Project Experience

Projects include:

PowerGrid, Singapore – A detailed inspection and investigation into the cause of failure of a 230kV XLPE cable joint.

Electrical Power Research Institute, USA – Analysis of world’s best practice for the design and manufacture of XLPE cables and accessories at 220kV and above.

Various customers – Writing specifications for land and subsea power cable systems.

Electrical Power Research Institute, USA – A study into the thermo-mechanical behaviour of XLPE cables systems installed in ducts and pipes using advanced computer modelling techniques.

UK Utilities, UK – Conducting training courses covering power cable system design, manufacture, project management and installation.

National Grid, UK – Procedures for carrying out work on cable circuits under conditions of induced voltage.

Conjunction, USA – Consultancy services covering all aspects of the supply and installation of 800km 500kV dc land cables.

National Grid, UK – Hydraulic profiling of EHV fluid filled circuits and recommendations to reduce system pressures.

Chinese National Offshore Oil Company, PRC – Investigation into the cause of multiple failures of 10.5kV XLPE subsea cables.

National Grid, UK – Current rating calculations using advanced FE techniques on water cooled 400kV cables installed in a tunnel.

EPRI, USA – Designing superconducting cable systems for use in practical, long length, applications.

Steege Kingston, UK – Provision of technical expertise in relation to insurance loss adjustments of an HVDC cable system.

Mott MacDonald, UK – 132kV land and subsea cable system design for high capacity offshore windfarm export connections.

National Grid, UK – 275kV and 400kV pre sanction documentation and cable route investigation.

If you need these or any other cable engineering services for your project, or you would like to know more about us, contact our Projects Office using the information listed below.

Cable Consulting International Ltd
PO Box 1
Sevenoaks
Kent TN14 7EN
United Kingdom

Tel: 01732 834375 (+44 1732 834375)
Fax: 08701 380857 (+44 8701 380857)
Email: enquiries@cableconsulting.net

Cable Consulting International engineers have the highest experience and expertise in all aspects of land and subsea power cable systems from 10kV to 550kV and beyond.

We have hands-on R&D, manufacturing, commercial, project management and installation experience and are the authors of over thirty technical papers.

Our experience of worldwide AC and DC cable system types includes oil-filled, gas-filled, XLPE, EPR, mass impregnated cables and gas insulated lines. We have in-depth knowledge of accessory design for both present and superseded designs. We have over thirty years of international cable system project management experience.
Cable Engineering Support

Cable Consulting International provide full engineering support for cable system users including:

cable rating calculations
induced voltage calculations under normal and abnormal conditions
computational flow dynamics and heat transfer
special bonding designs
earthing designs
link box design and selection
sheath voltage limiter requirements
gauge kiosks and pits selection
oil feed tanks selection
take off connector choice
interface between cables and overhead lines
evaluation of asset life
hydraulic design
post fault analysis
failure investigations
cable support rigid systems
cable support flexible systems
hybrid cable circuit engineering
interface designs to SF6 gas immersed switchgear
interface designs to oil immersed transformers
cable system monitoring services
direct buried cable system engineering
ducted installation engineering
cable tunnel installation engineering
subsea cable engineering
training

Additional information on our engineering services can be found by consulting our web site at www.cableconsulting.net.

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Voltage Range: 10kV to 500kV and above
Cable design, manufacture, testing, installation and application
Cable rating calculations, laid direct, in air, in tunnels, cooled, subsea

Extruded XLPE cable
Extruded EPR Cable
Fluid (Oil) Filled Paper Cable (Low Pressure Self Contained)
Fluid (Oil) Filled PPL Cable (Low Pressure Self Contained)
Gas Filled Pre-impregnated Cable (Self Contained)
Gas Filled Impregnated Pressure Cable (Self Contained)
Gas Compression Cable (Pipe Type)
High Pressure Oil Filled Pipe Type Cable (HPFF)
High Pressure Gas Filled Pipe Type Cable (HPGF)
Mass Impregnated Non-Draining Cable
Gas Insulated Line
Subsea 3 Core and Single Core Cables
Subsea Mass Impregnated Paper Cable for DC Application

Accessories design manufacture, testing and application for the cable designs listed above.

Straight Through Joints
Transition Joints to connect different cable types
Thermomechanical Anchor Joints
Stop / Feed Joints for FF Cables
Sectionalising Joints for GF Cables
Subsea joints (Rigid and flexible)

Terminations in Air (Outdoor and Indoor)
Gas Immersed Terminations
Oil Immersed Terminations (Transformer)
Temporary Terminations
Pot End Terminations for subsea cable
Test termination

Ancillary components design manufacture, testing and application.

Sheath Voltage Limiters. Fluid Feed Tanks (Oil Pressure Tanks)
Gauge boxes and Oil Control Kiosks. Gas Feed Cubicles.

Jointing Plant and Equipment design, use and training e.g.

RGP Cells
Oil Fittings
Manometer for Impregnation coefficient
Soil thermal resistivity probes
Impregnation and oil degasification equipment
Subsea Cable Systems

Cable Consulting International can provide expert advice on all aspects of subsea cable system design, manufacture, installation and maintenance.

The increasing trend towards bulk power transfer between countries is recognised as is the trend towards lower power connections to offshore platforms and from offshore windfarms.

Our expertise includes:
- The choice between AC and DC transmission
- System voltage optimisation
- Power flow calculations
- Continental connections
- Engineering analysis
- Island interconnectors
- Offshore rig interconnectors
- Supplier vetting
- Specification writing
- Enquiry preparation and response evaluation
- Cable electrical designs
- Cable mechanical designs
- Cable manufacturing and processes
- Cable testing techniques
- Joint and termination designs
- Cable landing site surveys
- Cable laying procedures
- Cable ploughing and burial techniques
- Cable jointing at sea
- Failure analysis
- Residual life calculations

Desk-top studies, site visits, manufacture and test witnessing and installation supervision are all within our range of expertise.

If you would like further information, please contact our Systems Office using the information listed below.

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Consultancy Services

Cable Consulting International specialises in land and subsea power cable systems from 10kV to 550kV and above.

We provide a wide range of services and are available for short and long term engagements. We are able to respond to emergencies.

Our customers include utilities, private generators, contractors, consultants, research organizations, cable manufacturers and law firms.

We are available to travel overseas and have business experience in over thirty countries.

The services we offer include:

- Product development
- Process development
- Project expediting
- Test witnessing
- Cable system design
- Electrical thermal (ratings)
- Installation design
- Route surveys
- Thermo-mechanical bridge crossings
- Special constructions
- Finite element modelling
- Non-standard ratings mechanical behaviour
- Specification writing
- Project management
- Installation
- Training
- Failure investigations
- Insurance claims
- Contractual claims
- Expert witness work
- Strategic planning

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Training

Cable Consulting International provides training courses for every level of cable engineering. In addition to standard courses we are happy to tailor a course to your needs.

Available training:

- cable systems of the world
- introduction to solid dielectric cable & accessory systems
- theory of fluid filled cable engineering
- basic principles of accessory design
- basic principles of cable design
- advanced cable design
- advanced accessory design
- cable rating techniques
- subsea cable design
- design of hydraulic systems
- operation and maintenance of oil filled systems
- design of gas pressure systems
- operation and maintenance of gas filled systems
- cable system design for tunnel installation
- choice of installation designs for power cable systems
- valuation of cable assets
- estimation of cable system life
- analysis of failure data records
- purchasing cables, accessories and systems
- jointing techniques for engineers
- environmental aspects of cable systems
- testing cables, accessories and systems
- cable diversions using hybrid solutions
- cable system monitoring techniques

If you would like to book a training course, or wish to have a tailor-made course, please do not hesitate to contact us using the information listed below.

Cable Consulting International engineers have the highest experience and expertise in all aspects of land and subsea power cable systems from 10kV to 550kV and beyond.

We have hands-on R&D, manufacturing, commercial, project management and installation experience and are the authors of over thirty technical papers.

Our experience of worldwide AC and DC cable system types includes oil-filled, gas-filled, XLPE, EPR, mass impregnated cables and gas insulated lines. We have in-depth knowledge of accessory design for both present and superseded designs. We have over thirty years of international cable system project management experience.
One-Stop Cable Project Service

Cable Consulting International provides the complete project engineering service for transmission and distribution cable systems.

We have a comprehensive knowledge of the engineering requirements of all cable system types in use around the world.

Our packages include:

- route planning and feasibility studies
- UK CDM “Planning Supervisor” & “Designer”
- environmental impact assessments
- risk assessments
- method statements
- programme of works
- cable and excavation design arrangements
- preparation of tender schedules
- current ratings
- computational flow dynamics
- hydraulic calculations
- liaison with public bodies
- budgetary project costing
- supplier prequalification assessment
- overall system design recommendations
- tender analysis and recommendations
- project management
- project planning and expediting
- inspection in manufacture and test
- installation inspection and verification
- project progress reports
- cost analysis and targeting
- commissioning panel advice
- maintenance and spares recommendations

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Cable System Monitoring

Cable Consulting International can provide expert knowledge on monitoring techniques and methods for all types of power cable system.

The current trend towards condition based monitoring is fully recognised and our knowledge extends to including the latest developments in data transmission and presentation.

Our expertise includes:

- oil pressure monitoring
- gas pressure monitoring
- oil and gas leak detection and location
- distributed temperature measurement
- partial discharge detection and measurement
- cable movement detection and measurement
- cable oversheath integrity checking
- cable bonding system checking
- sheath voltage limiter integrity checking

In each case we are able to interpret the data generated by each monitoring system in order assess any impact on cable system life and integrity.

In addition, cable fluid sampling can be carried out to test for moisture, contaminants and dissolved gasses.

If you would like further information, please contact our Systems Office using the information listed below.

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Investigation Services

Cable Consulting International provides a complete and confidential cable and accessory inspection service.

Inspection, investigation and detailed analysis of damage and failures on cable systems is essential for future effective remedial action to be taken.

Our services cover manufacture through to in-service failures and include:

**Manufacturing**
- primary and secondary insulation failures
- product contamination
- bending performance
- drum winding damage

**Transportation**
- storm damage
- loading damage
- off-load mishandling
- road traffic damage

**Installation**
- over bending and over pulling
- incorrect cable payoff
- abrasion
- water ingress
- jointing defects
- impact / crushing / strangulation

**Third Party**
- mechanical strike
- impact / crushing / strangulation

**Ageing**
- corrosion
- embrittlement
- fatigue

With the wealth of knowledge that we are able to provide, we can offer recommendations, advice and an expert witness service in cases of litigation.

If you would like to know more about our investigation services, contact our Technical Office using the details listed below.

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Fax: 08701 380857 (+44 8701 380857)
Email: technical@cableconsulting.net
Inspection and Vetting Services

Cable Consulting International provides comprehensive inspection and vetting services for utilities.

Prequalification vetting of suppliers including:
- inspection of suppliers’ premises
- inspection of suppliers’ procedures
- verification of manufacturing capability
- verification of installation capability
- verification of project management capability
- verification of design capability
- assessment of disaster recovery response
- verification of load-out and subsea facilities
- assessment of training facilities
- assessment of track record
- assessment of type approval records

In process inspections:
- witnessing for compliance with specifications.
- sample inspection
- test and storage inspections
- type test witnessing

Installation inspections:
- best practice inspections
- jointing/splicing inspection
- installation documentation inspections
- project management system inspections
- after laying and commissioning test witnessing

If you would like to know more about the services Cable Consulting International provide, visit our web site at www.cableconsulting.net or contact our Systems Office using the information below.

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Cables in Tunnels

As the demand for electrical power in a city centre increases, finding an acceptable route for power cables to deliver the load becomes more problematic.

Tunnels have been used to solve congestion problems in cities for over a century. The installation of dedicated power cable or multi-service tunnels is still seen as a practical solution where other means of access are impractical or uneconomic.

The leasing to utility companies of allocated space within multi-service tunnels brings together water, communication and power services in close proximity running parallel for many kilometres. Careful consideration must be given to the performance of the power cables and their effect on other services within multi-service tunnels.

The power cables must be positioned in the tunnel to obtain adequate heat transfer to meet the cable rating. Cable bonding and earthing systems must be designed to ensure that voltages induced during normal and abnormal operation do not become life threatening to tunnel maintenance personnel. Unexpected induced voltages and interference on adjacent telecommunication cables will be unwelcome and tunnel heating by power cables under load may encourage bacterial growth in water systems fed by the adjacent water pipes.

The design selection of cable systems for tunnels will also require full risk assessments for such issues as reliability and personnel safety, fire and pollution.

Cable Consulting International has a full cable system design capability, including the use of advanced computational flow dynamic techniques, for power cable systems to meet the stringent requirements of multi-service or dedicated cable tunnels.

If you would like more information about our cable tunnel design services, please contact our Technical Office using the information listed below.

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Email: technical@cableconsulting.net
By Car
From the M25 travelling from the west or from the north, take the A21 Sevenoaks by-pass going south at junction 5. After approximately 4 miles, take the B245 turn-off to Hildenborough. After further 1.5 miles along this road, take the left turn into Mill Lane. (The turning is immediately before Mill Garage, which has a large white wall with green chequers). The Business Centre car park is on the left about one mile along the lane. Leave the car park by the pedestrian exit and cross the road to the entrance to the business units. Cable Consulting International Ltd is located in Unit J (Jacob Suite).

From the south, use the A26 or take the A21 Tonbridge by-pass and leave at the B245 turn-off to Hildenborough. Locate the office using the instructions above.

By Train
From London Charing Cross take the suburban train to Sevenoaks (approx. 30 mins). A 10-15 minute taxi ride is then required to get you to the office.