

Earthing & lightning protection Design & technical solutions

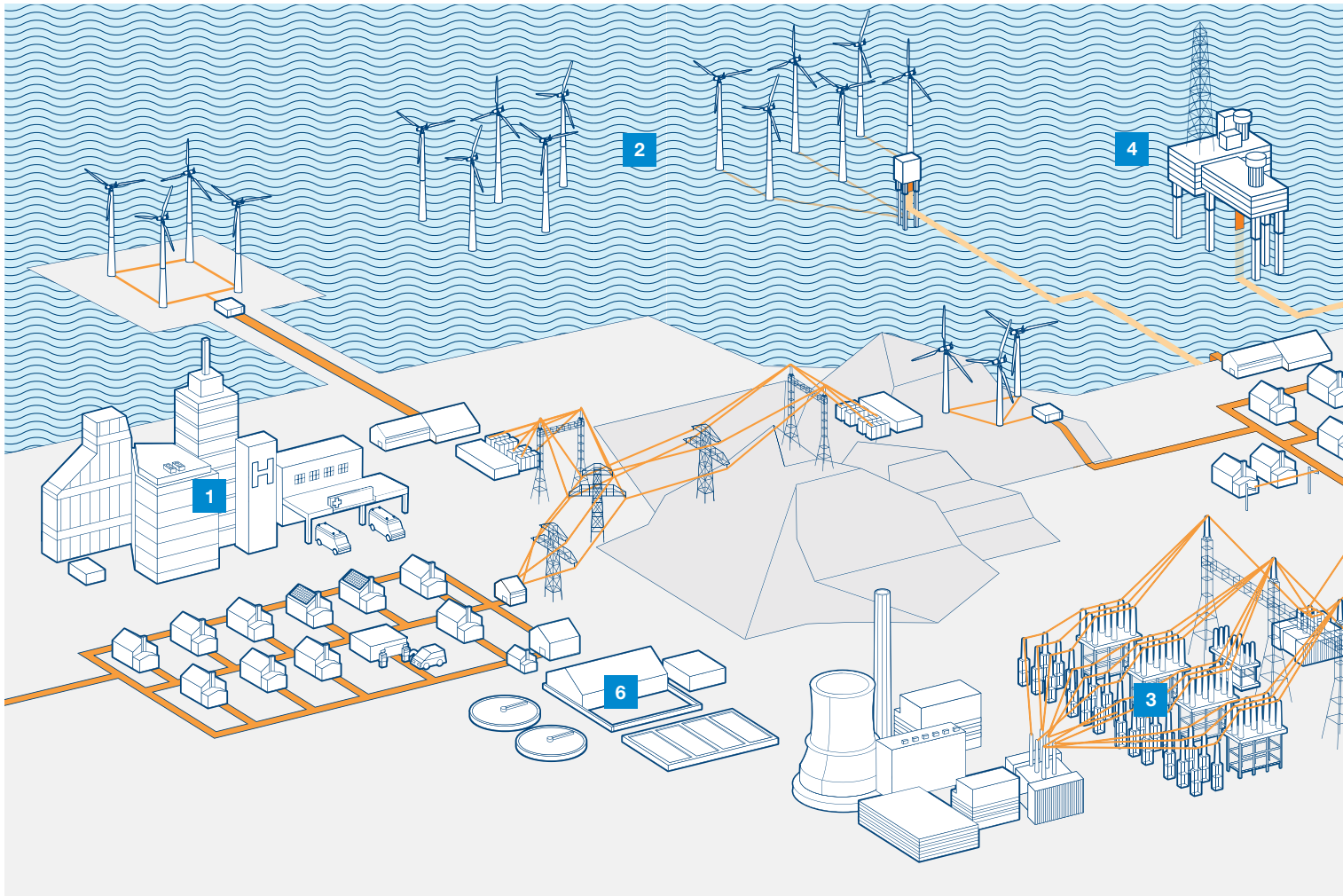


Company overview

Our reach and expertise

Furse provides world leading Earthing, Lightning and Electronic Systems Protection from our own designed and manufactured products through to risk assessment and systems design advice. Our renowned Furse range of Earthing & Lightning Protection design services provide a unique total solution.

1 Construction | 2 Renewables | 3 Utilities | 4 Oil & Gas | 5 Transportation | 6 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.

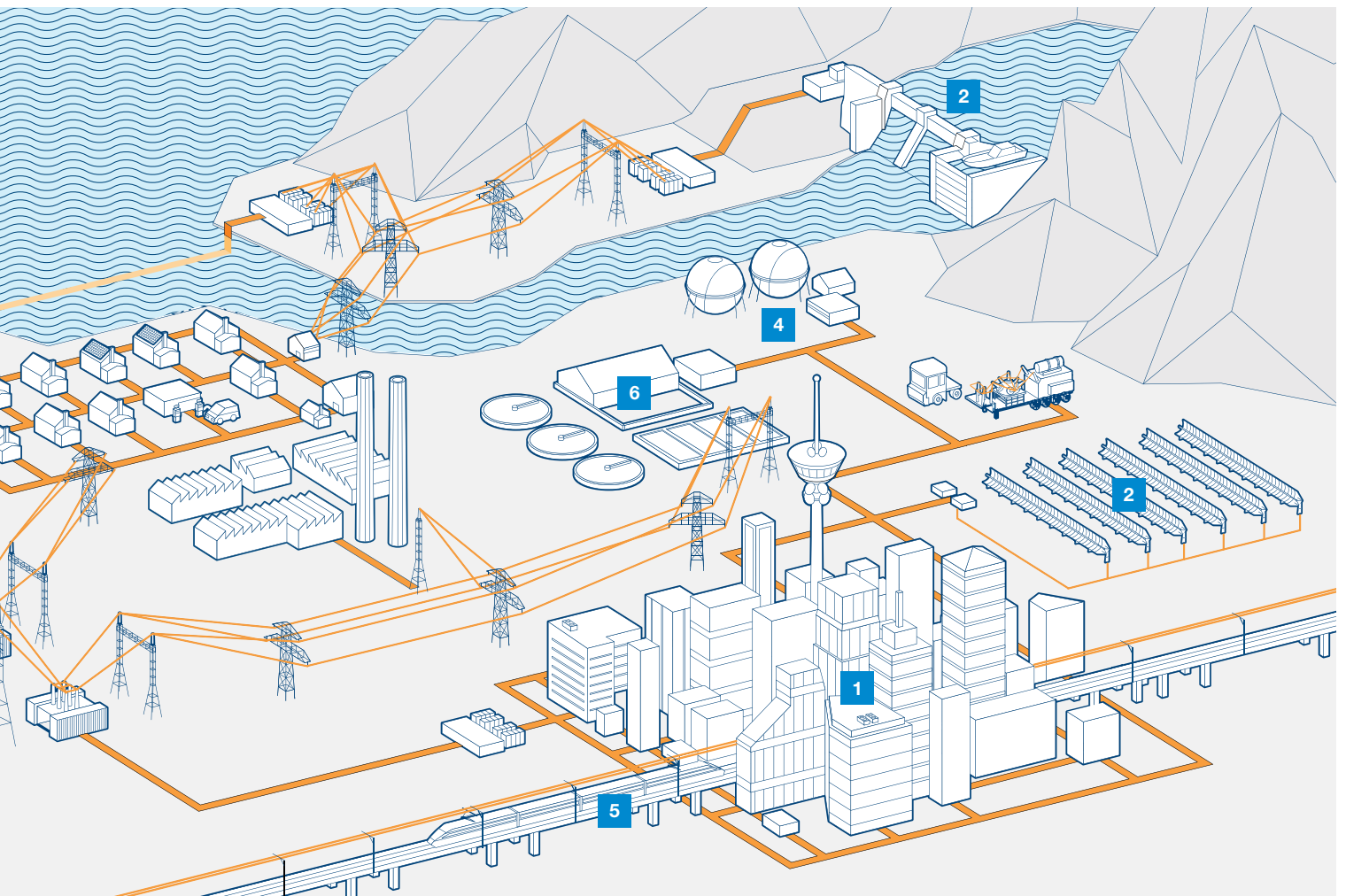
Knowledge

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 recognised standards - national and international. Our engineers actively contribute to national and harmonised European / international standards, ensuring we remain at the forefront of new developments.

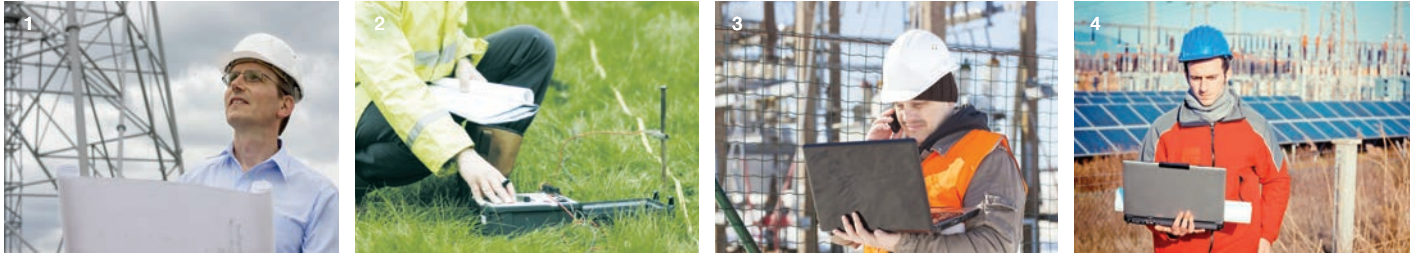
- BS EN/IEC 62305 Protection against lightning
- NFPA 780 Standard for the installation of lightning protection systems
- IEEE Std 80:2000 IEEE Guide for safety in AC substation grounding
- ENA TS 41-24 Guidelines for the design, installation, testing & maintenance of main earthing systems in substations
- BS EN 50522:2010 - Earthing of power installations exceeding 1.k Vac
- SS 555



Technical solutions

Advise, support and design

Furse have been providing design solutions for over 100 years and believe the fundamental ingredient to our success has been sharing our expertise with clients to allow informed decision making.



1 Lightning protection solutions | 2 Soil resistivity surveys | 3 Analysis & earthing design | 4 Earth resistance testing

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



Earthing and lightning protection

Design services, site surveys and analysis

Earthing & lightning protection solutions

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

- Specialist advice from our fully qualified technical team, which focuses on earthing and lightning protection
- Active contribution to national and harmonised 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

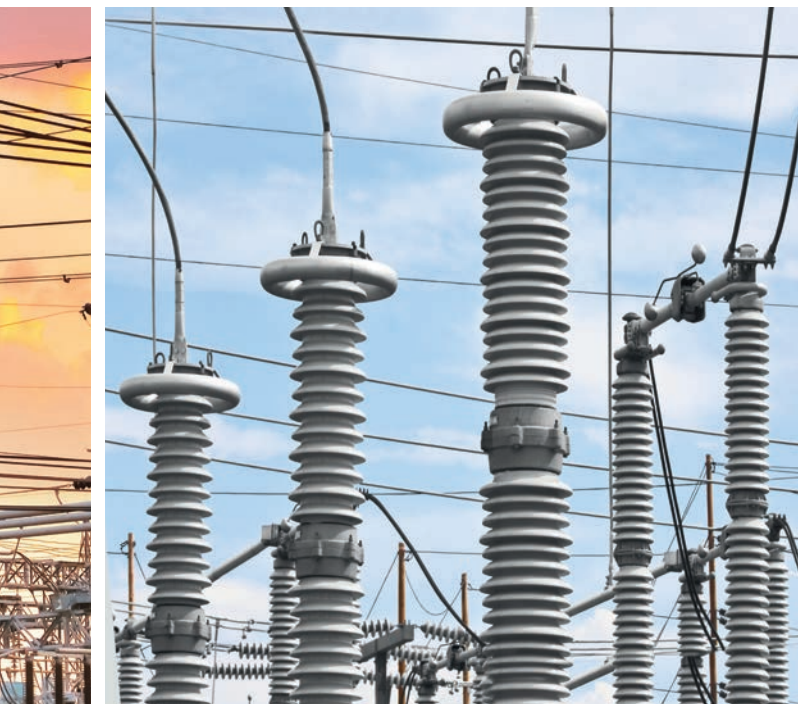
Using the latest computer aided design & modelling software we can produce detailed or budgetary earth electrode and lightning protection system designs, in compliance with recognised standards and whatever the complexity of system required.

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



Earthing and lightning protection

Providing a total solution



Structural lightning protection

From Furse air termination systems including air rods and strike plates to capture lightning strikes, through to our comprehensive range of down conductors and lightning protection components which channel lightning energy safely to a Furse earth termination network.

- Air termination systems
- Lightning protection conductors
- Conductor clips, clamps and holdfasts
- Bimetallic connection components



Earthing

A combination of Furse earth electrodes, soil conditioning, conductors and equipotential bonding bars provide an effective, low resistance dissipation from the lightning protection system to earth.

- Earth rods and conductor systems
- Mechanical earth clamps and bonds
- Soil conditioning agents
- Earth bars and equipotential bonding



Electronic systems protection

Our exhaustive range of equipotential bonding and transient overvoltage SPDs providing fully coordinated protection against transient overvoltages on all incoming and outgoing metallic service lines including power, data, signal & telecoms.

- Lightning Equipotential Bonding SPDs
- Mains power transient overvoltage SPDs
- Data, signal & telecommunication lines SPDs
- DC power & photovoltaic



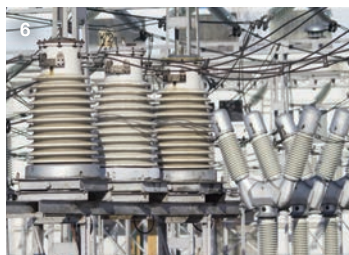
FurseWELD - Exothermic welding

FurseWELD exothermic welding is a cost efficient, self-contained system that uses the high temperature reaction of powdered copper oxide and aluminium, within a mould, to form permanent electrical connections.

- Moulds
- Powder
- Handle clamps
- Accessories

Case Studies

Sharing our expertise



1 Power stations | 2 CHP plants | 3 Wind farms | 4 Hydro power plants | 5 Feeder stations
6 Substations | 7 Solar photovoltaic power stations | 8 Trackside substations

Past projects include:

Oil & gas / Petrochemical

- Oil Fields in Toha, China
- Pertamina Gas / Petrol Depot, Indonesia
- Asab Full Field Development, UAE
- Dorra Gas Field Development, Saudi Arabia
- Jubail Chevron Phillips (JCP)
- Petrochemical Plant, Saudi Arabia

Utilities

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

Rail & infrastructure

- Bahrain Int'l Airport Expansion
- Shanghai Metro, China
- Kowloon Rail Link, Hong Kong
- New Terminal, Seeb Airport, Oman
- Circle Line, Mass Rapid Transit System, Singapore
- Channel Tunnel Rail Link, UK

High tech & industrial

- Taiwan Semiconductor Manufacturing Corporation, China
- China Telecom
- Intel Plant, High Tech Kulim, Malaysia
- Kuala Lumpur Telecoms Tower, Malaysia
- Seagate Semiconductor Plant, Singapore
- Alexandra Technopark, Singapore
- Motorola Factories, Singapore
- 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
- Central Market, Abu Dhabi
- Canary Wharf, London, UK
- Highland Distilleries Co plc, UK
- Barwa Financial District, Qatar
- London Stock Exchange
- Royal Bank of Scotland

Sports & recreation

- MGM Grand Hotel & Complex, Macau, China
- Bahrain Opera House
- Azizia Mall, Kuwait
- Disneyland Hong Kong
- Sebang International Formula One Circuit, Malaysia
- Manchester United Training Ground, UK
- Grand Plaza Hotel, Singapore
- Dubai Sports City Complex, UAE

Government & public sector

- Royal College of Surgeons, Muharraq, Bahrain
- Ministry of Foreign Affairs, Brunei
- Singapore Embassy, China
- Prime Minister's Office, Putrajaya, Malaysia
- University Institute of Technology, Ijok-Selangor, Malaysia
- Ministry of Finance Administrative Building, Malaysia
- Mater Dei General Hospital, Malta
- International Maritime College, Oman
- Al Jaber Hospital, Kuwait
- Police Headquarters, Kampong Java Road, Singapore
- British Library, London, UK

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