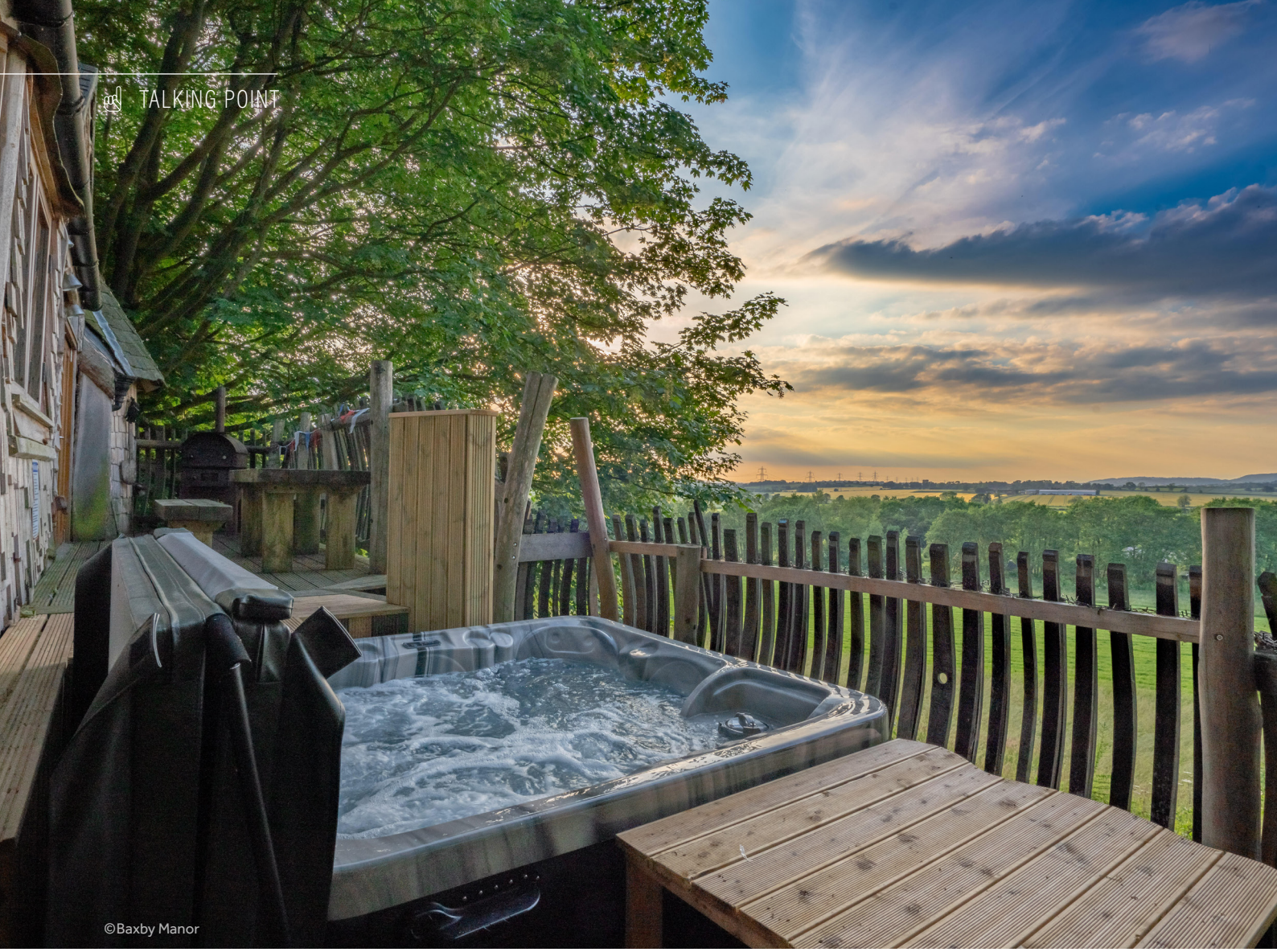


Eco friendly glamping at The Hideaway, Baxby Manor

Solar and storage for eco-friendly glamping

Words: Alvaro Garcia, Commercial Director, EFT Systems, European service partner of BYD Battery-Box

The Hideaway, Baxby Manor near York planned to expand its range of accommodation with the addition of several fully equipped holiday Kabinas, but was reaching the capacity limit of its 60 A single phase grid supply. As the campsite aims to offer eco-friendly holiday lets, the owners decided to complement the power supply with a 52 kW solar and a 120 kWh energy storage system, using sustainable energy supply to offer an even more sustainable glamping choice for their guests.

It's a very idyllic arrival when the green canopy of the tree-lined country road opens up to reveal the campsite. Children are racing across the meadow, while parents are relaxing with a cool drink in front of Hobbit-like wooden cabins. More and more holidaymakers are looking for eco-friendly accommodation and a way to reconnect with nature. But rustic camping in a tent is not for everyone, especially if the weather is too hot or the one-week holiday includes four days of rain.

Since its opening 10 years ago, the campsite has been expanding its choice of accommodation. The provision for tents and campervans is complemented by fairy-tale-like wooden cabins that look like tree houses, with different levels of amenities, from wood burners to fully equipped kitchens. The latest additions are several new Kabinas, complete with kitchens, showers, lighting, air to air heat pumps and hot tubs. At this point, camping definitely becomes glamping, and holidaymakers can enjoy nature while not having to forego the amenities of a modern holiday home.

When grid power is not sufficient

Even regular campsites need power supply for campervans, bathrooms and often for a café, restaurant, or community room. Holiday cabins with individual kitchens and bathrooms need additional power supply. When the campsite owners decided to build three new fully equipped Kabinas in late 2022, it became clear fairly quickly that the 60 A single phase grid supply would not be able to cover the additional power demand.

The cost to increase the grid connection capacity to this rural location would have been very expensive. Additionally, the owners wanted to keep their site as eco-friendly as possible, even with a higher standard of amenities. Therefore, they started to explore options to supplement the grid power supply with a renewable energy solution.

Together with renewable energy specialist Vero Power, the campsite owners found the perfect solution, with a 52 kW PV system in combination with a 120 kWh energy storage solution in the form of eight BYD Battery-Box systems. The system can cover the bulk of the site's power requirements with green energy, but still utilise the existing 60 A grid supply, with an 8 kW max draw, as a backup battery charger during times of poor solar yield, through its own dedicated battery charger. The solar power is stored for self-consumption and not fed into the grid.

Snowy start with sunny outlook

The ballasted tray ground mount photovoltaic arrays are hidden behind a line of trees on a sun flooded patch of land. Tucked away in the shadow of the trees is a container that houses the energy management equipment, the eight 15 kWh BYD Battery-Box LVL battery storage systems, the four Victron 15 kVA Quattro inverters with a single-phase configuration, controlled by a Victron Cerbo communication platform.

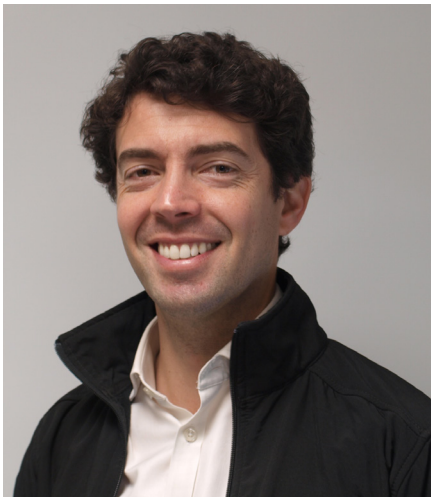
The system was installed in March 2023, despite the snowy conditions in the north of the UK. As the 20 ft power container is located on the other side of a disused elevated railway line, the services of a moling contractor were enlisted to install 50 metres of 90 mm ducting beneath the old railway line. This connected the power container to the newly installed site feeder pillar, via a 240 mm^2 three-core armoured cable.

In the first three months of operation, since the system was first energised on 29 March 2023, it has generated 12,408 kWh of energy and drawn 1,448 kWh from the grid to top up the batteries, which represents only 10% of total consumption.

The Baxby Manor team has not only solved its short-term energy needs but also future-proofed its system.

This has been possible by choosing a modular design of the BYD Battery-Box LVL, which can also be scaled-up at any time, especially with the flexible setup designed by Vero Power. Being able to camp in a sustainable way is likely to make The Hideaway an even more attractive destination. Therefore, as demand increases, they will be able to add power and capacity seamlessly, something unthinkable when talking about grid supply upgrades.

Craig Morgan, Chief Commercial Officer at Vero Power, says, 'We have seen a dramatic increase in demand from customers across the sector, but particularly within the tourism and leisure industry, such as holiday parks and campsites. Operators are looking at ways to move to a more sustainable source of power for their business, whilst mitigating the extraordinarily high cost of grid energy.



Alvaro Garcia

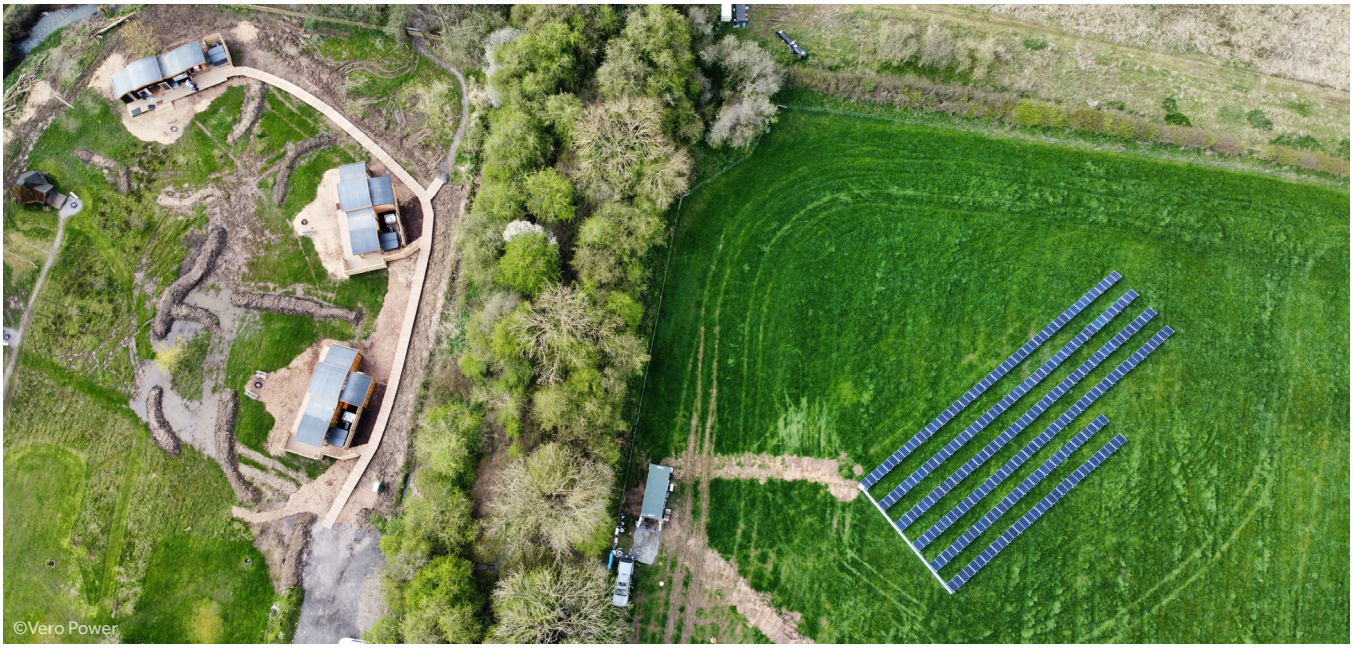
'We are proud to be continuing our partnership with BYD with this installation. Its continued support, market leading technology and dedication to work with us hand in hand to ensure project success has been second to none. It is easy to see why it has been voted the Top Brand PV Storage again in 2023.'

Supplementing grid power

In the past, most energy storage projects were clearly divided into on-grid systems, with the option to feed energy back into the grid, and off-grid systems. The off-grid applications could mostly be found in rural areas, where new grid infrastructure would have been too expensive, or simply not possible to realise. Today, there are more and more examples of the general power demand or the supply for demand peaks exceeding the available grid power supply.

Therefore, the combination of renewable energy sources and an energy storage solution is increasingly becoming a suitable

Pictured from left to right, Craig Morgan, Vero Power, Barney Smith, Baxby Manor campsite owner and Paul Chester, Vero Power



52 kW PV system and 120 kWh energy storage with BYD Battery-Box systems

solution to address different demand and application scenarios.

The performance of the energy network is limited. Due to the conversion of the energy system to renewable resources and towards a more electricity-based energy system, demand is increasing. This results in costs and in some cases, it is not possible or sensible to adapt the power of the network to the ad-hoc demand. This is especially true for infrastructure projects for EV and charging on company premises, which can massively increase the required connected load.

Company campuses and businesses such as car dealerships and hotels are often confronted with this problem. Customers and corporate expectations call for the rapid installation of charging stations. During the planning, it often turns out that the permissible connected load at the transformer station cannot be increased.

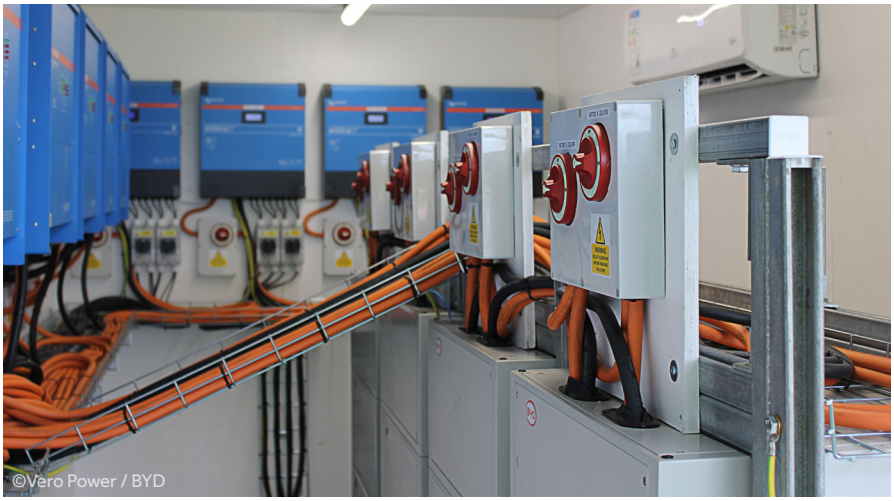
Load management for the charging infrastructure can then regulate the charging park in a targeted manner. To avoid times in which charging is not possible, a commercial energy storage system can help. This can be charged with low power over a long period of time and, if an e-vehicle needs to be charged, it can be supplied with high power.

Where ecology meets economy

In addition, many businesses are becoming more sustainability-conscious and are actively looking for solutions to greening their energy footprint. An example in which both the handling of demand peaks and environmental considerations met is the Eco-Hotel Grüne Elster, in Germany. The hotel needed to supply its eco-conscious clientele with charging stations and wanted to make its overall power supply greener. The combination of a PV system, BYD Battery-Box energy storage and a comprehensive energy management system was able to achieve both.

Providing charging stations is an even greater challenge at shorter stay hospitality businesses, such as restaurants. In these cases, demand is not only highly concentrated during mealtimes, but the power needs are much greater, in order to allow the growing number of electric vehicles to charge as much as possible in one hour or less. Such businesses would benefit greatly from smartly managed energy storage systems, in order to smoothen that demand.

Another business sector often forgotten when considering the current development of energy prices, is agriculture. Operating agricultural machinery and caring for livestock is energy intensive. A dairy cow needs to be warm and milked regularly in the mornings and evenings, causing peaks in the load profile during these times. A study by the HTW Berlin revealed that there is great potential for savings in the agricultural sector, by operating a self-consumption storage system connected to a PV system.



Energy management equipment and eight 15 kWh BYD Battery-Box LVL battery storage systems

Conclusion

There are more and more examples where supplementing grid power with renewable energy and storage systems can help businesses to solve current energy demand challenges and to future proof their energy supply, in both an ecologically and economically profitable way. Baxby Manor is a great example of what end customers with the right ideas, the support of smart engineering, a solar energy system combined with a flexible storage solution, such as the BYD Battery-Box with its unique characteristics, are able to achieve.

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