
TECHNICAL SOLUTIONS

Furse[®] Earthing & Lightning Protection

Design & technical solutions overview



Our renowned Furse® Earthing & Lightning Protection design services provide a unique total solution

- 01 Construction
- 02 Renewables
- 03 Utilities
- 04 Oil & Gas
- 05 Transportation
- 06 Water Treatment

Expertise

Specialist advice from our fully qualified technical engineers - focusing on your earthing & lightning protection issues and concerns.

Experience

Experience to provide the optimum design - one that doesn't use more material than is necessary, saving you money.

Knowledge

Our knowledge of the latest products ensures a tailored design that can be installed using the most appropriate and up-to-date products.

Compliance, now & in the future

Furse designs comply with all recognized standards - national and international. Our engineers actively contribute to national and harmonized European / international standards, ensuring we remain at the forefront of new developments.

- BS EN/IEC 62305 Protection against lightning
- NFPA 780 Standard for the installation of lightning protection systems
- IEEE Std 80:2013 IEEE Guide for safety in AC substation grounding
- ENA TS 41-24 Guidelines for the design, installation, testing & maintenance of main earthing systems in substations
- BS EN 50522:2010 - Earthing of power installations exceeding 1.k Vac
- SS 555 - Protection against lightning



Providing solutions for over 130 years



Technical solutions

Advice, support and design

Furse® Earthing & Lightning Protection have been providing design solutions for over 130 years and believe the fundamental ingredient to our success has been sharing our expertise with clients to allow informed decision making.



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1. Lightning protection solutions

- Team of experienced engineers
- Engineered designs to meet client specifications
- Risk assessment complying to latest standards

2. Soil resistivity surveys

- Experienced surveyors
- Key to creating effective earthing system
- Multiple readings taken to ensure safe and accurate designs

3. Analysis & earthing design

- Latest CDEGS software to optimise designs
- Range of detailed reports to clients' requirements

4. Earth resistance testing

- Verification of earthing design through measurement
- Experienced team of engineers with full understanding of electrode testing



Design services, site surveys and analysis

Earthing & lightning protection solutions

There are many protection benefits of coming to Furse for earthing and lightning protection analysis:

- Specialist advice from our fully qualified technical team, which focuses on earthing and lightning protection
- Active contribution to national and harmonized European/international standards ensures our engineers remain at the forefront of new developments in earthing and lightning protection
- Designs that comply with all relevant standards - national and international
- Our responsibility for providing a design that is safe
- Experience and the software to provide an 'optimum' design - one that doesn't use more material than is necessary - saving you money
- Manufacturing experience and expertise utilising our knowledge of the products available to provide a tailored design that can be installed using the most appropriate and up-to-date products

Soil resistivity surveys

A comprehensive soil resistivity survey is key to creating an effective earthing system, as inadequate or erroneous soil resistivity readings are likely to result in a flawed design.

Furse site surveys take multiple accurate soil resistivity readings at various depths across the site. As these results form the basis of the whole earthing design, the experience of our engineers is critical in ensuring correct implementation of the test data.

Analysis & earthing design

Using the latest computer aided design & modelling software we can produce detailed or budgetary earth electrode and lightning protection system designs, in compliance with recognized standards and whatever the complexity of system required.

Full earthing analysis uses state-of-the-art software to determine the step and touch voltages, earth potential rise and hot/cold classification of the site generated by the initial design.

Earth resistance measurement

Earth resistance measurement is essential to accurately determine that the installed earthing system meets the anticipated criteria laid out in the initial design.

Our technicians ensure all measurements are correctly taken and interpreted, so that the true resistance of the earthing system can be accurately determined and verified.



Furse® earthing and lightning protection

Providing a total solution

As one of the world leaders in earthing and lightning protection, Furse is committed to provide a quality total lightning protection solution: from innovative product design and manufacturing, through to literature, seminars and customer services.



Structural lightning protection

From air termination systems such as air rods and strike pads to down conductors and earthing materials, the Furse range of components provide a complete solution to the requirements of a lightning protection system.

These include:

- Freestanding and fixed terminals
- Stranded, round and flat conductors
- Fixing clips, clamps and bonding components
- Earth pits, rods and plates



Electronic systems protection

Our exhaustive range of equipotential bonding and transient overvoltage Surge Protection Devices (SPDs) provide fully coordinated protection against transient overvoltages on all incoming and outgoing metallic service lines including power data, signal & telecoms. This includes:

- Lightning equipotential bonding SPDs
- Mains power transient overvoltage SPDs
- Data, signal & telecommunication lines SPDs
- DC power & photovoltaic systems SPDs



Earthing

The combination of Furse earth electrodes, clamps, conductors, and equipotential bonding bars provide an integrated solution to the requirements of electrical power earthing. These include:

- Earth rods, plates, and conductors
- Mechanical clamps and bonds
- FurseWELD® exothermic welding
- Custom and off-the-shelf earth bars



Technical support

Furse technical design teams ensure all designs for lightning protection, earthing and transient overvoltage protection meet relevant national and international standards, whilst our sales engineers provide key updates on lightning protection matters. Services include:

- Lightning protection system design
- Site surveys & earthing analysis
- Lightning protection seminars & training
- Technical guides & StrikeRisk software

Case Studies

Sharing our expertise

- 01 Data centres.
- 02 Trackside substations.
- 03 Wind farms.
- 04 Oil & Gas.
- 05 Water treatment.
- 06 Telecommunications.
- 07 Healthcare.
- 08 Substations.

Oil & gas / Petrochemical

- Laggan & Tormore Gas Fields, UK
- Pertamina Gas / Petrol Depot, Indonesia
- Asab Full Field Development, UAE
- Dorra Gas Field Development, Saudi Arabia
- Jubail Chevron Phillips (JCP)
- Petrochemical Plant, Saudi Arabia
- Barzan Camp & Gas Fields, Qatar

Utilities

- Waste Water Treatment Plant, Shoiba, Saudi Arabia
- JAFZA Desalination Plant, UAE
- Hammas Power Station, Algeria
- Shuwaikh Desalination Plant, Kuwait
- Tianwan Nuclear Power Plant, China
- Mombassa Substation, Kenya
- Kapichira Hydro-Power Station, Malawi
- Hinkley Point Power Station, UK

Rail & infrastructure

- Kuwait Int. Airport
- Shanghai Metro, China
- Kowloon Rail Link, Hong Kong
- New Terminal, Seeb Airport, Oman
- Circle Line, Mass Rapid Transit System, Singapore
- HS2 Chiltern Tunnel, UK
- Cairo monorail, Egypt
- Haramain Railway Station, Saudi Arabia

Military

- Kazma Camp, Kuwait
- Alexander Barracks, Cyprus
- Dukham Airbase, Qatar
- Rafo Airbase, Oman

High tech & industrial

- Taiwan Semiconductor Manufacturing Corporation, China
- Intel Plant, High Tech Kulim, Malaysia
- Kuala Lumpur Telecoms Tower, Malaysia
- Seagate Semiconductor Plant, Singapore
- Alexandra Technopark, Singapore
- Various Data Center projects, Bahrain, Kuwait, Qatar, Saudi Arabia and UAE

- Najran Cement Factory, Saudi Arabia
- Merck, Sharp & Dohme Pharmaceutical Plant, Singapore
- Alfred McAlpine Quarry Products, UK

Commercial construction

- Bahrain Financial Harbour
- Emirates Towers, Bahrain
- Petronas Twin Towers, Malaysia
- Oman Arab Bank, Oman
- Kuala Lumpur Stock Exchange, Malaysia
- Graha Energy Building, Indonesia
- Canary Wharf, London, UK
- Highland Distilleries Co plc, UK
- Barwa Financial District, Qatar
- London Stock Exchange
- Iconic Tower, Egypt

Sports & recreation

- World Cup Stadium, Qatar
- Geordano Mall, Qatar
- Bahrain Opera House, Bahrain
- The Grand Egyptian Museum, Egypt
- Disneyland Hong Kong
- Sebang International Formula One Circuit, Malaysia
- Manchester United Training Ground, UK
- Grand Plaza Hotel, Singapore
- Dubai Sports City Complex, UAE
- Mall of Oman, Oman

Government & public sector

- Royal College of Surgeons, Muharraq, Bahrain
- Ministry of Foreign Affairs, Brunei
- Singapore Embassy, China
- Prime Minister's Office, Malaysia
- University Institute of Technology, Malaysia
- Ministry of Finance Building, Malaysia
- Mater Dei General Hospital, Malta
- International Maritime College, Oman
- Al Jaber Hospital, Kuwait
- British Library, London, UK
- Aster Royal Hospital, Oman
- Expo Pavilions 2020, UAE



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