



SPE ELECTRICAL – GENERATION



SPE Electrical Limited (SPE) a UK based, small, independent Electrical Engineering consultancy, well-positioned to offer strong and continuing support for the thermal generation, STOR and CHP industries, from concept development to design and commissioning.

The small-scale generation, STOR and CHP markets are a rapidly changing industry and competitive marketplace, and it is therefore essential to be able to design robust, cost effective and flexible solutions to projects. SPE are well positioned to help navigate this complex area, and to find low cost solutions for our Clients.

One of the many challenges faced by the generation industry are the various network constraints that the DNO impose on this type of new connection. In many cases the grid connection cost, and reinforcement needed for their own network forms a major part of the overall project cost and can also considerably increase the project timescales – leading to problems of the overall project viability.

One of the areas where SPE can assist is in helping to understand the DNO constraints and specify the equipment parameters and design configuration such that the grid connection costs is reduced is simplified. We can also assist in reviewing connection offers from the DNO to ensure that all the risks, constraints and costs are fully understood by our Clients. We can also carry out very simple preliminary low-cost studies to parametrize the design issues. Typical services include:

- Optimizing electrical designs to reduce cost
- Ensuring compliance with DNO standards
- Early design studies
- Review of DNO offers and Developer Invitations To Tender

Members of this team, working together, have successfully worked on several notable projects, which are summarized below:

Fylands Bridge – EcoDev Group

SPE were appointed by EcoDev Group to assist in the development of this 30MW STOR project connected at 66kV to the Northern Power Grid network, planned for execution in 2 stages. SPE undertook numerous design activities to help develop the concept of this project to a workable including comparing the technical and economic issues for connection of one or two 66kV circuits split over the project phases, the use of non-standard transformer impedances and generator sub-transient reactance's to reduce fault current, generator selection and inertia comparison, different configurations of 33kV and 11kV switchgear to allow for different metering approaches of the different project stages, guidance on the HV earthing and support on the transient stability study.

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Forest Park Energy From Waste – Trant Engineering

SPE were appointed to carry out all of the HV design and key parts of the LV and control design for a new waste to energy plant containing a 4.5MW Steam Turbine Generator. As part of our scope SPE developed an HV protection & control drawing, LV protection and control drawing, operating and control philosophy, control block diagram, short circuit study, P28 / voltage disturbance study and protection coordination study in ETAP. SPE also provided assistance in helping coordinate and define the supplier roles and responsibilities and the interfaces to the end user and DNO.

Hall Farm - Rosbery / Makpower

SPE were appointed by Rosebery and Makpower to assist in developing the design for a new 11kV, 7.5MW STOR generation site. SPE's responsibilities including developing the overall HV SLD, HV cable sizing, protection philosophy, interfaces between the HV switchgear and LV generators, switchgear specification, wiring schematics, cable block diagrams, fault level study and protection study using the ETAP simulation package.

Pye Bridge - Lark Power Services

SPE were appointed by Lark Power Services to carry out a range of design activities and studies for a new 7.5MW, 11kV STOR generating site in the UK. SPE carried out a P28 voltage disturbance study, a P29 voltage unbalance study, G5/4 harmonic study, short circuit study, ENA 41-24 earthing study and a protection coordination study. SPE undertook the studies using a combination of ETAP, DigSilent, EMTP and CDEGS.

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