



## Power Projects and Solutions



electrical engineering & equipment supply

[www.etech-group.co.uk](http://www.etech-group.co.uk)

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## Quality Assurance

**Q**uality in our industry is paramount and at E-Tech we have, since our conception, ensured that this is never compromised.

We pride ourselves on our commitment to ISO 9001 throughout the group and through our customer feedback system we are undergoing a programme of continuous improvement to ensure our clients get the very best service we can offer.

This level of quality is maintained through the close involvement of our client and our suppliers in the supply chain.





# Company Overview

For over 10 years, E-Tech Group has been a leading player in the oil, gas, shipbuilding & petrochemical industries throughout the UK and worldwide, offering a fully integrated electrical engineering and material supply service from initial consultancy to implementation and completion.

Through experience, client feedback and a business ideal with focus on continuous improvement, E-Tech's approach to the turnkey project has evolved. Great care is taken with risk minimisation aimed at building a strategy to protect the project budget and schedule. E-Tech has through dedication and commitment built an enviable reputation in the handling of turnkey projects worldwide. It is by focussing on the supply chain and developing a close liaison with client and suppliers that we have been able to achieve this.

In addition to expanding in the oil and gas sector, E-Tech Group has sought to diversify and best utilise its extensive range of skills and experience in other sectors that require high quality engineering and specialist knowledge. This includes traditional power projects along with the new and exiting alternative and renewable energy projects.

Offshore wind farms are proving to be a significant source of renewable energy in the UK. These new ventures provide a perfect synergy with E-Tech's offshore experience in both major projects and retrofits.

Awareness of the unique problems faced in offshore installations ensures our personnel and equipment meet and exceed all of our clients expectations and requirements.

Our onshore project teams are involved in power stations and refineries and provide the total service from conception through to installation and plant asset management.



Trading names

### Peto Services

electrical engineers

Gt Yarmouth

### Peto Netlift

Tyneside

Teeside

### Peto EMR

Southampton

Humberside

### Peto South West

Plymouth

### Peto South East

Dover

### Eastern Switchgear

control panel builders

### Orwell Design

CAD design & engineering

### Barrett & Wright

Building Services

### E-Tech Gulf

Dubai

### E-Tech France

### BCD Cables

cable supplier

Gt Yarmouth

### Global ES

electrical distributor

Gt Yarmouth

Thetford

Tyneside





# Health & Safety

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E-Tech is committed to responsibly managing our operations to provide safe working environments.

We continually promote rigorous health, safety and environmental protection practices. The safety and health of our employees, and the protection of the environment are corporate priorities throughout E-Tech Group.

Employees and work areas are closely monitored and any recommendations for improvements are relayed to the appropriate heads of departments and recorded.

In order to continue to meet the high standards we have set in health and safety, E-Tech Group requires each of its operations and subsidiaries to have a formal health and safety management system. This is designed to provide a consistent approach to health and safety management throughout the group.

We aspire to the highest standards in the conduct of our operations and of the health, safety and welfare of our employees.

**In accordance with this value:**

- E-Tech will provide and maintain places of work that are safe and without undue risk to health.
- E-Tech will meet its legislative and regulatory requirements.
- E-Tech will conduct its business in a manner that will eliminate, minimize or control hazards to ensure the safety and security of its employees, its contractors, and the community.
- E-Tech will provide opportunities that enable employees to co-operate in developing, promoting and continuously improving measures to ensure their health and safety at work.
- E-Tech will make available safety equipment, personal protective equipment and protective clothing appropriate to the activities of each employee.
- E-Tech will provide information, instruction, training and supervision sufficient to ensure that all employees are fully aware of their responsibilities for workplace health and safety.



BRITISH SAFETY COUNCIL





## Design & Engineering

**Orwell Designs:** Established in 1968 as a design company specialising in large power station MV & HV control systems, Orwell Designs has developed into one of the industries leading engineering design specialists with experience covering many of the unique facets of the Marine, Offshore & Petrochemical World.

Producing almost all of our work in CAD using Auto CAD 2000 and R14 software, we do have, and are experienced in using Intergraph Microstation and Turbocad V4. We have facilities for updating drawing by manual draughting if required

Providing a total design capability to produce Schematic and Layout diagrams for all types of Electrical Services and Control Systems for a broad variety of companies including Shell Expro, Global Marine, Amec and Water authorities.

Design work contains the recognized electrical symbols as specified in BS3939 and are plotted in full colour in all sizes on our own sophisticated hardware.

### services provided

#### *full colour engineering drawings*

schematic diagrams, block diagrams, and connection diagrams. cable routing, cable schedules, equipment location and lighting diagrams.

#### *technical reports & manuals*

lists, specifications and technical documentation. complete electrical equipment construction packages as required

#### *conceptual engineering & design*

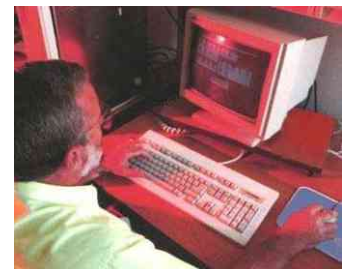
system concepts, generator sizing, system design, equipment specifying, estimating & specification creation.

#### *surveys & studies*

electrical survey's to confirm safe operation of the vessels electrical systems, damage survey's for clients, insurance companies or boatyards, SOLAS/MCA survey's. electrical load & short-circuit current analysis . system evaluations & system design comparisons. motor starting studies, protection system studies, and harmonic evaluation

#### *client & contractor interface*

technical assistance & sub-contractor management. equipment evaluation, vendor monitoring & control. equipment integration and procurement. control of work scheduling and status reporting.



# Safety Interlocks

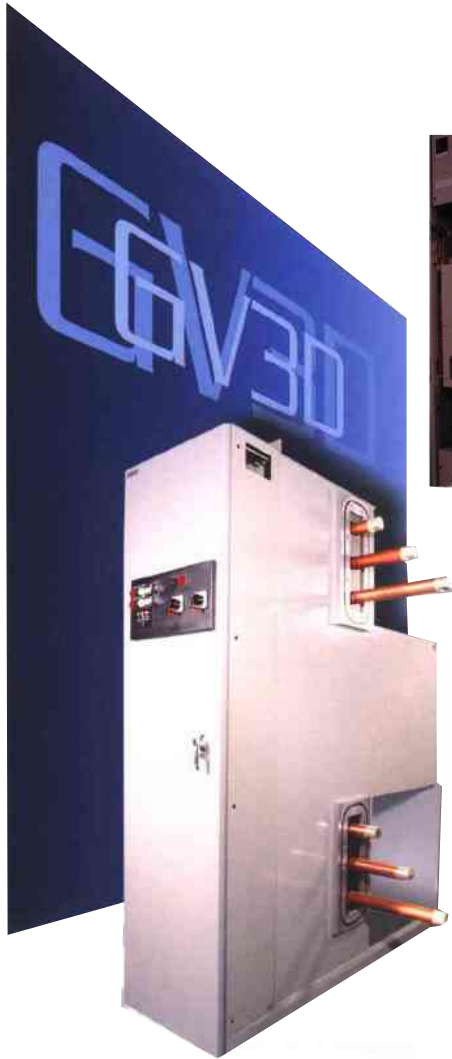
This range does not compromise on operator safety. Some of the safety interlocks are:

- Disconnecting switch cannot be operated if the VCB is closed
- Disconnecting switch cannot be electrically operated if the manual operating handle is inserted
- VCB cannot be operated either electrically or mechanically if the disconnecting switch handle is inserted
- Earthing can only be effected through the circuit breaker.



## Vacuum Circuit Breaker

The switchgear incorporates a fixed VCB. The design emphasizes simplicity and minimum parts count for reliability, efficient heat dissipation and reduced maintenance.



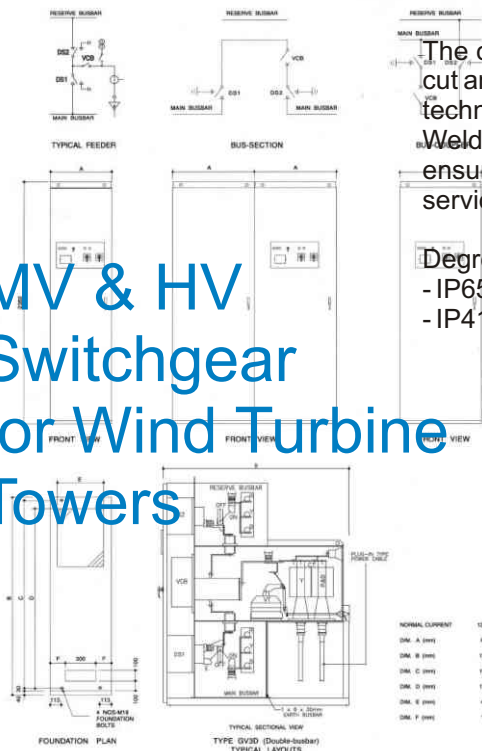
## Cubicle

The cubicle is made out of heavy gauge steel sheets cut and welded using state-of-the-art laser and robotic techniques to obtain close manufacturing tolerances. Weld integrity and gas seals are extensively tested to ensure effective gas containment throughout the service life span of the switchgear.

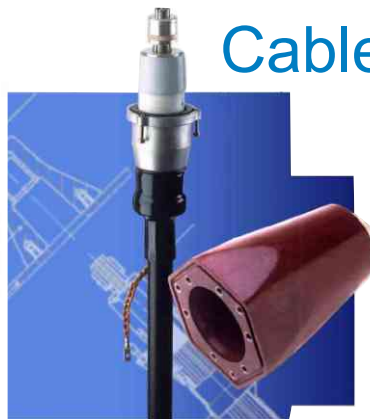
Degrees of ingress protection, per IEC 529:  
 - IP65 for high voltage compartments  
 - IP41 for mechanism and low voltage compartments



## MV & HV Switchgear for Wind Turbine Towers



## Cable Terminations



The switchgear is designed for use with plug-in type of cable terminations, for which purpose ample space is provided at a convenient height above floor level. The plug-in technique is an economical and proven method of cable termination. Multiple cables per phase can be easily accommodated.



# Power Distribution

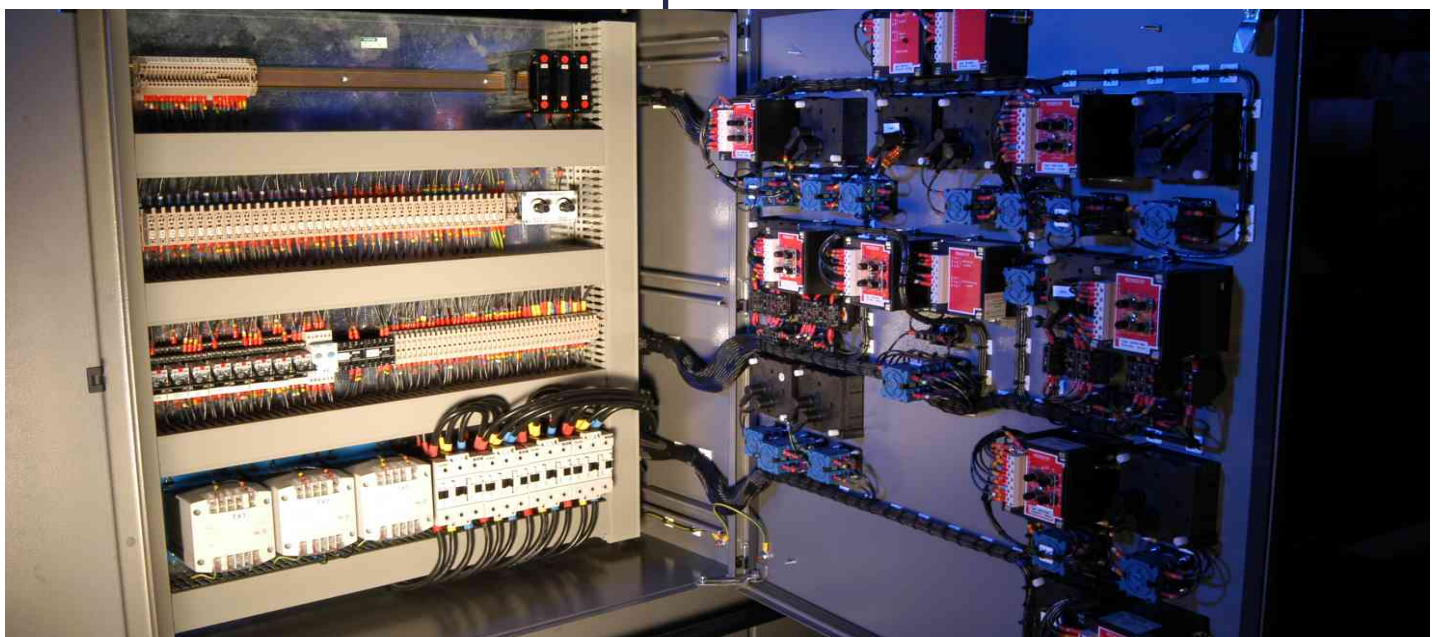
Eastern Switchgear Ltd possess over 25 years experience in the design and building of control equipment and this ensures that we are amongst the leading companies in this field of electrical engineering.

Over the years we have entered new and challenging markets which has seen the company develop from industrial control equipment to massive suites of control panels for major offshore & petrochemical projects as well as power projects.

Our origins are not forgotten though and industrial work plays a key role in our portfolio and includes major water authorities, public works, hospitals, airports, military bases, petrochemical process plants and many others.

The experience gained by our engineers and surveyors ensures we provide switchgear and control panels of the highest quality and specification, each uniquely designed to meet our clients individual requirements in a variety of materials and finishes to suit the application whether it is for the Marine, Offshore, Water Authority, Petrochemical or Industrial sector.

- CAD design
- Conceptual design
- LV & HV Switchboards
- Class approvals & submissions
- Technical advice and specification
- Procurement of complete electrical systems
- Survey, testing and commissioning ( on site )
- Consoles, control desks & distribution panels
- PLC, SCADA, and full building management systems
- Complete generator control & switching equipment
- Complex control panels incorporating latest PLC technology
- Group starter panels & MCC's
- Generator switchboards with power management systems





## Installation & Support Services

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E-Tech's extensive experience of outline or conceptual design of power projects and wind farm electrical systems allow us to determine factors such as optimum voltage levels, location of transformers and switchgear, and cable routes.

We provide in-house electrical engineering expertise to work with client on the design of the project infrastructure and grid connection with the highest levels of safety in mind. Our electrical engineering team carry out extensive design studies to ensure that all relevant standards are met and the HSE.

Experienced engineers with a background of working in the North Sea since the 1970's who along with designers, supervisors and project managers used to handling EPC contracts around the world for many major oil & gas corporations forms the core of installation project teams.

We often operate as lead contractor providing the essential link between client and the contractor teams ensuring good communication and exchange of ideas to allow the critical milestones and budget costs to be maintained. Flexibility in our approach ensures E-Tech are able to integrate within any project team at any level and work alongside primary contractor providing support services.





- cable glands
- control gear
- hazardous area
- lighting
- cable ladder
- plugs & sockets
- cable tray
- GRP enclosures
- hand tools
- power tools
- trace heating
- junction box's
- Exe & Eexd equipment
- weatherproof equipment
- inverters
- batteries
- temporary lighting
- voltage convertors

## cable supply

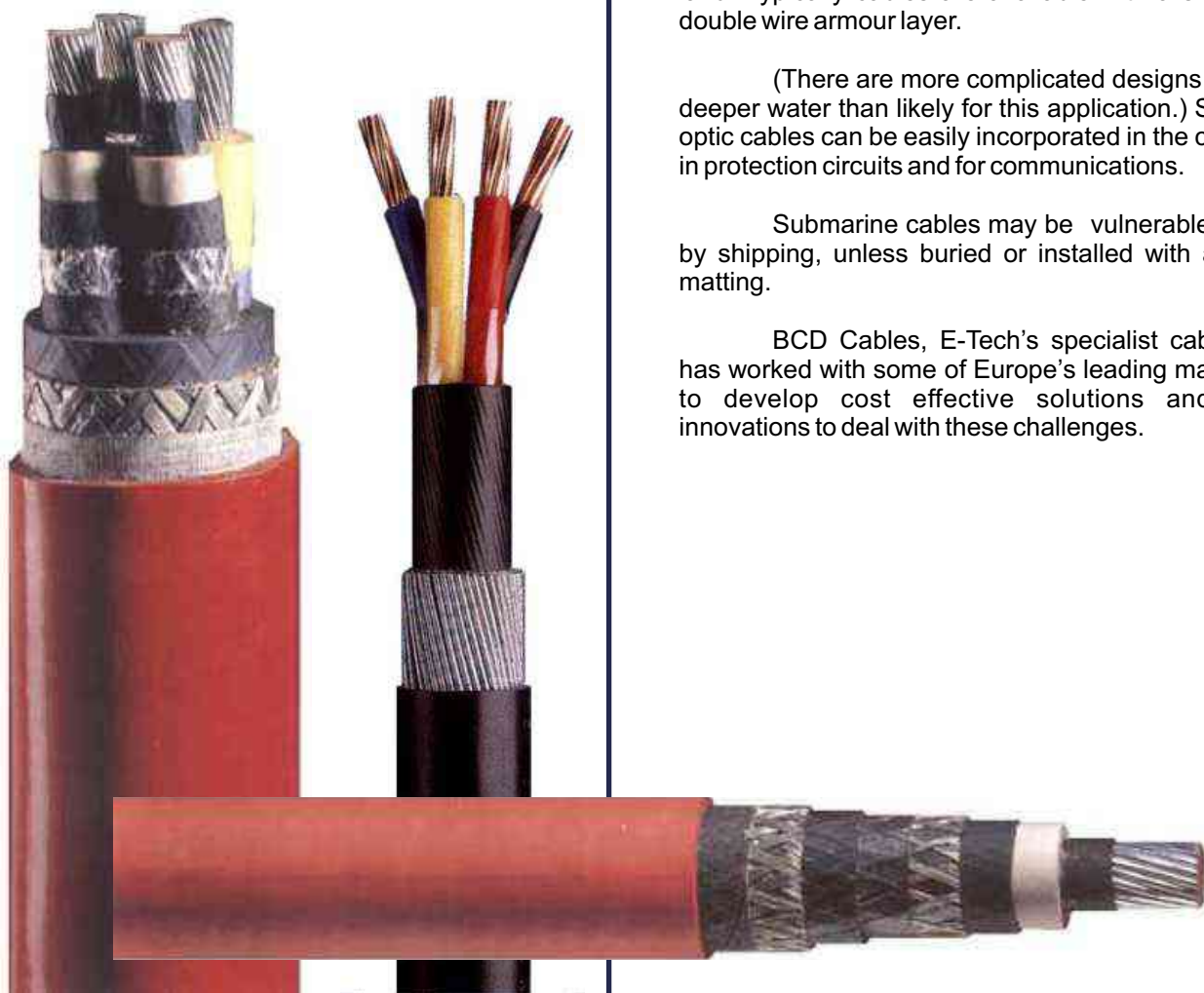
First hand knowledge of the requirements of our clients has enabled us to create a cable supply & cable management service designed to compliment turnkey projects.

The high & medium voltage submarine cables used for linking between offshore turbines and distribution to shore are more expensive than their land based equivalents due to the requirement to withstand their environment. The design voltage stress may also be lower for submarine cables than for those intended for use on land. Typically cables are available with a single wire or double wire armour layer.

(There are more complicated designs for laying in deeper water than likely for this application.) Several fibre optic cables can be easily incorporated in the cable for use in protection circuits and for communications.

Submarine cables may be vulnerable to damage by shipping, unless buried or installed with a protective matting.

BCD Cables, E-Tech's specialist cable supplier, has worked with some of Europe's leading manufacturers to develop cost effective solutions and technical innovations to deal with these challenges.





## Current Injection

Powerful, modern portable test equipment up to 13,000amps allows us to perform both primary & secondary current injection tests, essential to a regular maintenance programme to verify the operation of protective components in electrical systems. The test simulates fault conditions to activate and time the response of the protection devices. This test can be carried out in our workshop, on offshore platforms, on site, onboard ships or in petrochemical plants - anywhere in the world.

## Vibration Analysis

New sophisticated FFT vibration analysis instruments enable us to carry out noise & vibration tests on all types of rotating equipment such as motors, allowing production of results on site to aid harmonics & predict potential component failures. Real time bandwidth of up to 20kHz operating on mains or batteries ensures we are able to carry out analysis in any location, regardless of how remote, to provide this valuable service to our clients maintenance programme.

## Laser Alignment

E-Tech Specialist Services has within its range of modern, state of the art equipment, the SmartALIGN laser shaft alignment system. This is the pioneer of shaft alignment technology with it's 200 + patents including single-beam technology, continuous sweep, multipoint, InfiniRange and TolCheck all incorporated as standard to ensure the accurate alignment of rotating machinery. The kit is lightweight, fully portable, water resistant, dustproof and can be used in most environments.

## Thermal Imaging

An essential part of the Condition Monitoring service is Thermal Imaging which is able to identify Hot Spots within equipment without the need to shutdown. This enables preventative maintenance to be performed which helps reduce failures, downtime and additional damage to other equipment. Portable & modern camera equipment ensures this may be used in any location or situation and hard copy reports can be produced on site to allow immediate remedial action to commence



From the inventors of laser shaft alignment!



# Asset Management

Managing assets in the power generation industry involves the people who operate and maintain these assets as well as the parts and materials needed to maintain them, the equipment and processes that monitor performance – and, of course, the maintenance process itself, including the scheduling and implementation of all types of maintenance measures.

E-Tech's Plant Asset Management Solution provide a powerful approach to improve efficiency, reduce costs and optimize asset performance.

Operating and maintaining capital assets generates value and constitutes the most complex phase of an asset's life cycle. It involves asset maintenance planning, monitoring of asset status and condition as well as the management of resources – human or otherwise. With our solutions implementing consistent operation and maintenance practices throughout your organization, you maximize the value of your assets and realize considerable savings.

The provision of our specialist services, condition monitoring and predictive maintenance solutions become an integral part of our asset management strategy and allows clients to plan necessary maintenance shutdowns thus greatly reducing costs and improving plant efficiency.



## Locations & details of individual divisions

### Engineering Divisions

#### Peto Services (electrical eng.)

##### Head Office

The E-Tech Centre  
Boundary Rd  
Harfreys Ind Est  
Great Yarmouth  
Norfolk NR31 0LY  
Tel: +44 (0)1493 419800  
Fax: +44 (0)1493 419805  
E mail: peto@etechcentre.com

#### Peto EMR: (electrical eng.)

##### Southern Division

Burnley Wharf  
Marine Parade  
Southampton  
Hants SO14 5JF  
Tel: +44 (0) 23 8022 0942  
Fax: +44 (0) 23 8022 0837  
E mail: peto.emr@etechcentre.com

also

#### Humberside Division

Quay Units  
Alexandra Dock  
Hull HU9 1TA  
Tel & Fax as Southampton  
E mail: peto.emr@etechcentre.com

#### Peto Netlift : (electrical eng.)

##### North Eastern Division

Unit 205 Viking Industrial Park  
Jarrow  
Tyne & Wear  
NE32 3DT  
Tel: 0191 4283441  
Fax: 0191 4283479  
E mail: peto.netlift@etechcentre.com

also

#### Teeside Division

The Cadcam centre  
Unit 2N High Force Rd  
Riverside Park Ind Est.  
Middlesbrough TS2 1RH  
Tel: 01642 244 901  
Fax: 01642 245 901  
E mail: peto.netlift@etechcentre.com

#### Peto Services

##### South West Division

2 Broadley Court  
Parkwood Close  
Robborough  
Plymouth  
PL6 7SQ  
Tel/Fax: 01752 696134  
E mail: peto.sw@etechcentre.com

#### Eastern Switchgear

##### Main Workshop

The E-Tech Centre  
Boundary Rd  
Great Yarmouth  
Norfolk NR31 0LY  
Tel: +44 (0)1493 419800  
Fax: +44 (0)1493 419805  
E mail: esl@etechcentre.com

#### Barrett & Wright :(building services)

##### Head Office

The E-Tech Centre  
Boundary Rd  
Great Yarmouth  
Norfolk NR31 0LY  
Tel: +44 (0)1493 419800  
Fax: +44 (0)1493 419805  
E mail: barw@etechcentre.com

#### Orwell Designs

##### Head Office

242-244 High St  
Dovercourt  
Harwich  
Essex  
CO12 3PA  
Tel: +44 (0) 1255 502333  
Fax: +44 (0) 1255 241166  
E mail: orwelldesigns@etechcentre.com

### Supply Divisions

#### BCD Cables

##### Head Office

The E-Tech Centre  
Boundary Rd  
Harfreys Ind Est  
Great Yarmouth  
Norfolk NR31 0LY  
Tel: +44 (0)1493 604604  
Fax: +44 (0)1493 604606  
E mail: bcdcables@etechcentre.com

#### BCD Cables

##### Aberdeen Office

Units 4/2 & 4/4  
The Deemouth Centre  
South Esplanade East  
Aberdeen  
Scotland AB11 9PB  
Tel: +44 (0) 1224 249007  
Fax: +44 (0) 1224 249003  
E mail: bcd.aberdeen@etechcentre.com

#### Global ES

##### Head Office

Global House  
Harfreys Rd  
Harfreys Ind Est  
Great Yarmouth  
Norfolk, UK. NR31 0LS  
Tel: +44 (0)1493 650555  
Fax: +44 (0)1493 650888  
E mail: sales@global-es.co.uk

#### BCD Cables

##### Southampton Office

Burnley Wharf  
Marine Parade  
Southampton  
Hants SO14 5JF  
Tel: +44 (0) 23 8022 0942  
Fax: +44 (0) 23 8022 0837  
E mail: bcdcables@etechcentre.com

#### Global ES

##### North East Base

Unit 209  
Viking Ind. Park  
Jarrow  
Tyne & Wear UK  
NE  
Tel: +44 (0)191 428 3494  
Fax: +44 (0)191 428 3374  
E mail: sales.ne@global-es.co.uk

#### Global ES

##### Thetford Base

18 Napier Place  
Thetford  
IP24 3RL  
  
Tel & Fax 01842 820673  
email: sales.thetford@global-es.co.uk

### E-Tech Group Worldwide

#### E-Tech ( Gulf )

PO Box 25647  
Jebel Ali  
Dubai  
United Arab Emirates  
Tel: 00 971 488 33863  
Fax: 00 971 488 33862  
E mail: etech.gulf@etechcentre.com

#### E-Tech ( France )

Currently care of:  
46, Quai François Mitterrand  
13600 La Ciotat  
Cote d'Azur, France  
Tel: 0033 614895171  
Fax: +44 (0)1493 419805  
E mail: etech.france@etechcentre.com

#### E-Tech Specialist Services

( NB: Specialist services are available through any group location )  
The E-Tech Centre  
Boundary Rd  
Harfreys Ind Est  
Great Yarmouth  
Norfolk NR31 0LY  
Tel: +44 (0)1493 419800  
Fax: +44 (0)1493 419805  
E mail:sales.peto@etechcentre.com