THE FUTURE'S STORAGE

Energy storage is widely regarded as a thing of the future, so why aren't more energy managers investing in it then? asks John Hudson, managing director of **Boston Renewables**

It is widely accepted that the solution to Britain's energy challenge is not just more generation, but to make the Grid work better. The key is to balance the peaks and troughs of electricity demand. Through its Power Responsive* initiative, the National Grid is actively promoting demand side response (DSR) to energy managers across public and private sectors. The House of Commons' Energy and Climate Change Committee in its report of 15th October 2016 urged the Government to encourage the energy market to embrace these smart solutions noting that potentially £7 billion in savings to consumers and businesses could be achieved. Participants can enjoy additional income streams from DSR when an on-site storage system becomes a stand-by asset the Grid can call on.

Energy storage is the key enabler to all this. The principle source of revenue is from Firm Frequency Response (FFR). FFR is offered by the Grid to participating organisations to enable it to manage the rises and falls of frequency caused by corresponding peaks and troughs in demand. Lithium ion batteries are ideally suited to performing FFR tasks as they respond quickly and benefit from frequent charging and discharging cycles.

So why aren't energy managers rushing to sign up? Because there are still some myths and barriers to entry which the storage industry recognises and are working to address.

NAILING THE MYTHS

Common myths include things like, battery storage is too expensive. This isn't true as batteries usually carry a 15-year warranty and the payback on investment is well within that time period. Typically, the financial returns on capital range from 11% to 20% or more using the internal rate of return (IRR) metric. Flexible finance options are also offered by storage developers.

Another asumption is that DSR will impact your business operations. Again not true. It will not have any discernible impact. Typically a battery storage system will respond in 20 milliseconds to an FFR event. This is seen as a seamless transition when the battery automatically switches modes from discharge to charge or vice versa. Employees report they don't even see the lights flicker.

A contract will include pre-set parameters for responding (or not) to Grid requests to use an organisation's stand-by assets. A request will never be made if the batteries on-site are running low and organisations will never be asked to stop their processes to help balance Grid demand, as some suppose.

Large companies have dedicated energy teams who understand the issues around DSR. For smaller businesses, this is not always the case. For them, a trusted adviser can make it simpler to enter the DSR world, choosing the right technology, partners and contract. Aggregators working with battery storage specialists have become trusted partners enabling many to benefit from DSR. The key here is to specify a bespoke battery storage system and a bespoke contract.

Industry experts agree that long term planning is needed: an investment in storage now will reap dividends for 15 or more years. It requires a change of thinking, though: energy is a vital part of operations and deserves more investment and internal resource. Although almost any business with half-hourly metering can participate, an internal champion is needed with access to senior management who can ensure there is interdepartmental buy-in.

Figure 1: Conventional method of energy generation

Reference:
*http://powerresponsive.com/wp-content/uploads/2016/11/power-responsive-business-customer-dsr-snapshot-july-2016-v2.pd

> *"Industry experts agree that long term planning is needed: an investment in storage now will reap dividends for 15 or more years. It requires a change of thinking ..."*

REPLACEMENT UPS

If an organisation already has an uninterrupted power supply (UPS) on site, often their first question is whether to replace it with a new lithium ion battery system. Usually this is a good idea as modern batteries are more reliable and need less maintenance than, say, an ageing diesel generator. When organisations set the investment in battery storage against the real costs of a power interruption, they usually conclude it is well worth it. It is anticipated that battery storage will work as an alternative UPS on many sites across the UK.

Battery sizes range from 50kW to 5MW and a bespoke solution is always advised to enable organisations to participate in DSR. To select the right size, an analysis of on-site energy usage data is needed. It will reveal the use profile and crucially, show how much energy is being taken from the Grid in peak pricing periods.

It is a myth to suppose that access to DSR through battery storage will force a change in employees' behaviour or interrupt operations. DSR is a great opportunity for most organisations whatever sector they are in and however complex their processes are. These are the arguments that energy managers are using to persuade their organisations to take part.

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