



The brand new Energy for Life: Tropical House at Marwell Zoo in Winchester is benefitting from the latest Priva BMS technology as part of a fully co-ordinated controls package delivered by CambridgeHOK.

- > Priva Blue ID BMS at heart of highly co-ordinated controls package**
- > Single-screen functionality oversees controls in Tropical House and plant room**
- > Remote smartphone access of entire system via easy-to-use graphics**

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Constructed thanks to a multi-million investment programme, the new Tropical House is home to a range of sloths, marmosets, birds, lizards, tortoises, fish, insects and rare plant species. The control of parameters such as temperature and humidity is vital to the health and wellbeing of all animals and plants housed within.

Marwell Zoo's innovative and sustainable £8 million Tropical House marks the second phase of a £17 million investment (in total) over the next 8-10 years, creating improved habitats for animals and more immersive experiences for visitors. The zoo is hopeful that the new facility will contribute towards the goal of becoming carbon neutral by 2021.

The ground-breaking project features a woodchip boiler that will be supplemented by a specialist boiler capable of burning straw-based animal manure. The two boilers will provide heating for buildings across the zoo and enable Marwell to reduce its carbon footprint and dependency on fossil fuels.

Further environmental measures include the collection of rainwater from the roof of the Tropical House, which is harvested in two 50,000-litre tanks to provide water for the aquaria and plant watering, making the building almost totally self-sufficient.

Controls rethink

Such a technology-diverse and important exhibit clearly demanded an equally adept building management system. Until quite late in the project, Marwell Zoo was planning to use two BMS specialists, one for the controls in the plant room, and another for the Tropical House. However, a review of the plans led the zoo to think that it was not getting the best value for money. Moreover, the arrangement would lead to the creation of two separate controls screens.

“We were introduced to the project at the 11th hour after Marwell Zoo found out about our input on the Eden Project in Cornwall, where we won a national award for our energy-saving work in 2012,” explains Duncan Grant, Technical Manager at Priva partner, CambridgeHOK. “At Marwell, we set about installing a more co-ordinated system than was originally planned which, for ease, featured a just single screen encompassing both the plant room and Tropical House.”

CambridgeHOK set to work designing and manufacturing the control panels for both the plant room and Tropical House, controlling factors such as temperature and humidity, as well as monitoring fire alarms and water temperature for the reptile and fish pools. Serving as the heartbeat of the system,

“To save time we were able to plagiarise our own work on the Eden project by modifying programs accordingly to suit the Tropical House at Marwell Zoo,” explains Mr Grant. “The great thing about Priva Blue ID is that you can use Priva programs, or create your own, or modify previously created programs; it’s a very flexible system that not many other BMS types can match. It’s one of the key reasons we have been installing Priva as our only BMS for the past 15 years.”

Precise monitoring

Priva Blue ID takes care of the environmental controls in all of the different Tropical House zones, including a state-of-the-art renewable energy centre. Marwell’s plant room, which houses the biomass boiler, back-up gas boilers, water treatment plant and rain harvesting, is also controlled and monitored.

“It’s a very ecologically sound building, designed to be as energy efficient as possible,” says Mr Grant. “The control system we have installed is responsible for the efficient running of the Tropical House, as well as providing ideal conditions for the flora and fauna.”

Due to its critical nature, the entire control system was trialled for three months with just plant species inside the Tropical House. Once Marwell Zoo was satisfied regarding the system’s capability, animals were introduced.

Opened to the public at Easter 2018, the Tropical House creates a high-quality, novel and immersive exhibit, delivering guaranteed, close proximity animal viewing while enhancing and setting new standards of husbandry for the species displayed.

Co-ordinated control

The Priva Blue ID BMS oversees many functional aspects of the Tropical House, including ‘misting’, which serves two purposes: helping to maintain humidity at 80%; and enhancing the visitor experience by simulating the natural environment found within tropical rainforests. Indeed, an artificial rain system is also installed – again controlled by the Priva BMS.

Among further functions monitored by Priva Blue ID is the entire aqua system for reptiles and fish, as well as monitoring rainwater collection on the roof. Priva also monitors the break tank, setting off an alarm if the level of water in the tank is either too low or too high. The entire back-of-house (where the animals go at night), is an additional beneficiary of Priva controls for temperature and humidity.

“If there are any issues whatsoever, such as an unexpected fall in temperature, the system will send out alarms via email to relevant staff,” explains Mr Grant. “In fact, the entire control system is set-up in smartphone format, so authorised employees can log in and access a graphical front end to see what is going on. Users simply touch on a graphic of the building to see the status of all parameters.”

Mr Grant reports that Marwell Zoo is delighted with its highly co-ordinated controls package. Indeed, CambridgeHOK has now been asked to look at other buildings owned by the zoo, where it is likely that Priva BMS technology will also be implemented.

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