



Company Overview

December 2017

Company Number 06086450, registered in England & Wales.

SPE Electrical – Company Overview

- SPE Electrical are Power System Consultants that specialise in High Voltage (HV) and large LV power systems.
- Our Senior Consultants are all highly experienced individuals with a wealth of experience across a wide range of industries and countries.
- Our business structure is based on a small number of staff and a larger base of flexible call off contracts with very experienced, semi-retired engineers.
- We have PI cover of £10m (excluding USA & Canada) and are covered for high risk industries.
- We have a simple but robust QA / QC system.
- SPE was created in 2007, but started trading as a consultancy in late 2014.
 - High client satisfaction rate,
 - Several contracts with large, high-profile companies.

SPE Electrical – Technical Capabilities

- Our Engineers have a varied background and worked across a wide range of industries including: Oil & Gas, Renewables, T&D, Marine, Building Services and Data Centres.
- SPE are experts within Oil & Gas and Petrochemical facilities and with UK, IEC and IEEE/ANSI (USA) design practices.
- SPE provide expertise in four main areas:
 - Power System Studies & Analysis,
 - Power System Design,
 - Power System Earthing,
 - Power System Consultancy.
- SPE use several key software packages that let us carry out a wide range of studies and analysis:
 - ETAP, DigSilent, CDEGS, EMTP-RV, EMTP-ATP and PSCAD.
- SPE operates a SQEP (Suitably Qualified and Experienced Personnel) system to ensure that work is carried out by sufficiently trained personnel.

SPE Electrical – Key Personnel

- As a consultancy our personnel are our key asset. Our engineers have a wide and varied background, but are predominantly from the Oil & Gas industry, which gives us a good insight into Cabot's operational needs.
- **Stephen Sommerville**, BSc, MEng, CEng, MIET
 - Stephen Sommerville is the Director of SPE Electrical and has over 15 years of experience in HV power systems, gained from working in a number of different industries. Stephen's specialist areas are power system studies and simulation, power system protection and control, HV earthing design, HV and EHV switchgear and large Variable Speed Drives.
- **Alan Walton**, BSc, CEng, FIET
 - Alan Walton is a Senior Consultant with over 30 years' experience, and has extensive experience within the Oil & Gas industry. Alan has been involved in a wide variety of detail design, FEED and conceptual projects, and is a specialist in conceptual designs, power systems analysis, system studies, relay protection and large power systems.
- **Bob Hough**, HND, BA, CEng, MIET
 - Bob Hough is a Senior Consultant and with over 45 years' experience and experience in a variety of industries including Oil & Gas, Heavy Industry and Consultancy. Bob has a wide range of knowledge and is experienced in all aspects of power system design and analysis, he also has extensive experience in witness testing and commissioning.

SPE Electrical – Existing Clients



Sample Projects

- **Royal Haskoning DHV:** SPE were appointed by RHDHV to carry out an extensive ETAP study for a large maritime yard, that once completed, will be the largest of its kind in the world and consisted of over 150 substations. ETAP studies were carried to assess the site load-flow, short circuit, motor starting and arc flash parameters.
- **Storengy:** SPE were appointed by Storengy to carry out a verification study for an existing site, that was undergoing a planned upgrade to include two additional 9.5MW, 33kV connected VSD compressors. A new ETAP model of the site was created, to analyse various load-flow and short circuit conditions, before then carrying out verification of the existing protection settings, before proposing protection settings for the new equipment.
- **UCP Choice:** SPE undertook a series of P28 transformer energisation studies and ENA G5/4 Stage 3 harmonic assessments for 3 different 4.5MW solar farms connected at 33kV. SPE undertook the harmonic studies using DigSilent which required modelling of large portions of the DNO electrical network to ensure that the THD was within acceptable limits across the network and no resonance conditions were present.

Sample Projects

- **Huntec Energy Solutions:** SPE undertook a series of P28 transformer energisation studies, ENA G5/4 Stage 2 harmonic assessments and ENA 41-24 earthing studies for 2 different 4.5MW solar farms connected at 11kV. SPE undertook the harmonic studies using DigSilent, the P28 inrush studies using PSCAD and the earthing studies using CDEGS.
- **Windcare:** Keith Hill Windfarm, a 4.5MW, 33kV windfarm connected to a National Grid transmission busbar. SPE undertook a wide range of power system studies including reactive power compensation, harmonic analysis, fault ride through / stability, transformer energisation and an earthing study. SPE undertook the studies in ETAP and DigSilent to validate the new DigSilent software purchased.
- **Intercontinental Exchange:** Full relay protection coordination study of large 30MW data centre for a key financial institution based in both the USA and the UK. SPE imported the existing client software model in SKM, into ETAP and then undertook a detailed scenario analysis before producing over 20 separate TCC coordination studies.

Sample Projects - Continued

- **EirGrid:** A safety investigation for the planned upgrade of an electrical management system (EMS) to control a 275kV substation and HVDC link between Ireland and the UK. SPE undertook a Root Cause Analysis approach to identify all the possible scenarios in which a safety risk could occur, resulting in a thorough investigate report and a fault tree diagram to demonstrate that the concern was misplaced.
- **Prescient Power:** A protection mal-operation investigation to identify why a protection relay kept tripping spuriously. SPE coordinated the investigation, and arranged for data loggers to be installed. After a brief review of the data logger information, SPE was able to identify that a phase imbalance in a nearby processing plant was causing the relay to trip due to vector shift.
- **Saga Cruise Lines:** SPE undertook a due diligence investigation into to the use of 2x 6.5MW, 6.6kV azimuth electrical propulsion pod drives, instead of conventional diesel engines and rudder arrangement.

Summary

- SPE's engineers have a strong background in all areas of electrical engineering and specialise in HV networks and power system studies.
- SPE possess a range of key software packages (i.e. ETAP, DigSilent, CDEGS and EMTP-RV) and our engineers have experience in undertaking a wide range of studies using these software packages.
- SPE's business model of call-off arrangements with experienced, semi-retired engineers allows us to respond flexibly to business needs, and gives us access to a wide knowledge base.
- Questions?