



ESOS Compliance for HP Data Centres

Undertaking energy audits to BS EN 16247 in compliance with ESOS legislation – BSSEC delivered audits, in both the UK and Ireland, for 12 data centre sites for HP. This included acting as lead assessor.

Client Requirements

The objective of each audit was to understand energy used at the site, the installations present and the patterns of occupation to identify areas where energy consumption could be reduced, or trends of use altered, to provide appropriate energy savings, whilst also ensuring compliance with the UK Government mandatory ESOS Scheme (response to Article 8 of the European Commission's Energy Efficiency Directive).

Data centre sites, and associated buildings, often involve different functions, and therefore different usage levels. These were categorised into 3 scales of kWh usage process. All functions were accounted for in the audit process. This included; the data centres themselves, manufacturing processes, research & development and offices.

Methodology

Prior to site visit, historical consumption was calculated in the form of a 3-year energy profile to compare and analyse for benchmarking, usage, cost and emissions and review of profiles to understand baseload and peakload implications.

A bottom-up energy analysis was conducted to estimate the energy use by individual items of plant, based on observation. This covered areas including process, heating and hot water, lighting. Small power / IT, ventilation, cooling, catering and building fabric. IT systems and space cooling are the service areas of most significance within data centres as these use the most energy, the latter in controlling the data storage medium (IT plant) temperatures. These are areas of significant cost and therefore where savings could be made.

In order to assess energy performance in data centres, the PuE (power usage efficiency) metric was used in order to measure how efficiently the data centres were using their energy. This was calculated by dividing the total data centres' power consumed by power consumed by the IT plant.

- The energy saving opportunities reports prepared by BSSEC were structured in line with BS EN 16247-1 European Energy Audit Standard, and highlighted recommended measures, the associated energy, carbon and financial savings along with an estimated cost of implementation and a simple payback calculation.

energy efficiency consultants

11 Pierrepont Street Bath BA1 1LA

t 01225 938735 www.bssec.co.uk

CASE STUDY

As Lead Assessor, BSSEC provided the following duties:

- The review of organisational structure
- Group energy data review
- Energy saving documentation review
- Audit methodology and sampling approach
- Review of existing EPC's and DEC's
- Review energy consumption calculations
- Energy audits review and aggregation of opportunities
- Identify organisation-wide energy saving opportunities
- Calculate energy/cost savings of measures identified
- Prepare directors sign-off summary report
- Submission to EA (UK)/SEAI (ROI)

Outcomes

The technical measures explored by BSSEC for the data centres included:

- Energy policy
- Behaviour change (staff training)
- Metering, monitoring and targeting
- Low energy lighting
- Heat recovery
- Air tightness/ Draught proofing
- Heat plant and system efficiencies and upgrades
- Heating set points
- Controls strategy
- Solar PV & Solar Thermal
- CHP
- Ventilation system maintenance and upgrading

Promoting costs effective solutions, the work involved in implementing the recommendations made by BSSEC were generally straight forward and provided replicable opportunities to improve energy efficiency and reduce costs to numerous data centre sites. Most measures identified, were designed be carried out with a no, low or medium capital cost investment.

The opportunities generated by the audits of 12 HP sites in the UK and Ireland have the potential to significantly improve the energy efficiency of the sites and yield financial and carbon savings consistent with best practice in data centre operation, with typical savings of 15% in No and Low cost measures.

"HP has a long history of backing its commitment to energy efficiency with real resources—not just money, but our people and products. From product design to our own operations, HP leads by example, inspiring customers, governments, communities and other organizations to make a commitment to creating a more energy efficient environment." – Saving Energy with HP (HP website)