



# Power Systems Consultancy

Improving availability, optimising performance

## Services

- Power systems planning
- Technical analysis and power systems studies
- Protection application, co-ordination and settings
- Generation integration
- Rural and urban electrification and rehabilitation
- Substation design
- Project management including construction / commissioning supervision
- Specification and tender documentation
- Factory and site acceptance tests
- Overhead line design and routing

## Leading Consultancy in the Power Sector

**With extensive global experience of power generation, transmission, distribution and utilisation projects in many industry sectors, Edif ERA provides a high quality, independent and confidential 'one-stop' service covering low to extra high voltage power systems.**

Our enviable worldwide reputation in power systems engineering stems from an enormous breadth of expertise and vast project experience in many countries and across multiple industries. Our capabilities range through multiple sectors including electricity networks, Oil & Gas, railways, renewable energy, generating plants and data centres.

Edif ERA's services are used by a wide range of companies in the utility, industrial and commercial sectors. By providing a highly responsive and flexible consultancy service, we provide our customers with the confidence to make investment decisions at any stage of the project's life cycle.

Our early involvement offers valuable progress towards the success of your project by optimizing technical performance. Our expertise at the concept stage of a new development evolves from feasibility studies and investigations through to project management and commissioning supervision. We provide value-engineering reviews which reduce risk, maximize cost reduction and provide compliance with health, safety and environment requirements.

## Experience:

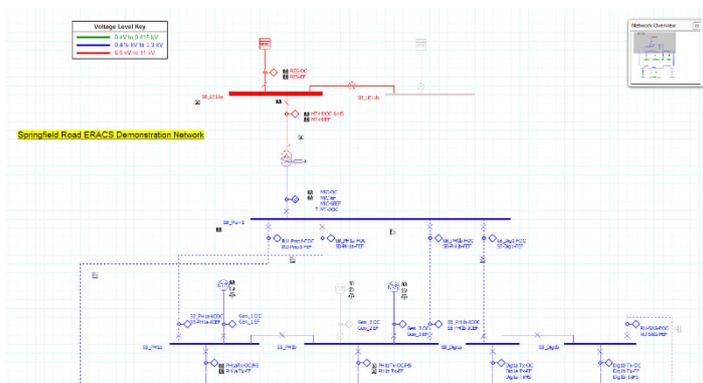
- **Datacentre substation design:** design services for Extra High Voltage Substations, to supply datacenters at several locations across Europe
- **Series compensation analysis, NGET/SPT:** assisted the utilities to develop an engineering solution for the application of distance protection on a 400kv series compensated overhead line between two transmission boundaries. In addition, SSR were completed to assess the implication on nearby conventional generators
- **Upgrade of Urban Distribution Networks in Ethiopia:** contract supervision services for a project with work with components of both urban distribution and rural electricity access
- **Utility planning:** assisting various utility companies in the UK with planning of reinforcements to allow the connection of new embedded generation such as PV farms, wind farms and STOR schemes

### Power System Planning and Analysis

The foundation block of planning a new project in the power sector is the ability to analyse power systems. Involving us at the planning phase will ensure that you optimise the design and avoid costs and time delays associated with incompatible systems or re-engineering.

Power systems are typically analysed either in the time or the frequency domain. Some of the studies we undertake include Power Flow, Fault Level, Stability, Load Shedding and System Restart, Voltage fluctuation and Flicker Studies (ENA ER P28) as well as Harmonic Studies (ENA ER G5/4-1) studies. Our specialised engineers have comprehensive experience in Protection Studies for transmission (National Grid TP141 Authorised), distribution and industrial networks.

Software packages used for these studies include DIGSILENT, IPSA+, EMPT/ATP, PTW CAPTOR, AutoCAD, ETAP, PSS/e and NEPLAN and ERACS. ERACS is a power analysis software developed by Edif ERA which is commercially available and supported in-house.



### Overhead line and Substation Design

Our power systems engineers have in-depth knowledge of many aspects of network and substation design covering the complete voltage range from 11 kV to 400 kV. Our services range from the initial conceptual design to the final completion of the project. We can outline the initial design to detailed design and manage the entire project through to specification, bid evaluation, construction, testing, commissioning and finally acceptance.

Our power systems engineers also assist with the design of overhead lines covering tower design, route selection, insulator selection, surge arrester selection and SVC design. We also provide studies including sub-synchronous resonance and insulation-coordination.

### Generation

We provide services related to Power Systems Generation (including planning, integration and connections), CHP and renewables. Our engineers support Grid Connection, the Auxiliary Services of a power plant as well as earthing and lightning protection systems. We have also been appointed as Owner's Engineer for a number of generation projects and we have experience ranging from small wind turbines to 100MW+ power plants.

### Renewable Energy

Our engineers provide support with the analysis of both the steady-state and the dynamic performance of the power system in order to achieve effective integration of renewable generation. Edif ERA have completed harmonic studies prior to the connection of numerous solar PV farms and have been involved with projects concerning the grid connection of renewable energy schemes.

### Why Edif ERA?

For critical industries and environments worldwide, we provide technical inspection, engineering and consultancy services to reduce risk, optimise performance and enhance capability, giving our customers the confidence to build successful operations.

