

Western International Market



West London Alliance Energy Manager Group

The WLA energy group was established in 2014 and consisted of 7 west London energy managers

The main intention was to share energy saving, carbon reduction ideas/plans - in order to identify collaborative projects achieving the same goals - saving officer time and money - using joint procurement etc - taking advantage of the scales of economy.

WLA Collaborative approach to RE: FIT - building energy efficiency and carbon reduction

Our main plan involved utilising the GLA RE: FIT Framework to upgrade our existing stock. This entailed identifying suitable properties, carrying out a desk top assessment - a data collection process that identifies potential energy savings. This being a pre-requisite exercise, carried out before a benchmarking engagement with the RE:FIT Project Development Unit.

A portfolio of WL properties were agreed then tendered to 13 the Energy Services Companies (ESCO's) through the framework for works to commence in the 2014/15 financial year - with further phases to follow on from this as required.

Largest Photo Voltaic Array in the Capital

Imtech were appointed as the Energy Services Company (ESCo). As part of this, Western International Market was identified as an unique opportunity for the installation of a Solar Photo Voltaic (PV) array.

Award Winning Project

Being the largest Solar PV array in London and incorporating ground breaking bi-directional (i.e. simultaneous charge and discharge) battery storage technology with innovative demand management, monitoring controls were key factors in the overall project being awarded 'Best European Energy Service Project' at the 2015 European Energy Service Awards.

The Site

Western International Market is located in Southall, West London and is one of the principal wholesale markets in London of fresh produce; it is located close to Heathrow Airport and acts as the distributor for goods flown into Heathrow from around the world.

The buildings were purpose-made in 2008 and house approximately 75 independent wholesale businesses. The facility is owned by the London Borough of Hounslow. The site is one of Hounslow council's largest and consists of two principle buildings; the Produce Hall and Flower Hall. The combined roof area is circa 11,000 square metres.

Pre-Installation Energy Usage

The buildings represent one of the highest users of electricity within the council's portfolio at approximately 3.6MWh per annum.

Consequently, it was well suited to the installation of Solar PV's - that can provide savings from the reduced consumption of grid electricity and benefit from Government Feed-in-Tariffs (FITs), resulting in an additional revenue stream for the council over the next 25 years.

The Installation

Consisting of 6,069 LG 285w photovoltaic panels across the three roofs of the facility. The installation provides a peak capacity of 1.729MW - with an annual yield of approximately 1.5MWh - representing over 40% of the total consumption of the facility.

The panels are linked to 3,035 SolarEdge optimisers (maximise power generation at individual module level), linked to 47 SolarEdge invertors situated on the external façade of the facility below the main roof. The invertors are wired to the existing LV infrastructure at high level within the buildings.









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Market-Leading Innovation

Due to the operating activities of the site, peak load demand is in the early hours of the morning, when the PVs are unable to generate electricity. Technology was identified to meet this demand via two Lithium-ion battery storage units, rated at 120kWh each (240kWh total) and with a usable capacity of 192kWh.

Charging throughout the day, when demand is low and generation is at a peak, the batteries are discharged via invertors into the existing LV infrastructure, after the fiscal meter, to meet demand during peak times.

Control is achieved by the installation of an energy meter within each of the substations that is sensitive to flow direction, this achieves optimised charge and discharge of the units.

The storage batteries are housed in purpose built enclosures adjacent to the substations and have optimised temperature control to ensure maximum capacity and life from the system.

A large part of the electrical demand is recharging fork lift trucks. To manage the load factor, dedicated timer switches have been installed to each charging circuit to move energy demands to when the Solar PV generation is at peak performance. This still allows optimum charging times of 8-9 hours with no impact on the tenant's operational activities.

Financial Return

Through pre-accreditation and full accreditation the Council obtained the higher Feed in Tariff prior to the recent 87% cut by the UK Government. This, along with 90% of the Solar PV generation being consumed on site and only 10% exported, has ensured the system installed will provide the London Borough of Hounslow with an Internal Rate of Return of circa 9% and a payback of 7.19 years, whilst reducing their carbon emissions by approximately 780 tonnes every year. This collectively results in a projected fiscal return of ~£247k p/a (~£104k from FiTs, ~£143 savings on energy consumed) in the first year. These values are index-linked to RPI and utility inflation rates.

This, combined with the long term guarantees on saving identified in the Investment Grade proposal delivered by Imtech through the RE:FIT framework and the warranties provided via the LG and SolarEdge product selections, provides security and resilience to the Western International Market site and to the investment made by the London Borough of Hounslow.

Quote

“This solar PV and cutting edge battery storage project demonstrates LB Hounslow’s aspiration to convert Western International Market to a carbon-zero site. It is a real business success story, and a great example of working together with RE:FIT and several key partners to put sustainable energy at the heart of future plans. In addition to the financial benefits, the project will provide carbon free power for decades reducing carbon dioxide emissions, thereby underscoring the Council’s commitment to environmentally friendly projects via the largest public sector financed PV project with battery storage in the UK.”

“ I am proud to say that Hounslow Council were the first to start what I believe will be a widespread adoption of integrated solar energy and battery storage” - Charles Pipe Energy Manager London Borough of Hounslow