, before the pandemic altered the timescale of their ambitions.

The energy part of their strategy involved commissioning a feasibility study from EnergyLab to assess their current heat and power system and assess the opportunities to generate power onsite with renewables. As their building is listed, and in a dense urban area, Ground Source Heat Pumps and Air Source Heat Pumps were not viable options, and solar on the roof would only reduce their carbon by 1%. Their boilers are only 5-7 years old, so they made the decision to leave them in place as it was not sustainable to remove them after such a short operating period.

The Royal Court already procure 100% renewable electricity from Good Energy and Carbon Neutral gas from Ecotricity, however, given their limited opportunities to generate renewable power onsite, they are focusing on energy reduction targets to meet net zero, in recognition that procuring green energy still relies on a relatively carbon intensive national grid.

Their energy benchmarks are to reduce electricity by 37.5% a year and by 16% a year for gas. This will be achieved through re-setting the operating times of their BMS, replacing lighting in the building with LEDs and allocating staff responsibility for monitoring their metering system.

For building heat loss they are commissioning a thermographic survey to identify heat loss and opportunities for building fabric improvements.

POWERING PARKS

Powering Parks is a project by Possible, Scene and Hackney Council, piloting the installation of heat pumps in the borough's parks and green spaces to provide heat to nearby buildings.

The pilot project is delivering promising results and could offer an exciting model for more green spaces in cities going forward. They have developed a toolkit to help local authorities and park managers find opportunities, shortlisting sites and how to assess cost and benefits of park heat projects.

DEPOT CINEMA

The Depot Cinema in Lewes is highly committed to sustainability. Their building was designed with the ambition to create a building with the lowest possible environmental impact as it was understood at the time in 2014-5.

The building was designed to minimise energy consumption, with excellent insulation – double glazed curtain walling, LED lighting, roof vents instead of air conditioning, automated systems for internal and external lighting, and shutters which regulate sunlight and heat. The building is EPC A rated.

There is a living roof that provides a multitude of benefits. The substrate provides excellent heat and sound insulation and prevents excessive water run off, therefore reducing flood risk to the building. A number of solar panels provide an additional source of renewable electricity. The roof features 72 different local Chalk and Downland plant species which provide a rich food source for pollinators, including 9 species of bees recorded by a local bee expert. They have linked with important conservation projects including the Nationwide Buglife B-lines project and the local project Wildflower Lewes. They also have swift, sparrow and bat boxes, and are working with experts Lewes Swift Supporters to encourage swifts to nest there.

The building was designed with the local architecture in mind, drawing on inspiration from the local South Downs National Park. They worked with a local flint and lime conservation specialist as well as used local pebbles as a design feature on the roof, and local shingle in the screed restaurant flooring. The shutters were sourced from local chestnut trees.

They invested in a large ground source heat pump system which serves as a geothermal heating and cooling system. Unfortunately, the system was not specified correctly the first time round, and new specialists had to be brought in to ensure it performed as was originally intended. GSHP technology is highly effective when the specifications and design are correct, so to help others learn about their experience, Depot have been very transparent about the issues, keeping an open communication with audiences and helping others in the sector to learn from their experience. Read more about what happened here: https://lewesdepot.org/heating

BLENHEIM PALACE

Blenheim Palace Estates is a large Palace and subsidiary buildings in 12,000 acres of mixed farmland. In 2019 Blenheim declared a Climate Emergency. Blenheim took the executive decision to move to be carbon neutral by 2027. Blenheim set their boundary to include all carbon emissions (including international visitor travel), and to offset residual emissions within its own land. This is one of the most far-sighted net zero policies of any cultural organisation.

They've taken the following actions to tackle emissions from their buildings:

- Start the largest rural Passivhaus development in the UK. Passivhausing (following a specific low energy design standard) offers residents far better air quality, a lower carbon footprint and a much lower fuel cost
- Launch a new Church Farm community in Radley where each home will include an air source heat pump, solar panels and access to electric car charging – reducing the carbon footprint across the entire site
- Bring 10% of the lettings portfolio with an EPC rating of less than 'C' (126) up to 'C' rating in the next 12 months
- Reduce the carbon footprint of all new homes started in the next 12 months by 10% and offset 100% of what they can't eliminate.

Land-based actions:

- Complete a first scale solar park as an initial step to take Blenheim off-grid.
- Begin Blenheim's first regenerative farming project on land north of Woodstock, which will enhance the health of the soil to increase climate resilience
- Deliver the UK's first 'stage zero' project using nature-based solutions to reconnect floodplains back to their rivers and, in doing so, hold back flood waters and capture carbon
- Work with partners to plant 280,000 trees in 300 acres of new woodlands, and for the first time at this scale of planting, use plastic-free tree guards
- Open-up grass routes to connect 17km of circular paths
- Continue to shift fossil fuel vehicles to electric and, where we cannot, move them to Hydrotreated Vegetable Oil (HVO) fuel, reducing emissions by 95%.

Joana Moll's 16/2017, Santa Monica, Barcelona.

The piece 16/2017, by Joana Moll, is part of the current exhibition 'Exposar · No exposar-se · Exposar-se · No exposar', at the Santa Monica Arts Centre in Barcelona and aims to reduce the energy consumption of the art centre by 50% in the four months that the exhibition is set to run. It is an artistic intervention that directly affects the building and the people who host it, and proposes the need to articulate human activities around limited energy resources, a necessary exercise to promote new cultural rituals more consistent with the contemporary climatic conditions.

Read the full case study here: