Microgrid benefits dublin

Microgrid benefits dublin

In association with Schneider Electric

There are many reasons why Ireland has become a popular location for data centres in recent years. In the first instance, its geographical location makes it an attractive destination for submarine communications cables – a fact that has been evident since the first ever transatlantic telegraph messages were sent between Newfoundland and Valentia Island, Kerry in 1858. Today"s underwater cables, now comprised of optical fibre, also provide copious direct links between the island and Great Britain, the European continent, and North America.

Added to this is the long-term industrial policy of encouraging high-technology industry clusters aroundpharmaceuticals, software, Web development, and other digital-centric industries, both through inwardinvestment and indigenous growth. This strategy inevitably requires the availability of resilient IT and datacentres, and excellent connectivity to the cloud.

However, there is a downside to having so many large data centres in Ireland, namely the electrical power that is needed to keep them running reliably and efficiently. The industry has also been under great scrutiny from environmental groups who have questioned their energy demand in line with the country"s environmental goals. Set also within the context of households facing higher energy bills due to a global surge in wholesale power and gas prices, there has been a growing backlash against new developments.

Following a public consultation earlier this year, for example, EirGrid announced that it will no longer accept applications for new data centres in Dublin for the foreseeable future, and that any new applications for other parts of the country will be assessed on a "case-by case basis".

Personally, I believe that the data centre industry can play a key role in Ireland"s sustainability ambitions, using innovative technology approaches to design, build and operate sustainable digital infrastructure, enable greater resilience of the grid and generate new green, electrical energy.

For example, one such connection measure required by the Commission for Regulation of Utilities (CRU) is that new data centres must have onsite dispatchable power generation capacity equal to, or greater than their demand, to be connected. This means the ability to integrate with the grid, to store energy on site and the use of innovative technologies, such as microgrids, present key opportunities for Irish data centre operators to underpin the country"s sustainability ambitions and build greater resilience into the grid.

Microgrids are onsite networks of distributed energy generators and storage systems that are intelligently coordinated with the utility grid to optimise costs and power stability. In some circumstances they can be temporarily removed from the grid to avoid exposure to outages and disturbances, using stored energy to

ensure operational continuity.

Typically, most mission-critical facilities, be they data centres, hospitals, or other critical infrastructure, willhave emergency onsite backup generators that come online in the event of a prolonged grid outage. Microgrids, on the other hand, encourage the use of renewable energy sources to supplement power from the grid, both to offset the cost of the utility and provide stores of energy.

These may be called upon in an emergency but may also be used temporarily to implement cost-savingstrategies such as peak shaving, which is the practice of using stored energy in place of utility power to keep within agreed usage limits and avoid cost penalties for exceeding tariffs.

A true microgrid can make use of several energy-generating and storage systems. Many installations use onsite generators to produce heat. As these are based on reciprocating engines, they can also be used to generate electricity, a process known as cogeneration or combined heat and power (CHP). In the case of data centres, given the requirement to cool the IT equipment, an alternative system known as combined cooling heating and power (CCHP), or trigeneration, makes use of waste heat to produce chilled water for the cooling function. CHP and CCHP systems are a very efficient way to combine energy required for ancillary functions like heating and cooling to produce electricity. However, they usually have a significant carbon footprint because they burn fossil fuels.

A second component in a true microgrid would be some form of onsite renewable energy production. The optimal type of renewable used would depend on local conditions and might comprise a wind turbine, solar panels, biomass or hydrogen fuel cells to produce energy to supplement the grid.