

Big Savings at Pfizer Little Island

PFIZER'S Little Island Active Pharmaceutical Ingredients (API) has been operating for the last 28 years. The plant plays a key role in the Pfizer Global Manufacturing of Pharmaceutical Products. Located just outside Cork, it manufactures pharmaceutical products for the international market.

The plant consumes 13.3 GWh and 17.7 GWh of electricity and natural gas respectively per annum, to support utilities and processes onsite that include steam generation, compressed air, chilled water, low-temperature cooling water, largescale HVAC, waste-water treatment and various process equipment.

As a large energy consumer, Pfizer Little Island is committed to improving energy efficiency, reducing greenhouse-gas emissions and conserving natural resources. The plant signed up to the Energy Agreements Programme in May 2006 and achieved certification to IS393 in April 2007.

Shifting the focus

Pfizer Little Island has been managing energy for some years. Its previous energy programme was extremely successful, achieving an energy saving of 3% or more for four successive years. However, it was very dependent on individual efforts and it was felt that this ad-hoc approach could not sustain energy savings in the longer term as priorities and focus changed at various levels of the organisation. In addition, the energy team wanted to shift the focus towards processes on the production floor where diagnosis of the core energy service requirements are the key to increasing plant efficiency; this could not be achieved without structured energy management and company-wide cooperation.



Martin O'Connor, the site's Energy Manager, comments: "It felt like we had hit a glass ceiling – we were sure where we wanted to go but didn't know how to get there. We felt that a formal energy-management system with the full backing of senior management would enhance energy savings and empower us to encourage site-wide participation in raising efficiency levels."

Outlining how new insights into plant energy usage were gained during the early stages of implementing the energy-management system, Martin says: "More than anything, the energy-management system highlighted to us how much we didn't know. A number of weaknesses were identified in the monitoring system. In addition, one EPI employed as an indicator of energy efficiency onsite was found to be ineffective, and highlighted the continuous learning processes synonymous with structured energy management."

The process of IS393 certification means that energy management does not depend so

much on individuals. Organisation of the energy master plan for the facility is no longer structured around one person; ownership is now shared by all personnel and departments, including Engineering, Procurement, Validation, Projects, Production, EHS, Operations, Utilities and Maintenance.

A surprising finding

The energy management team considers the Review of Energy Aspects to be the most beneficial part of the implementation process. Forming the basis for focused energy projects, this process diagnosed all energy usage onsite, quantified energy for all end-users and technology, and analysed the sensitivity of input process variables. One of the most important and surprising findings from the aspects review was that the Waste Water Treatment Plant was responsible for 30% of energy consumed. Energy management of this end-user had been overlooked in the four preceding years.

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Pushing the boundaries

Now that it has been operating for a number of months, Martin explains the merits of the systemised approach to energy management: "I feel like the approach is widening the scope of the energy programme. It is opening our eyes, and prioritising our time and resources."

Looking into the future, he outlines the expected benefits of the energy-management programme: "Needless to say, continuous improvement is the main driver. We are finding that the systemised approach drives the energy team to push the boundaries and forces us into looking into places outside our comfort zone – challenging projects at the design stage, challenging production processes and discontinuing the historical black-box approach. The tailored approach to energy projects may have been agreeable but, for continuous savings, a structured approach like IS393 is vital."

A recent example of operational control was highlighted in the compressed-air system. The energy consumption of this big energy user is continually monitored. Excessive variations in the electricity profile were detected and an investigation determined the root cause to be a control issue in the generation station. As part of the regular maintenance schedules, a service engineer had recently changed the compressor control set-point and forgotten to reinstate the original set-point. This resulted in the standby compressor running for unnecessarily long periods – often as long as 24 hours. If not detected, this would have cost Pfizer an extra 9.6 MWh in electrical consumption per annum.

Benefits of a holistic approach

A recent project energy review reinforced the benefits of the holistic and inter-departmental approach to operating an energy-management system at Pfizer Little Island. A refrigeration plant front-end design was completed earlier this year. It is proposed that this plant will replace an existing once-through-cooling-water system. The capital expenditure was estimated at €4M. However, following IS393 procedures, a full energy review of the front-end design was carried out, which led to the energy service requirements being questioned. These requirements were reduced by 46%. This had the knock-on effect of reducing distribution piping sizes, and thus the generation plant itself. The net effect of reducing the capital requirements by about 50% and ensuring associated lifecycle cost savings.

SEI assistance

The energy team at Pfizer Little Island feel that the implementation and operation of the energy management system would not have occurred without the help of SEI. Energy team members contributed to the development of the standard and the accompanying technical guide. This guide was felt to be one of the most beneficial implementation resources. Martin also points towards the usefulness of the open forums run at SEI Energy Agreements workshops: "These were of immense benefit, facilitating the discussion of a number of key issues and assisting us in developing a deeper understanding of what was needed for a successful implementation."

Generating success

The energy-management system at Pfizer Little Island has caused a major shift in thinking about energy efficiency. Projects are no longer structured around the site's Energy Manager; ownership of energy initiatives is spread among all plant personnel. The success of the energy projects generates confidence in and enthusiasm for further initiatives. As a result, energy projects are moving onto the production floor where the biggest savings are expected and a number of special investigations are already planned.

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