CoolPlanet

WHITE PAPER

Earn revenue from your energy assets through Demand Side Generation

THE NUMBERS

DS3 EARNINGS

€163,216 per year

DSU EARNINGS

€25,824 per year

CoolPlanet in conjunction with our partner Powerhouse Generation (Ireland) Ltd (PHGIL) operates as a Demand Side Response Aggregator right across the island of Ireland. Within its portfolios it has several sites, each referred to an Individual Demand Site (IDS).

Each IDS is assessed for its capabilities to provide Demand Reduction and in turn what markets and products they are suitable for.

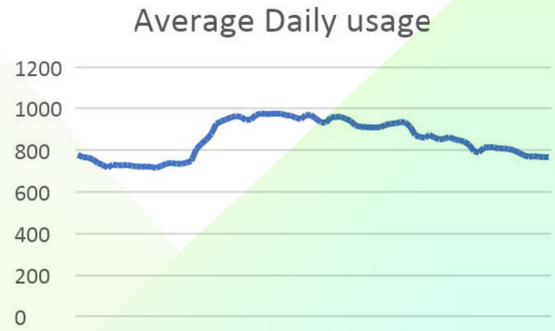
Background

This case study is based on a pharmaceutical company which is in the Republic of Ireland witha connection to the ESB grid. This pharmaceutical company has two generators on site but also a 1MW Battery (BESS) which was supplied by another one of our partners Powerhouse Energy.

Initial assessment of IDS

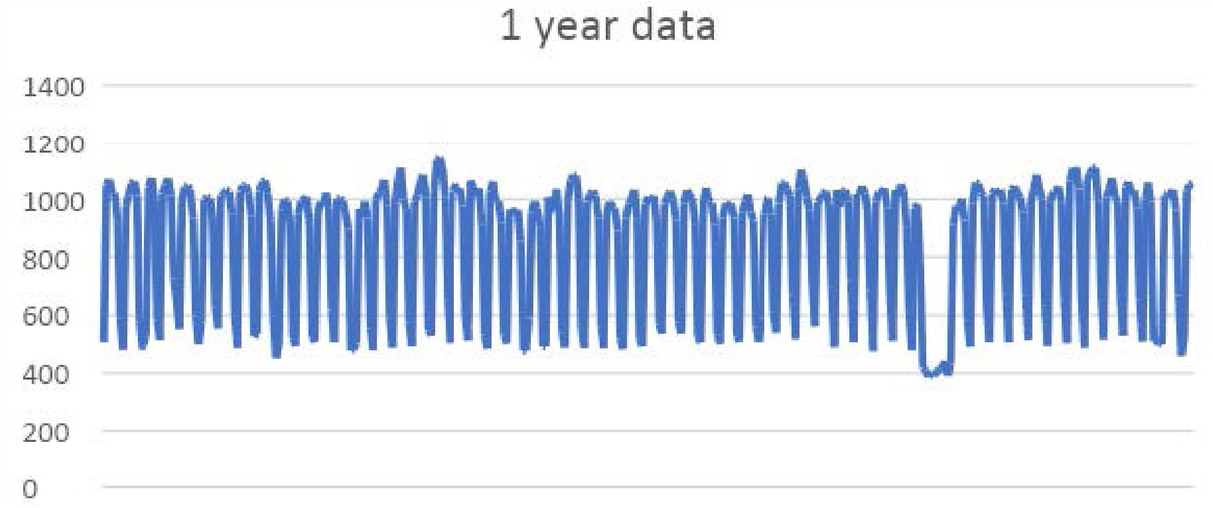
To ensure that the site is suitable for participation in the Electricity Markets in Ireland, a desktop study of the contractual and technical arrangements that the company had with the ESB grid was carried out. Firstly, any connection restrictions to the grid were determined by examining the Connection Agreement which is held by the IDS. The Maximum Import Capacity (MIC) and Maximum Export Capacity (MEC) are identified within this agreement, and it showed that there was no MEC available.

Next the electricity consumption of the IDS was identified through the analysis of the metering data. This data was requested from ESB, with the approval of the IDS. The desktop analysis enabled the historic consumption profile of the site over the past couple of years to be known so the Demand Reduction Capability can be determined. This shows the cyclic usage over the day and over the week/month/year.



01 Technical data

The IDS was asked to complete a technical data sheet, which seeks to determine an overall picture of the site.



The IDS was asked to complete a technical data sheet, which seeks to determine an overall picture of the site. Technical queries include information regarding the IDS generators,including details such as the capacity of these generators, or if there are no generators, what the site can ‘switch off’ to reduce demand from the grid.

Generators have different modes of operation, in relation to the electricity grid and the technical data sheet identified that the companies’ generators are synchronised Long Term Parallel, which means there is no disruption to the processes on site.

02 Assessment for market participation

After we assessed the historic data and understood the mode of operation, through the desktop study, a proposal was submitted to the customer which showed the potential revenue for the market services that were available from the site.

The customer’s site was identified as being capable of participating in the Capacity market (with generators) and the DS3 market (with the 1MW Battery). The site was also provided with contracts for DSU and DS3, which reflect the identified markets.

Following completion of contractual agreements we initiated the installation of monitoring equipment and integration of such into our SCADA systems. It is a requirement of market participation that monitoring equipment is installed so that the reduction in consumption can be reported by us.

This should match the half hour data recorded by ESB and provided to the energy markets. Having commissioned the monitoring equipment, we then organised a test with the EIRGRID (System Operator of Ireland) to identify a maximum capability for the IDS.

These tests included dispatching the IDS to respond and show that the site can be turned on and off in a controlled fashion. The reduction volume is captured by the monitoring SCADA software and separately by ESB metering.

The test data was incorporated in a report to EIRGRID, approved by them and the IDS MW volume was added to the Operations Certificatefor the unit. This is referred to as Capacity. Within the tests weperformed on the IDS, the speed of response and the capability for thevarious DS3 services were analysed. The DS3 products need to beproven to enable associated System Services provision. We submittedseparate reports on the DS3 service capability of the customers site,through its use of the 1MW Battery and the generators.

The Capacity of the IDS is aggregated into the units and that portfolio is bid into the Capacity Market Auctions which cover up to four years in the future. The DS3 services are also aggregated into the units and that capability can be adjusted every 6 months. We were able to obtain an MEC to cover the full 1MW Battery operation,should the site consumption be below the 1MW capability of theBattery.

This ensured that the DS3 services remained available tosupport the electricity system and assist in the development of renewable generation on the island.

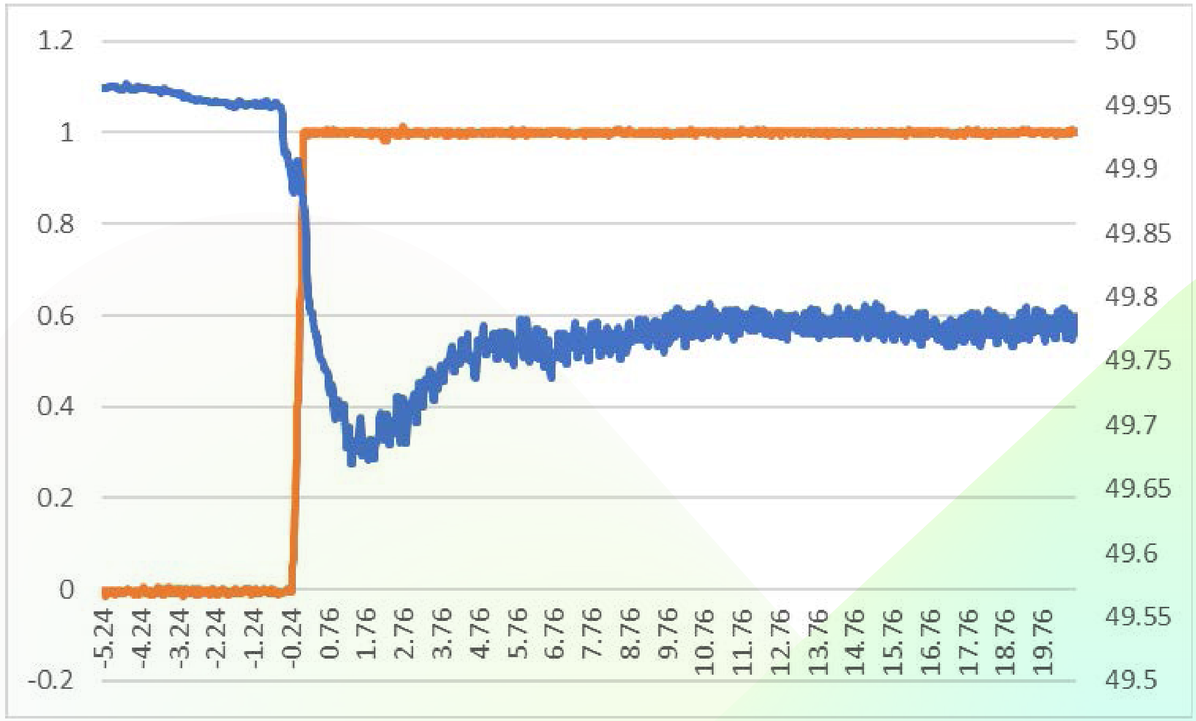
03 Site specification

This site has achieved the following through the baseline testing of the site.

The generators can sustain the full site consumption. The 1MW Battery can also sustain the site consumption until the generators take over, for a longer period of ‘loss of grid’.

Operational Certificate Capacity – 1.050MW
DSU Run Hour Capability – 2-hours
DS3 Service Volumes – FFR (1MW), POR (1MW), SOR (1MW), TOR2 (1.050MW), RRD (1.050MW) and RM1 (1.050MW).

The DS3 services are designed to respond to a drop in the system frequency, which is normally 50Hz. The faster they respond to the drop then the better the support to the electricity system. See graph showing the speed of response, in seconds, of the client’s site, through the utilisation of the 1MW Battery.



Next Steps

If you think your plants are candidates for this approach, we are in a position to deliver those savings via our Clarity™ software product.

We have deployed the model many times in the brewing and distilling sectors and is obviously very topical and appropriate under the current circumstances i.e. we can likely deliver this solution remotely and provide finance for upgrades identified as part of the analysis.

In order to deliver these savings and get started in general, we need to connect to your plant SCADA systems in addition to install some metering and sensors (unless already existing).

We give you

24/7 coverage from Digital and Human experts (we have the full suite – refrigeration, boilers, compressed air etc.) who will look at every part of the site all the time to identify waste and optimisation opportunities.

Digital twins built and running in Clarity™ so we can constantly compare equipment performance with the ideal – and alert on deviations.

Input via regular calls (and site visits when Covid lifts) from our experts working with your site teams to optimise further Demand Side management services which we may be able to extract value from the local power market.

Detailed report and dashboard building that will deliver energy, maintenance and production benefits.

Let's talk

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