



EMENTELLE



WWW.CABLEJOINTS.CO.UK
THORNE & DERRICK UK
TEL 0044 191 490 1547 FAX 0044 477 5371
TEL 0044 117 977 4647 FAX 0044 977 5582
WWW.THORNEANDDERRICK.CO.UK

PowerProtect+ Duct Systems

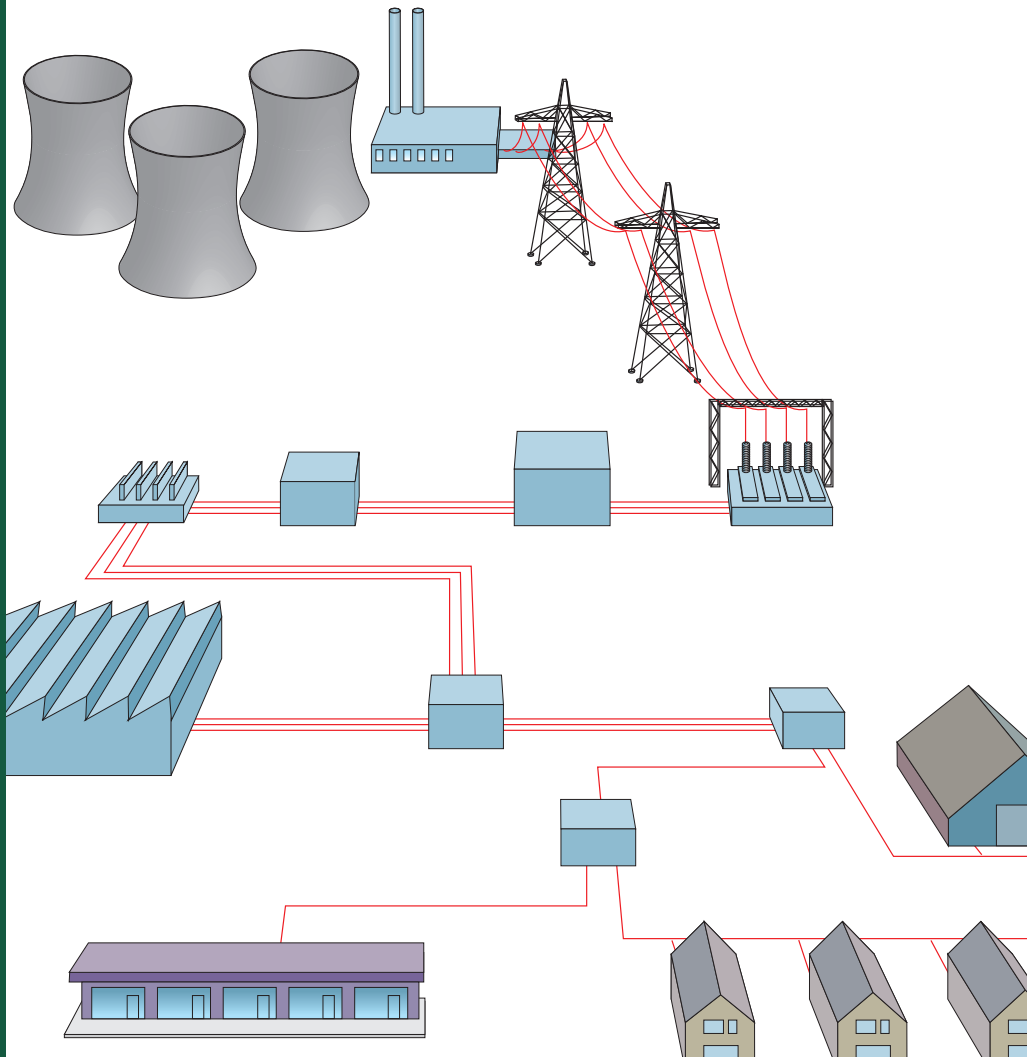
Setting new standards in power cable systems

Welcome to Ementelle

When it comes to ducts for all Power cables, reliability and durability are paramount.

Ementelle have listened to the leading specifiers throughout the industry, and have developed systems that meet today's and also future requirements.

Ementelle have an extensive PowerProtect+ Duct product range to meet all applications.



An industry leader in the provision of duct systems since 1980 and active in the power market for the last 10 years, Emtelle has completed many diverse projects for numerous high-profile clients and is the supplier of choice for many Distribution Network Operators. Much of this success is grounded in Emtelle's ability to provide the right solutions to meet the requirements of cable performance and installation challenges respectively. By getting involved in projects right from the start, Emtelle is able to offer unbeatable levels of knowledge and commitment to meet the clients and installers requirements every time.

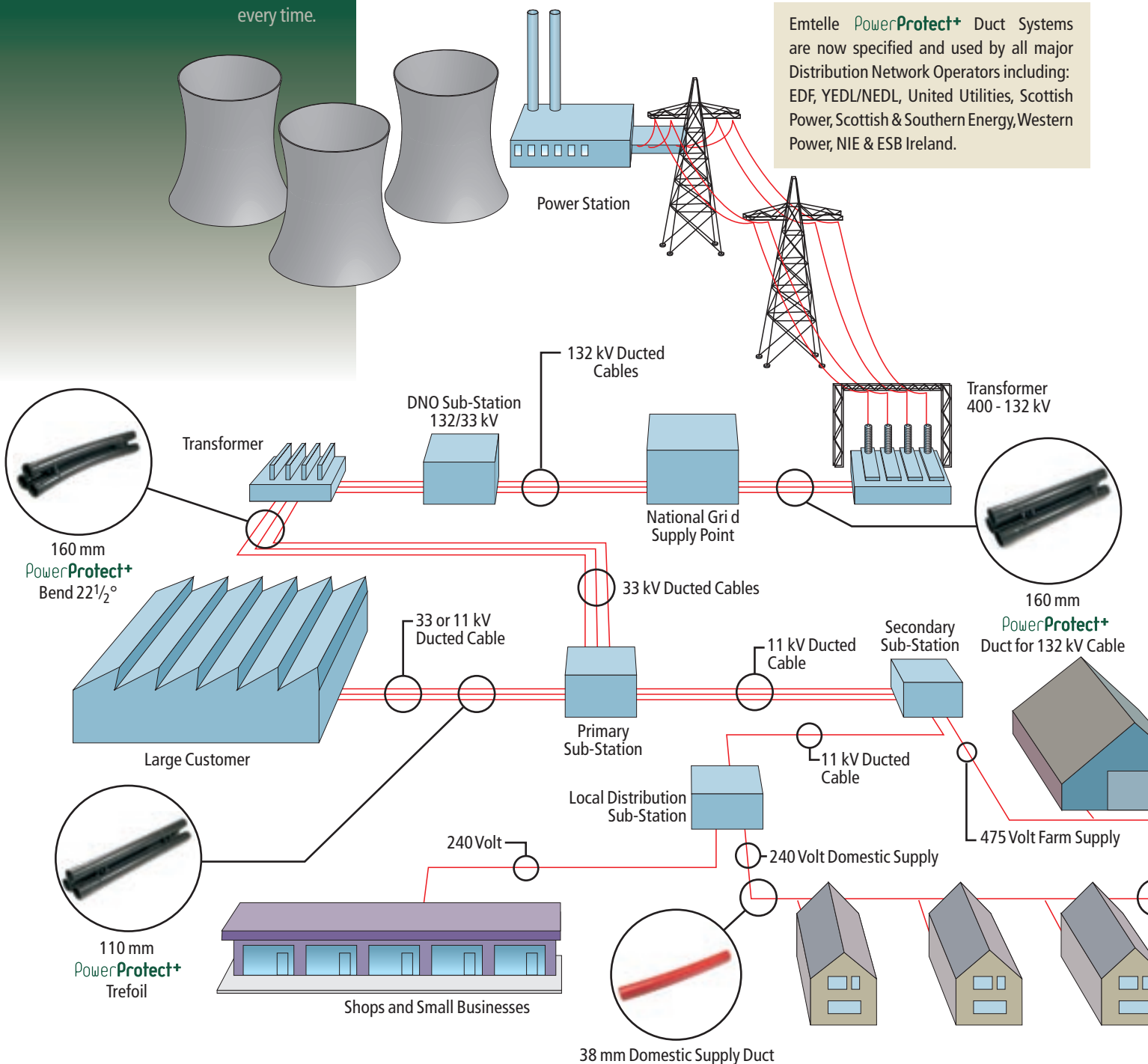
Meet the demands of today – and tomorrow – with Emtelle PowerProtect+ Duct Systems

The challenges the industry faces are well known: a relentlessly rising demand for electricity; constantly shifting usage patterns; cities undergoing rapid business and housing development; and new commercial and residential sites being built daily. This combination of mushrooming demand and fast-changing user demographics is putting electricity providers under increasing pressure. When we factor in the need to build these new networks with the minimum disruption to customers living in these cities, and the affect of industry legislation on construction practices, in conjunction with the latest generation of power cables operating at elevated temperatures, the need for a new generation of duct systems to meet these challenges was evident.

In response to these challenges Emtelle UK has developed a comprehensive range of PowerProtect+ Duct Systems and accessories designed to cope with the stringent demands involved in establishing underground power cables. Our systems include:

- Class 1 Solid Wall uPVC Duct System guaranteeing 450N compression performance at operating temperatures up to 75 Degrees C
- Class 2 Solid Wall uPVC Duct System guaranteeing 450N compression performance at operating temperatures up to 50 Degrees C
- Coiled Solid Wall HDPE duct systems for service cables and specialist applications

Emtelle PowerProtect+ Duct Systems are now specified and used by all major Distribution Network Operators including: EDF, YEDL/NEDL, United Utilities, Scottish Power, Scottish & Southern Energy, Western Power, NIE & ESB Ireland.

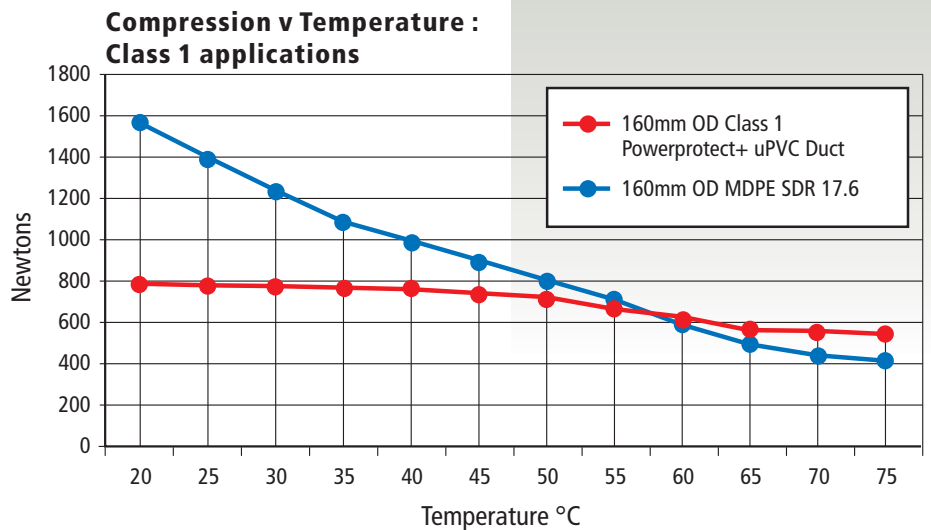
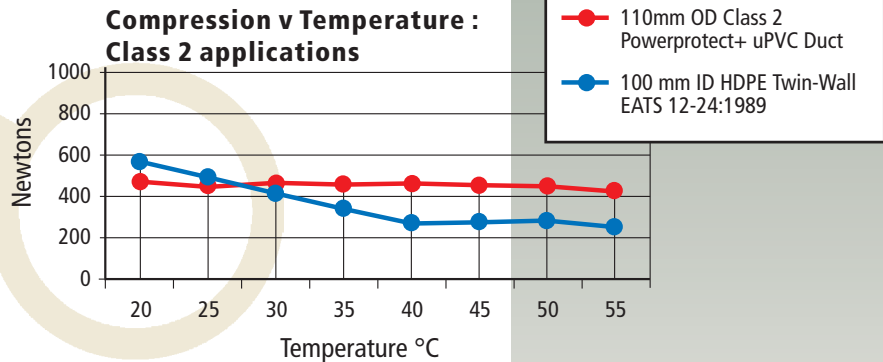


The Features and Benefits these systems bring are as follows:-

- The ability to withstand compression forces from carriageway loading at elevated temperatures.
- Ease of installation with integral jointing system, making the product simple to install, therefore ensuring system is installed correctly without fail.
- Ease of cable placement, with low friction inner surface and bespoke long radii bends to meet the requirements of the latest generation cables. This reduces whole system costs as longer cabling distances can be achieved, resulting in reduction in expensive joints. Internal chamfer on all spigot ends of ducts ensures no damage during cable placement, which in turn improves cable lifespan.
- Enhanced cable performance through efficient heat dissipation offered by uPVC duct systems, due to the high compression to wall thickness ratio, compared with alternate systems.
- Comprehensive product range, covering all possible cable requirements and construction techniques.
- Systems are re-useable when cables are replaced or repaired, therefore maximising asset life and reducing further disruption to the roadways and footways.

Key performance criteria

Emtelle's commitment to uPVC as the optimal material for high-voltage / high temperature duct systems is based on tests conducted on MDPE Solid-wall ducts and HDPE Twin-wall ducts. The tests revealed that uPVC duct systems maintain compression performance far better than polyethylene systems as temperature increases:-

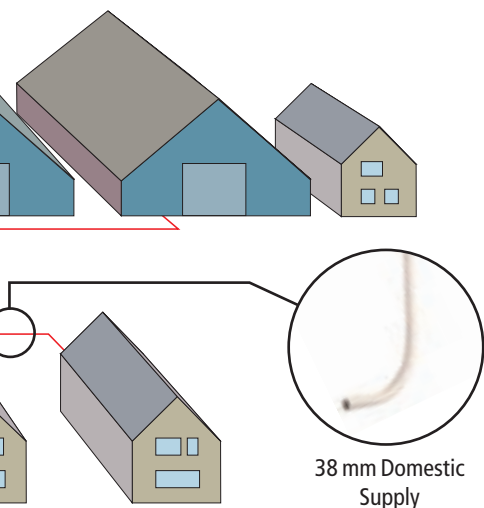


Emtelle's uPVC PowerProtect+ Duct Systems are designed for optimal performance:

- Manufactured using 100% virgin prime resin that far outperforms systems using re-grind materials; approved suppliers accredited to ISO 9000 & ISO 14000
- Tested to BS/EN 50086-2-4 for Impact, Tensile Strength, Heat Reversion, Acetone Test and Compression Strength (Class 1 and Class 2 available to meet differing cable temperatures)
- Extensive Product Range to meet all cable requirements:
 - Standard Interference Fit Socket - 42mm, 53.9mm, 88.9mm, 96.5mm, 110mm, 125mm, 140mm, 160mm, 168mm and 200mm Outside Diameters
 - Ring Seal Socket - 110mm, 160mm and 200mm OD, guaranteeing water and air tightness with adequate provision for thermal movement
 - Full range of long radius bends and ancillary products, enabling complete system one stop shop.
- Full compliance with Electrical Construction Design and Management Regulations and the new Roads and StreetWorks Acts, as well as with EU legislation on the safe, easy removal of cabling.

"We know from past experience that Emtelle ducts work. On this project, the product was on site when we needed it, and everything was installed without any problems. Emtelle were there if we needed help and the cables pulled the 1,100 metres like a dream."

Nial McLeod, Pirelli Project Manager of the Liverpool 132kV Cabling Project for Scottish Power-Power Systems, in which some 30 kilometres of Emtelle's 160mm Class 1 uPVC ducts were laid and cabled.



Full support from design through to operation and maintenance

Emtelle has a well-earned reputation for offering excellent specification, and site support. This commitment to service without compromise includes full discussion and cooperation from the design stage to cable placement. Our experts will walk the entire route with engineers, carefully quantifying product requirements, checking for areas of technical difficulty. We also provide product training and a step-by-step installation guide for ducts.

PowerProtect+ uPVC System - Product Range

uPVC Product Range	Range Features & Benefits
Standard Push Fit Socket Duct	38mm, 42mm, 54mm, 89mm, 96mm, 110mm, 125mm, 140mm, 160mm, 168mm and 200mm OD duct sizes to meet optimum size requirements for cabling and heat dissipation for all cable sizes. Class 1 & 2 available. Available in RED or BLACK to suit client requirements.
Ring Seal Socket Duct	110mm, 160mm and 200mm OD Ring Seal socket, for additional joint security where client requirements dictate. Class 1 & 2 available. Available in RED or BLACK to suit client requirements.
Slip/Repair Couplings	Enable 2 spigot ends to be connected. Available with standard and ring seal socket
Bespoke Single Socket Long Radius uPVC Bends	To enable easy change of direction as trench line dictates; ensuring cables can be pulled into ducts with minimum force and strain; reduces occurrence of joint bays, and therefore cuts system cost. Designed to meet the bend limitations of cables. Available with standard socket and ring seal socket.
Trefoil Duct Spacers	Provide adequate space for backfilling and compaction for optimal electrical and structural efficiency.
Rope Blowing Gun Sets	Bespoke kits for placing rope in ducts ranging from 32-200 mm; can place ropes in one operation up to 1,000 metre runs.
Cable Placement Lubricant	To optimize distance of placement between joint bays and ensure minimum strain on cable during placement.
Cable/Duct Seals	Water- and air-tight seals for areas of high water table or numerous extreme topographical changes.

PowerProtect+ HDPE System - Product Range

HDPE Product Range	Range Features & Benefits
Coiled HDPE Service Duct	25mm, 32mm, 37mm, 38mm, 44mm, 50mm, 54mm and 63mm OD duct sizes to meet optimum size requirements for cable placement. Coil lengths to suit client requirements; typically 50m, 100m and 150m. Banded and film wrapped for ease of handling.
HDPE Sub Duct	20mm – 63mm range available c/w low friction liner & optional 8kn pulling rope, for placement of fibre optic communication and telemetry cables. Delivered to site on single-way and multi-way metal skeletal drums, containing up to 4km of product.
HDPE Cable In Duct	20mm – 63mm range available c/w low friction liner. Cable placed in duct at point of manufacture (or post manufacture dependant upon size). Delivered to site on single-way and multi-way metal skeletal drums, containing up to 4km of product. Product is ideal for wind farm and G78 applications, reducing the build time.
Slip, Double Socket, Aluminium reverse thread & Compression connectors	Enabling connection of ducts in access chambers / trench. Standard of connector to suit application.



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