

Rail

lindapter[®]

Technical Innovation in
Steelwork Connections

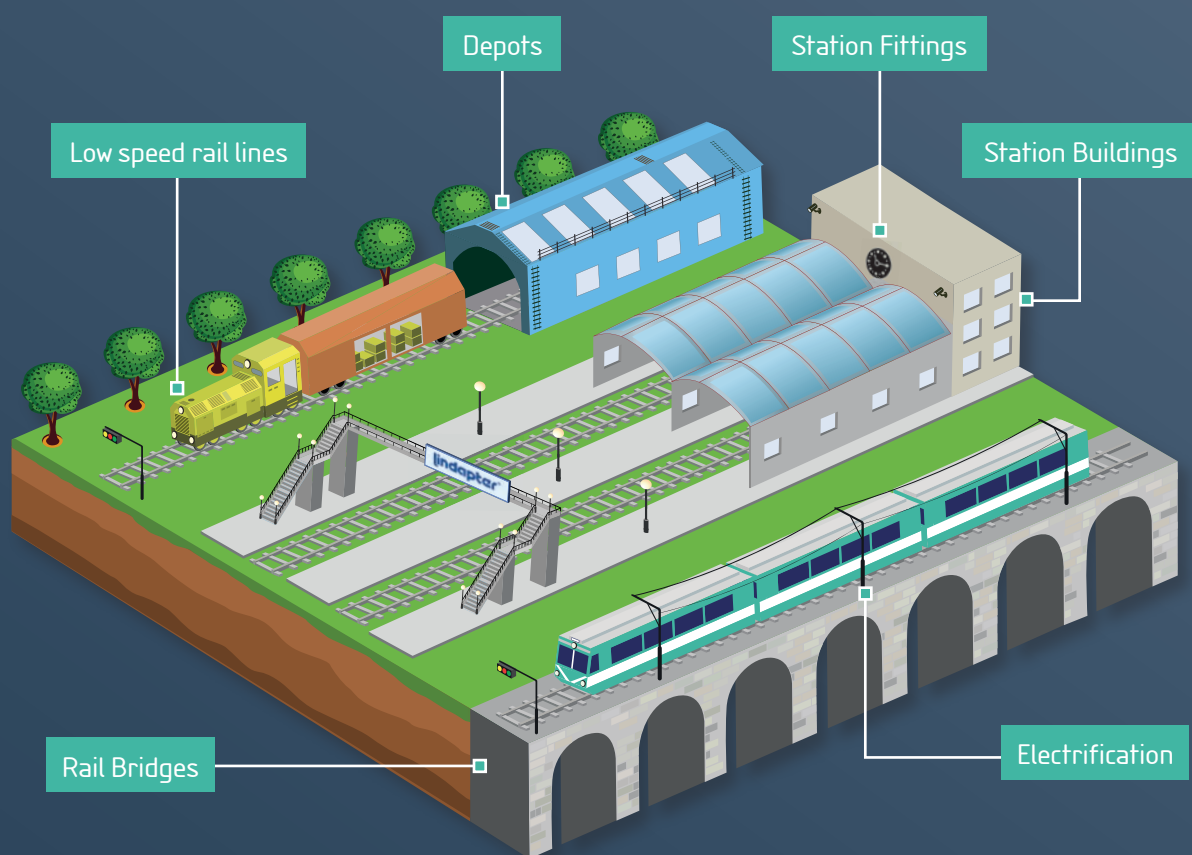


Welcome

lindapter[®]

Safely securing steelwork since 1934

Lindapter, the innovator of steelwork clamping systems, supplies its products to connect a range of structures and services throughout virtually every stage of rail infrastructure, including:



10 Reasons to use Lindapter connections

- Faster installation, lower labour costs
- Adjustable on-site for accurate positioning
- No drilling or welding on-site
- Available in a range of materials and protective coatings
- No damage to steelwork and coatings
- Compatible with virtually any steel section, hollow section, channel or bracket
- Can be pre-assembled to minimise installation time
- Suitable for permanent and temporary connections
- Independently approved Safe Working Loads
- A range of Network Rail approved products

Contents



Connections for

- Station Buildings 4
- Station Fittings 8
- Electrification 12
- Rail Bridges 16
- Depots 18
- Access Walkways 20

Project Experience

- St Pancras Station 22
- Camley Street Bridge (HS1) 23
- Hitachi Ashford Depot 24
- Arnside Viaduct 25

Lindapter Accreditations & Service

- Approvals 26
- Technical Support 27

Disclaimer

Lindapter International supplies components in good faith, on the assumption that customers fully understand the loadings, safety factors and physical parameters of the products involved. Customers or users who are unaware or unsure of any details should refer to Lindapter International before use. Responsibility for loss, damage, or other consequences of misuse cannot be accepted. Lindapter makes every effort to ensure that technical specifications and other product descriptions are correct. 'Specification' shall mean the specification (relating to the use of the materials) set out in the quotation given by the Seller to the Buyer. Responsibility for errors or omissions cannot be accepted. All dimensions stated are subject to production tolerances - if in doubt please check with Lindapter. In the interests of improving the quality and performance of Lindapter products, we reserve the right to make specification changes without prior notice.

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Whether securing a new roof to a station building, adding new digital displays to station platforms or fixing low speed rails within a depot, Lindapter has a proven accredited solution.

Established in 1934, Lindapter International is the world's innovator of steelwork clamping systems, eliminating the need to drill or weld steel on-site. Lindapter connections can be temporary or permanent, adjusted on-site and do not damage steelwork; ideal for installing station building services that may need to be realigned or removed or for attaching a new roof to a listed station building.

This brochure provides examples of the wide range of typical Lindapter connections for use across a rail network, all based on real applications. Lindapter offers a comprehensive design and support service to tailor its products to your specific application, including:



Online Support

- Innovative Assembly Selector tool
- CAD downloads
- Specification data
- News and case studies
- Download or request a catalogue



Station Buildings

Lindapter connections are used in railway station buildings around the world in a wide range of temporary and permanent applications.

Lindapter's versatile clamping systems offer secure steelwork connections with independently verified Safe Working Loads and industry leading product approvals. The innovative connections provide a quick and easy method of securing a new roof or façade panel without the need to weld or drill.

Typical applications include:

- Connecting roofing to supporting steelwork
- Securing façades and cladding panels
- Secondary structural steelwork connections
- Fastening support frames for mechanical equipment

No damage to existing steelwork:

- Perfect for refurbishment of station buildings
- Install and remove fixings without causing any damage
- A wide product range to suit virtually any application

Suitable for permanent and temporary applications:

- Quick, easy to install and remove connections
- High quality, corrosion resistant castings and Hollo-Bolts ideal for permanent applications
- Easy to realign and remove connections for temporary steelwork support frames

Recommended components for station building applications:



Type A



Type B



Type AF



Type LR



Hollo-Bolt®

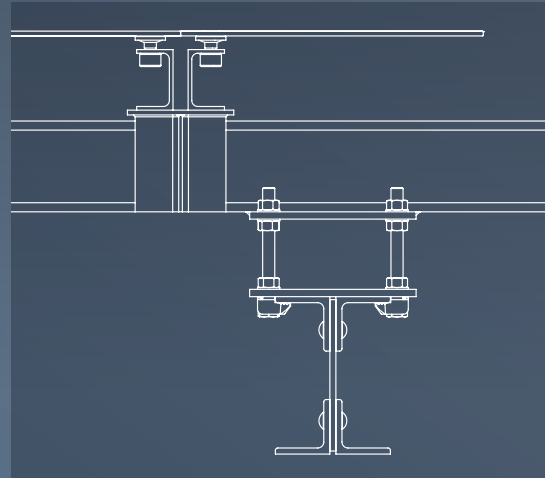
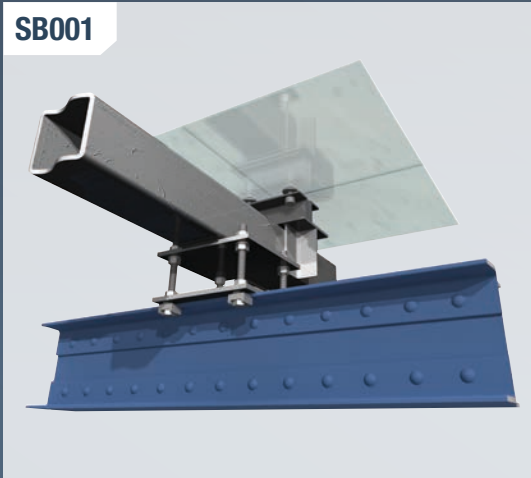


Hollo-Bolt® HCF*

Please refer to the Lindapter catalogue or website for full product data.

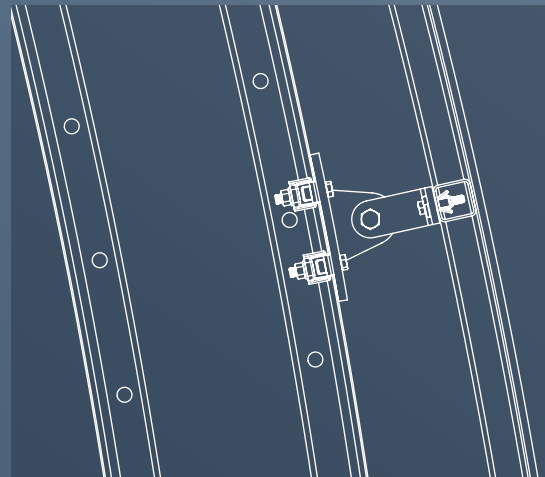
* High Clamping Force

SB001



Type A fixings clamping a glass roof frame to original steelwork (Manchester Piccadilly Station, UK).

SB002

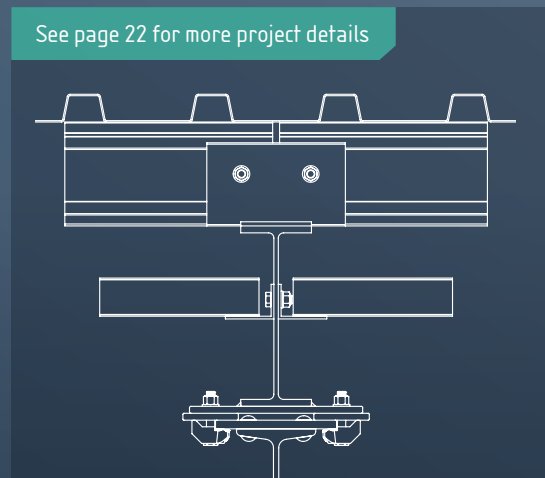


Hollo-Bolts & Type LRs connecting a domed glass roof to structural steel (Dresden Railway Station, Germany).

SB003



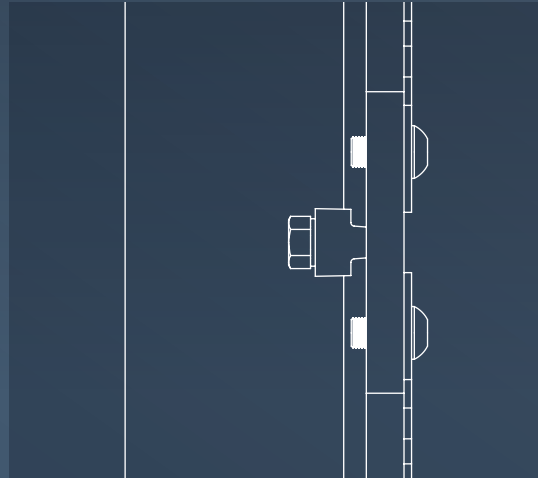
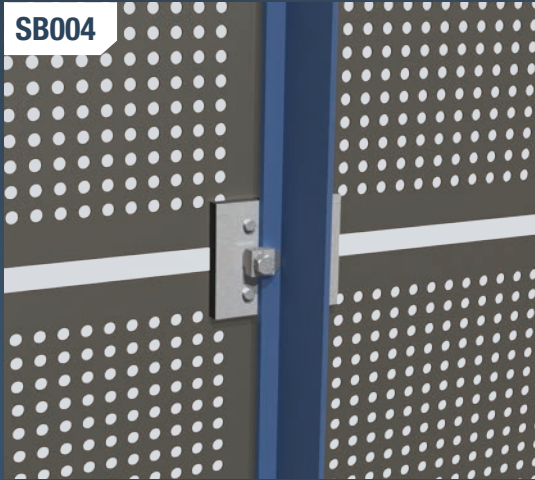
See page 22 for more project details



Type AFs fastening a multi-layered roof structure to original steelwork (St Pancras Station, UK).

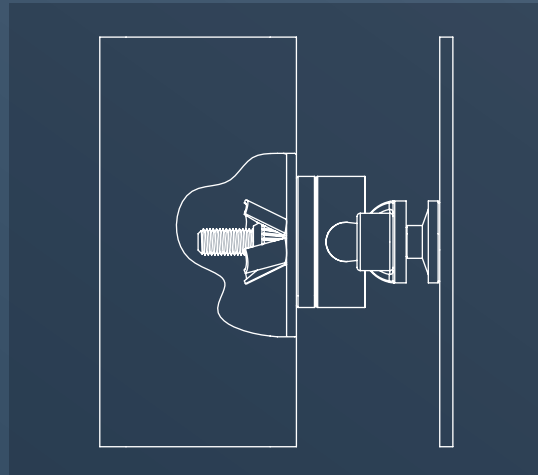
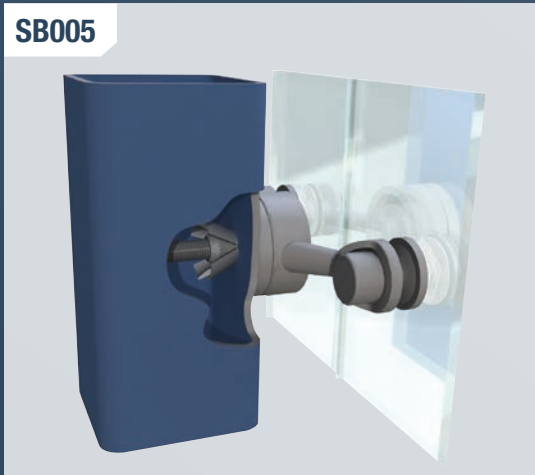
Station Buildings

SB004



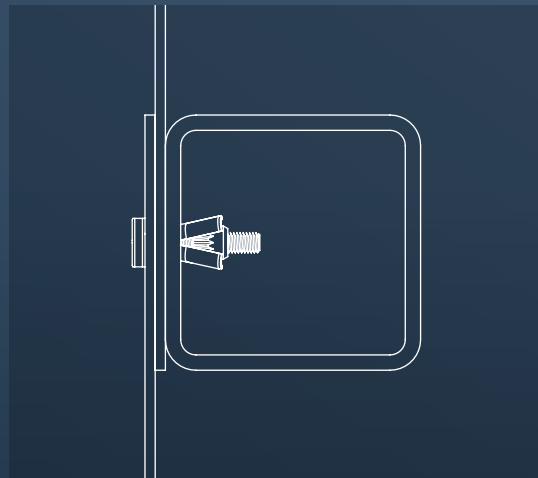
Type B clamps connecting a perforated metal façade to a supporting steel section.

SB005

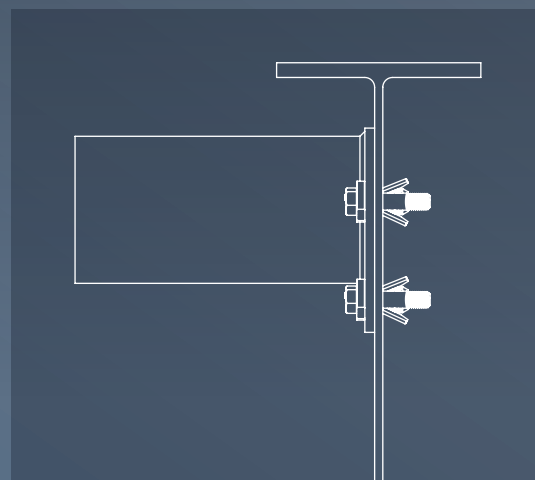


A Hollo-Bolt connecting a spider bracket to the SHS frame, securing the glass façade.

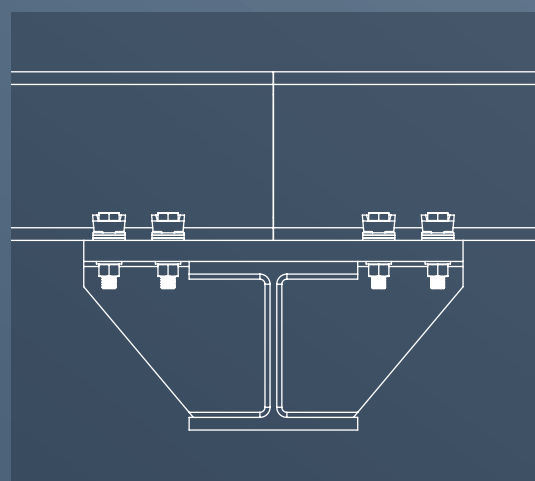
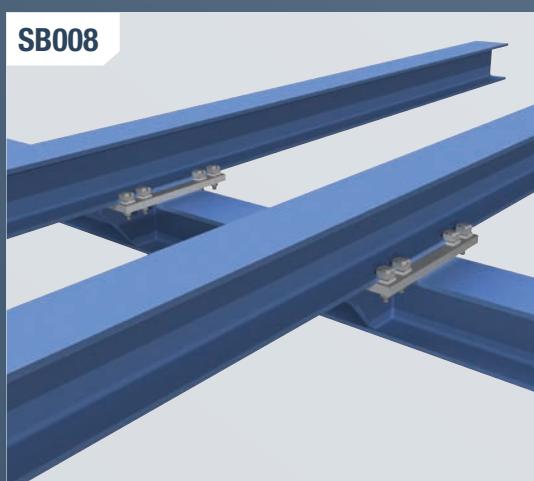
SB006



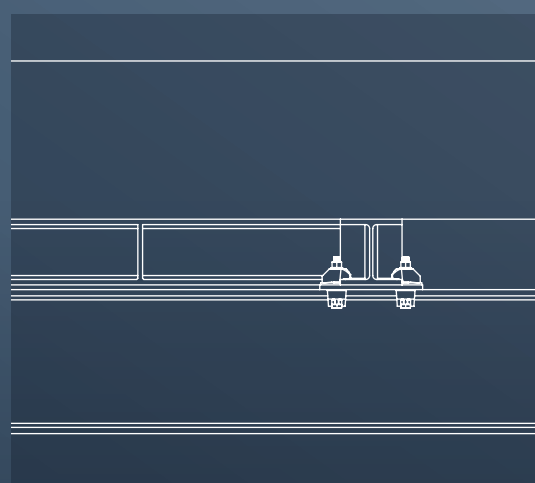
A mirror finish façade connected to supporting SHS with stainless steel Countersunk Hollo-Bolts.



Hollo-Bolt HCFs connecting stainless steel canopy support hollow section (Derby Midland Station, UK).



Type A fixings used in a Girder Clamp configuration to create a support frame for overhead equipment.



Type AF clamps connecting the base frame of a HVAC unit to supporting steelwork.

Station Fittings

Railway stations feature a wide range of fittings that must be secured to a station building's steelwork.



Lindapter provides labour saving connection solutions for connecting these essential elements to structural and secondary steel beams. From lighting and security devices to visual display equipment, Lindapter has a proven connection solution.

Typical applications include:

- Securing platform displays
- Suspending cable trays
- Fastening signage
- Connecting lighting and auditory equipment

Adjustable on-site:

- Connections can be delivered pre-assembled then adjusted on-site for accurate positioning
- Connections can be loosened and tightened to allow precise alignment
- Potential to adjust the connection without damaging the steelwork

No welding or drilling:

- Specialist labour is not required
- No hot work permits
- Fast, cost effective and safe installation

Recommended components for station fitting applications:



Type A



Type B



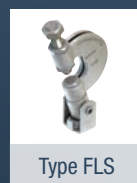
Type AF



Type HB



Type HBBH*

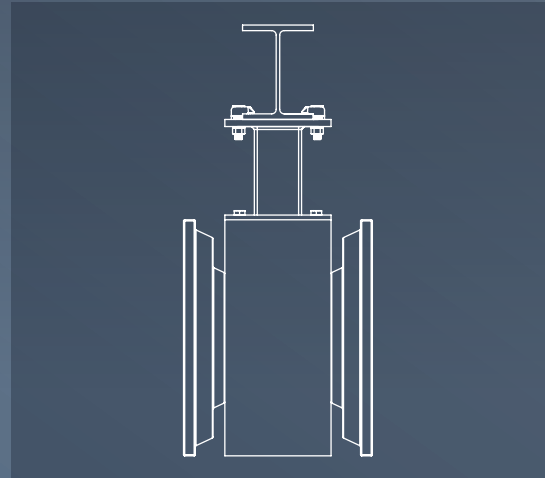


Type FLS

Please refer to the Lindapter catalogue or website for full product data.

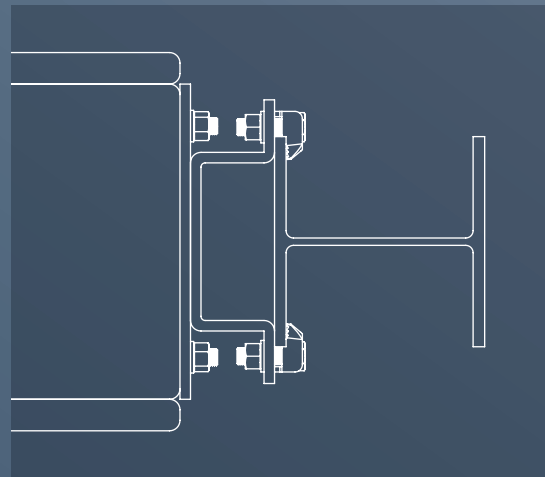
* Available in a security version

SF001



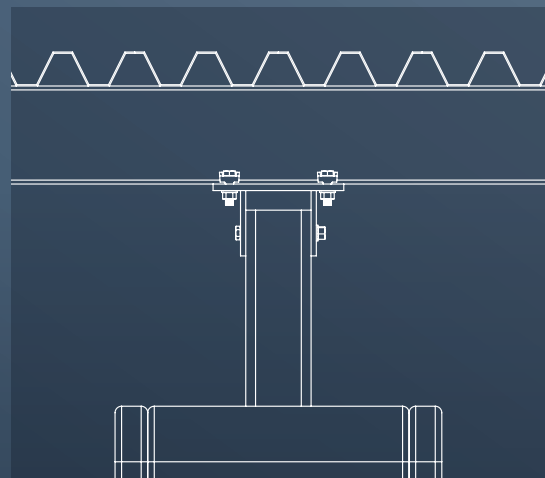
Type As connecting a station platform display in a tensile arrangement (Berlin Railway Station, Germany).

SF002



Type As connecting a station platform display in a friction application (SBB Station, Switzerland).

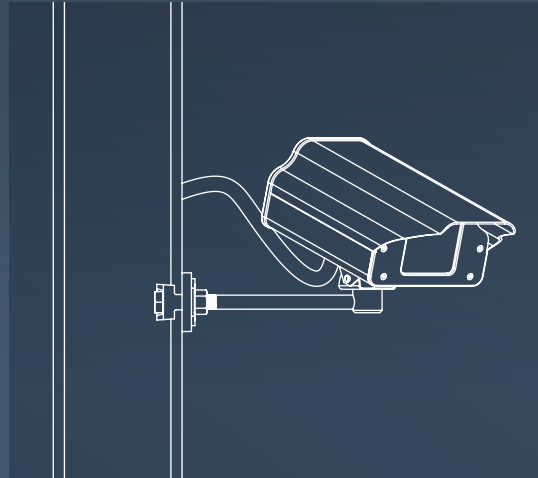
SF003



A station platform display connected with Type As in an offset arrangement (Leiden Station, Holland).

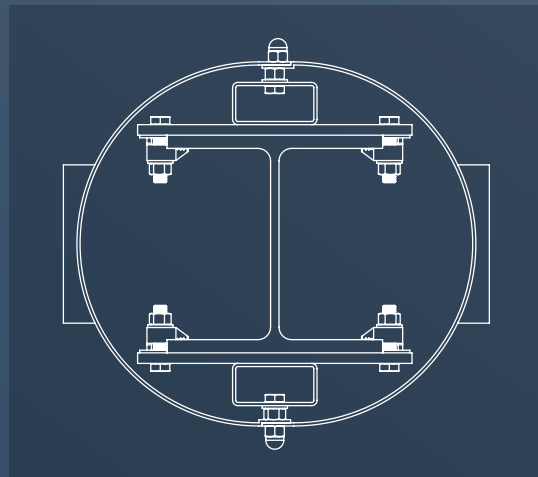
Station Fittings

SF004



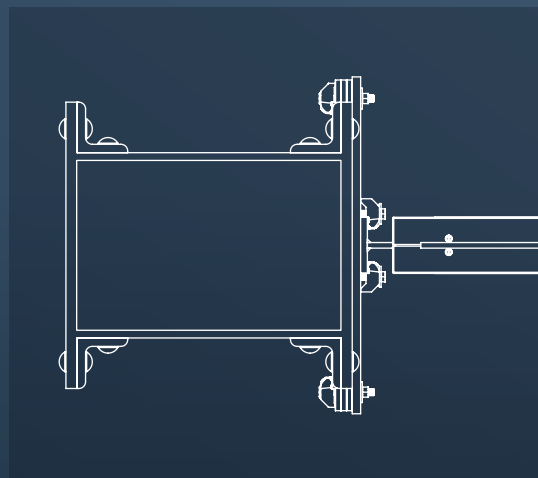
A security camera connected to an existing steel section with Type A clamps.

SF005

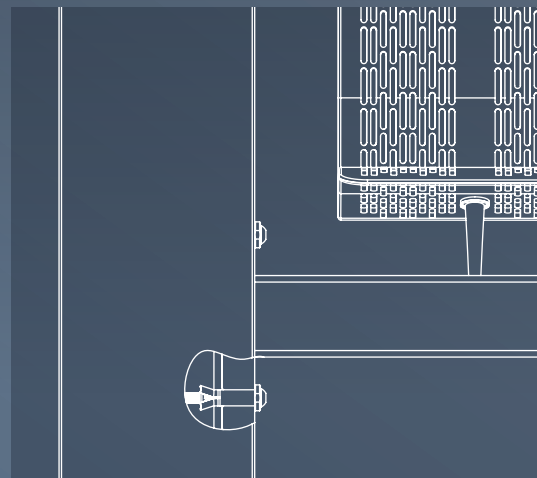
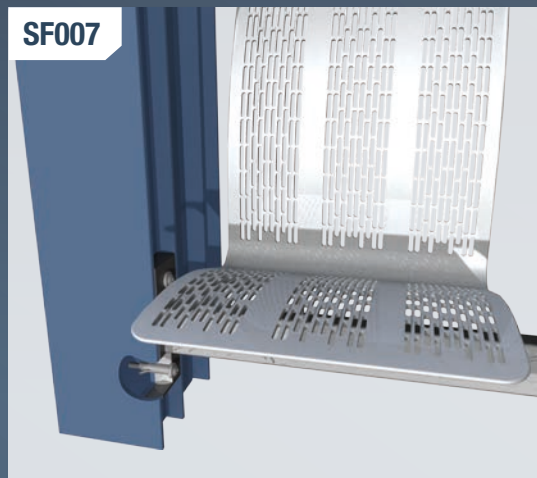


Aluminium sign connected to a structural platform beam with Type B fixings (Huddersfield Station, UK).

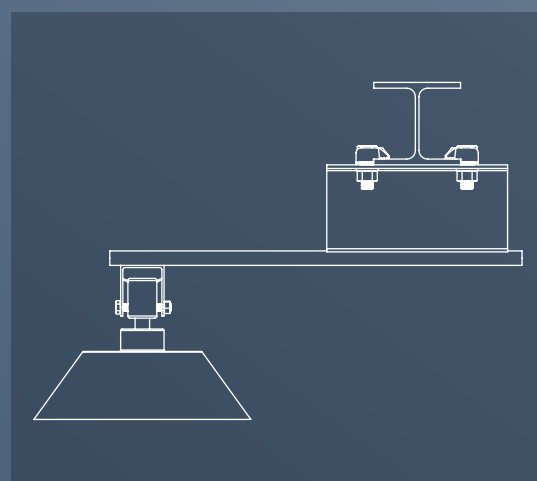
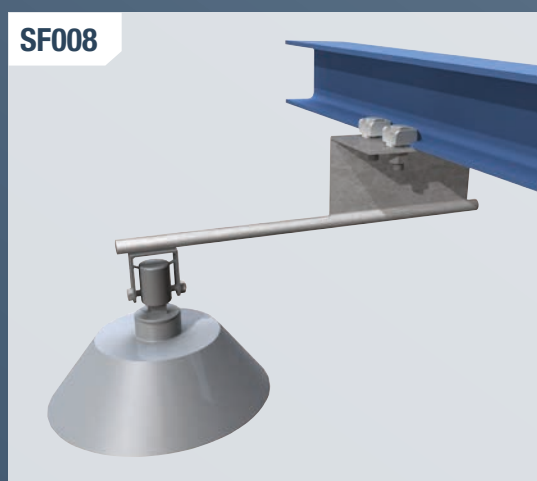
SF006



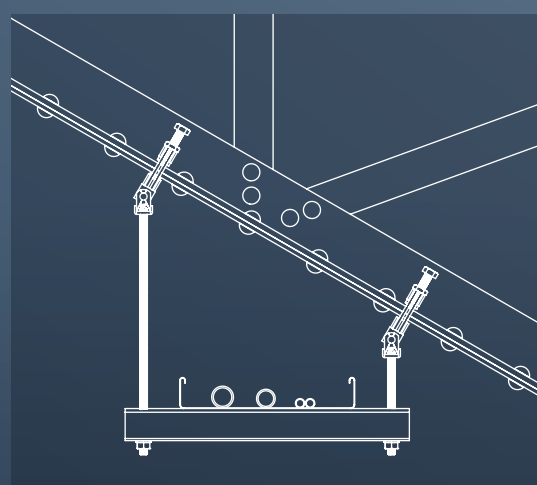
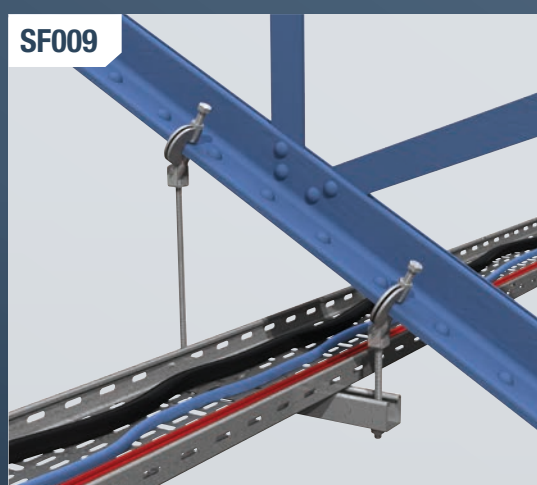
Signage secured in a friction application with High Slip Resistance Type AFs (Clapham Junction Station, UK).



Security head Hollo-Bolts connecting seating to a steel platform frame (Phoenix Light Rail, USA).



Type B clamps connecting a lamp bracket to supporting steelwork (Friedrichstraße Station, Germany).



Type FLS fixings used to connect cable trays to a platform roof's sloped steel flanges (Wimbledon Station, UK).

Electrification

Lindapter connections offer cost effective and easy to install solutions for railway line electrification.

Overhead catenary often runs along hundreds of miles of railway line, featuring thousands of connection points. The sheer quantity of connection points found along lines of Overhead Line Equipment (OLE) makes it crucial to find the optimum method of connecting electrification wires to the supporting steel.

Typical applications include:

- Hollow section connections
- I-Beam connections
- Suspending electrification from crossover beams

Fast, cost-effective installation:

- Only hand tools required
- No need for specialist labour
- Quick and simple process to ensure rapid electrification of entire lines

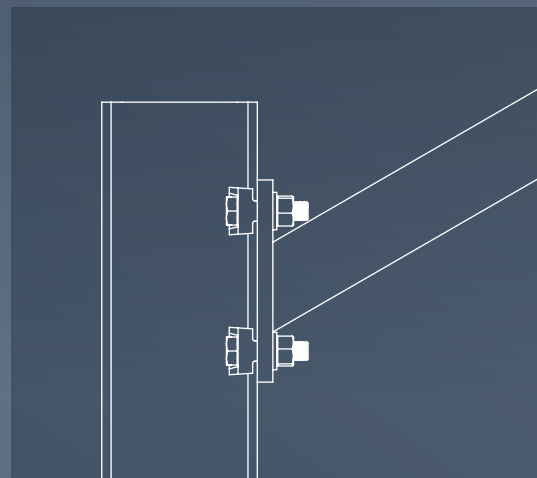
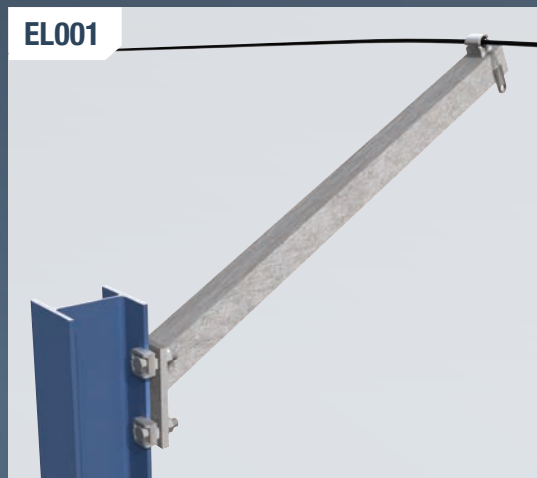
Corrosion resistance options available:

- Clamps and Hollo-Bolts are available bright zinc plated or hot dip galvanised
- Other coatings are available upon request
- Ideal for permanent connections in a range of environments

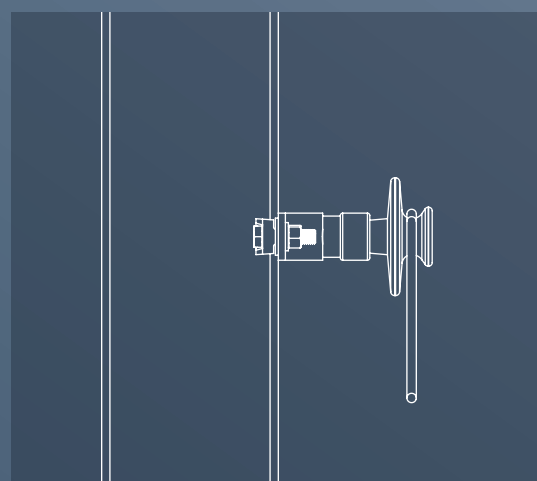
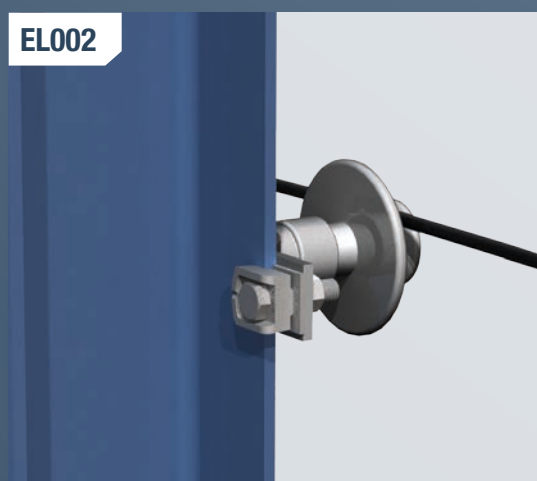
Recommended components for overhead electrification applications:



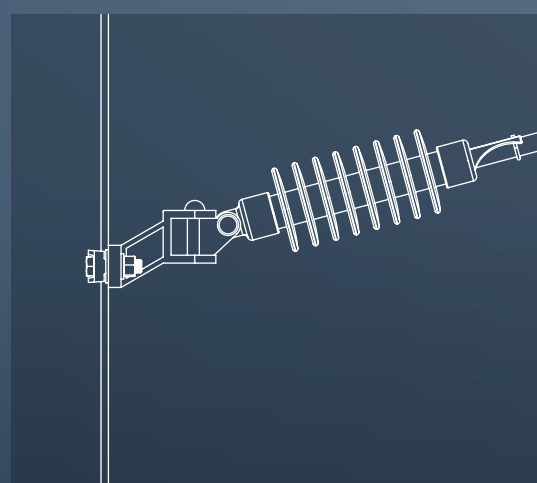
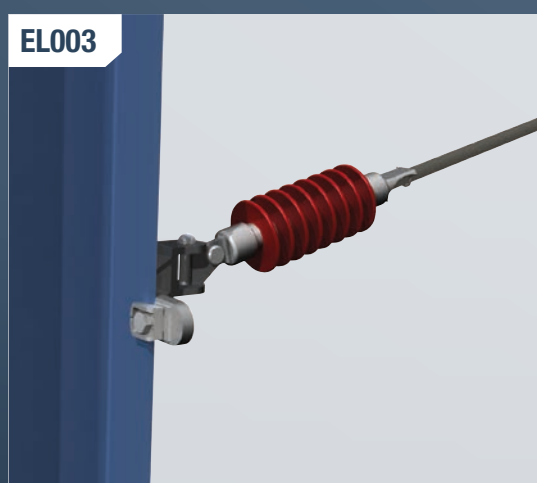
Please refer to the Lindapter catalogue or website for full product data.



Type As used to connect cantilevered supports to masts (Gautrain High Speed Rail, South Africa).



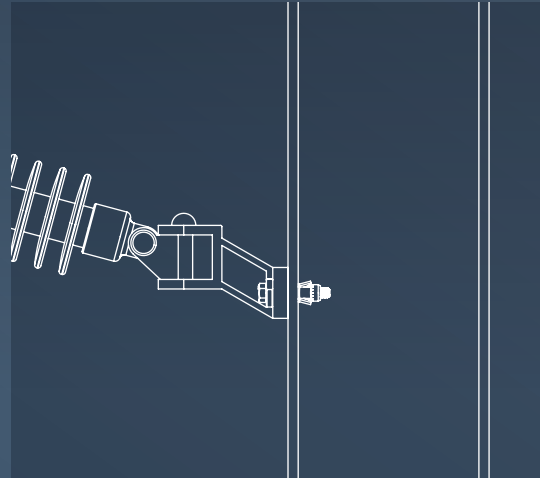
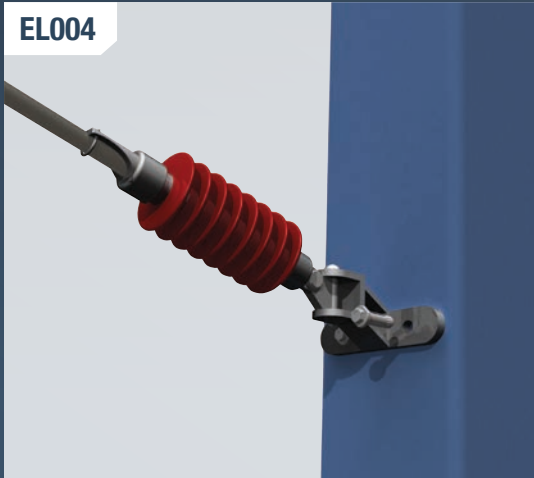
Type As connecting the OLE's disc insulators, supporting catenary wiring (East Coast Mainline, UK).



Type As used to secure OLE insulators to I-Beam masts (Frizinghall, UK).

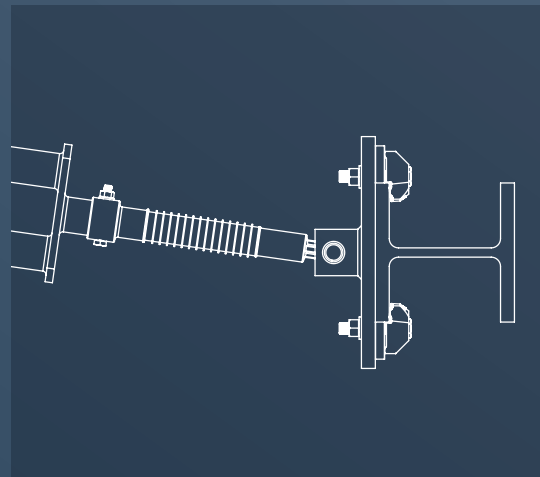
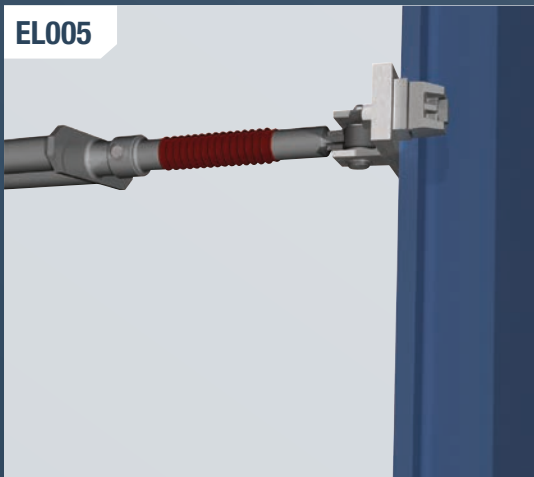
Electrification

EL004



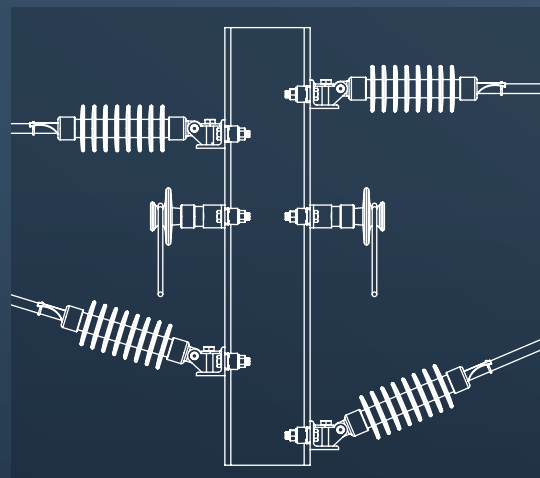
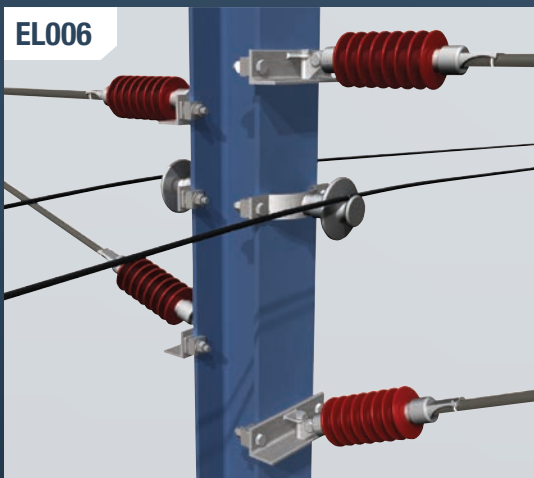
Hollo-Bolts fastening OLE to hollow section masts.

EL005

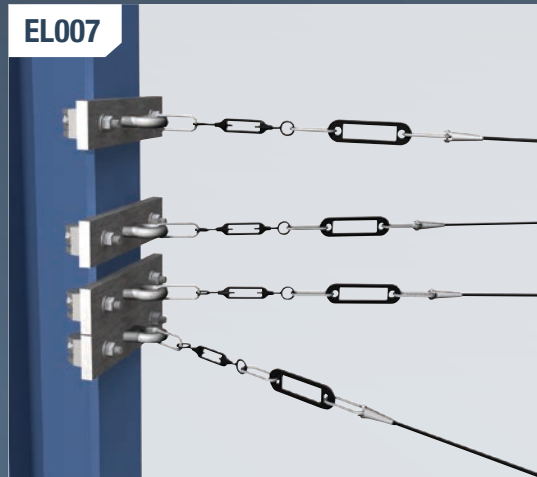


High Slip Resistant (HSR) Type AFs connecting OLE to I-Section masts (Claremont Ferrand Tramways, France).

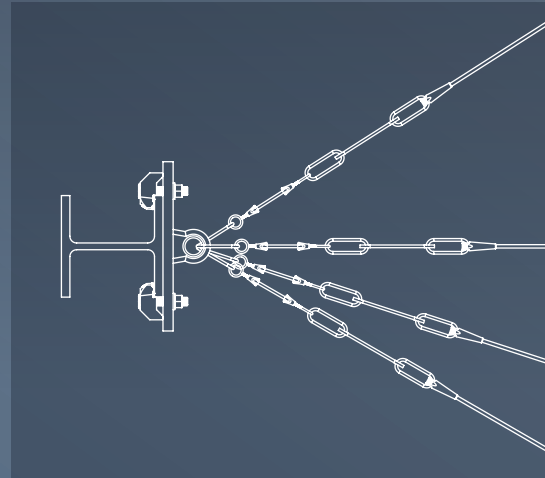
EL006



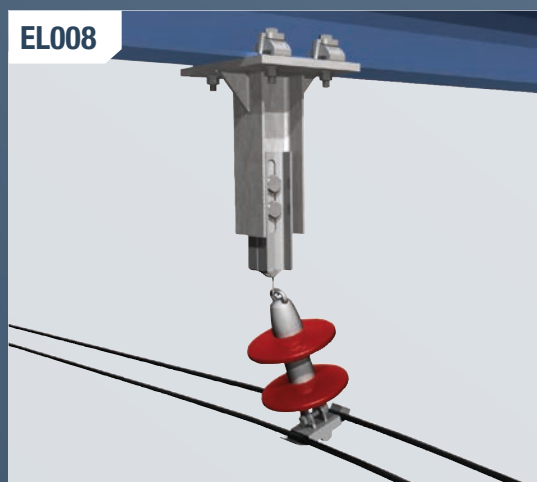
Type Bs connecting several supports to both flanges of a trackside mast (Perth Rail, Australia).



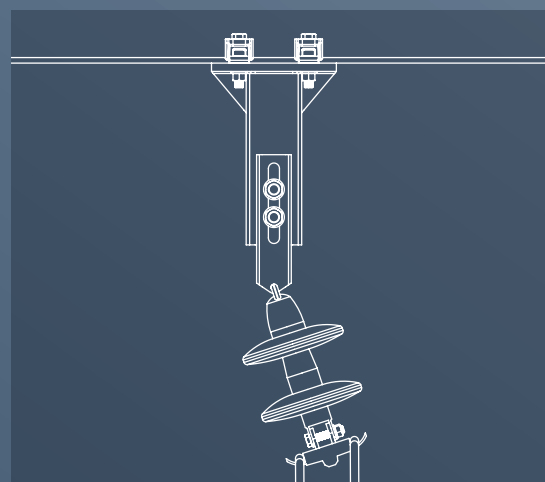
EL007



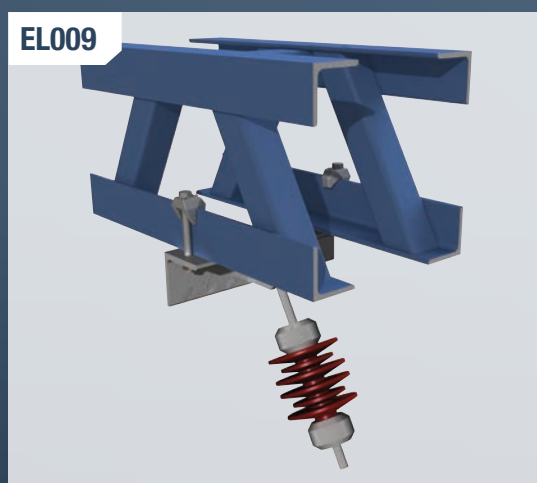
The HSR Type AF fastening several tension wire supports to a mast (Toulouse Tramway, France).



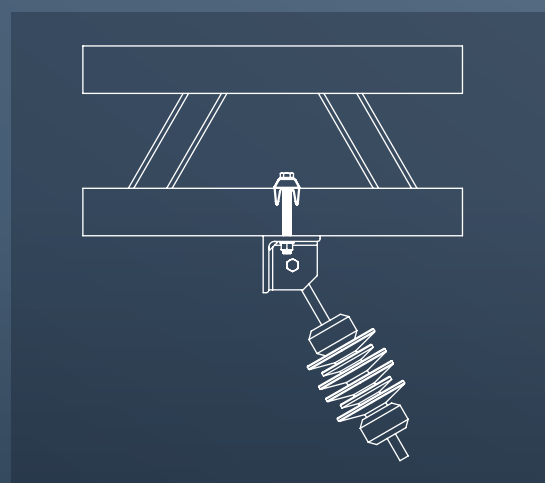
EL008



Type LRs connecting OLE to a support frame spanning across multiple tracks (RATP Paris, France).



EL009



Type CFs used to hang OLE from an overhead frame (Rail Infrastructure Corporation, Australia).

Rail Bridges

The Lindapter product range is ideally suited for use in the construction of new rail bridges and the strengthening and refurbishment of existing ones.



Lindapter's clamping method can be used in a wide range of bridge applications. As Lindapter clamps do not require any welding or drilling, surrounding transport lines, and sometimes even the bridge itself, can remain open whilst work is completed.

Typical applications include:

- Bridge strengthening
- Connecting maintenance access
- Securing services
- Attaching façade panels and signage

No welding or drilling:

- Avoids or minimises bridge, road and rail closures
- No hot work permits
- Specialist labour is not required

Free design service:

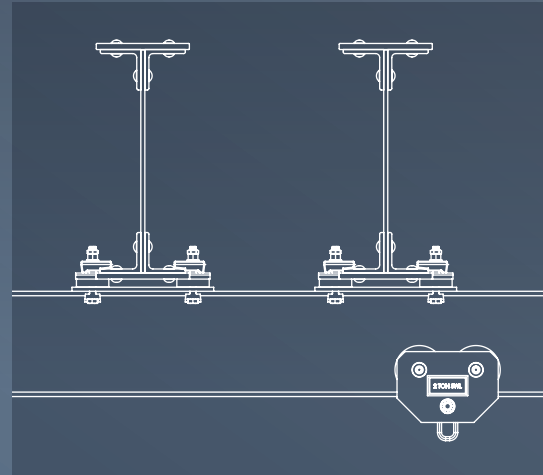
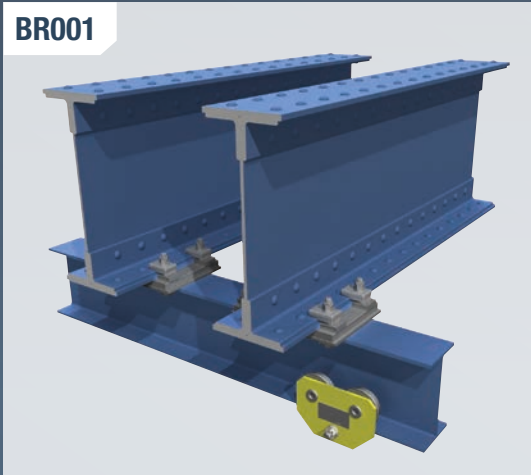
- Lindapter Engineers will provide a solution to your connection requirement
- Your connection will be designed and drawn free of charge
- Further support throughout the project is available

Recommended components for railway bridge applications:



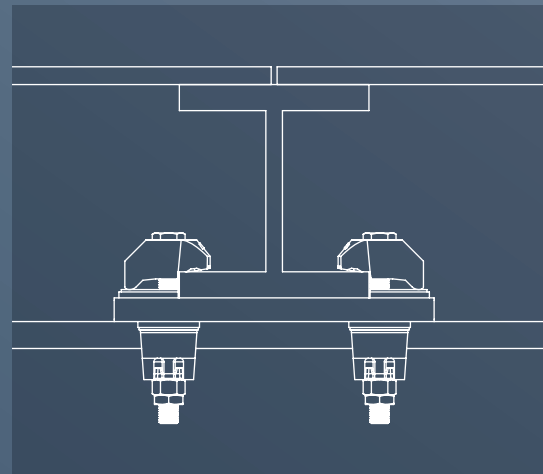
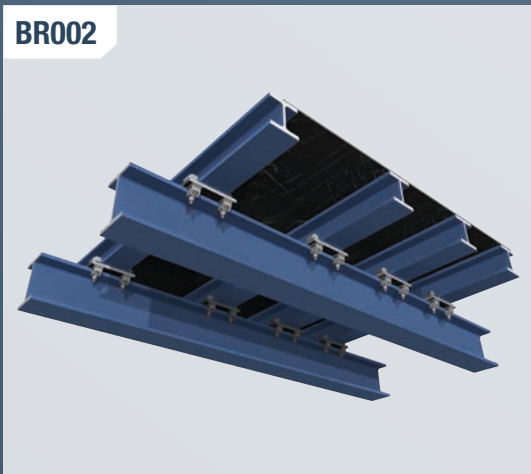
Please refer to the Lindapter catalogue or website for full product data.

BR001



Type RCs securing overhead lifting gantry to allow restoration work (Newcastle High Level Bridge, UK).

BR002

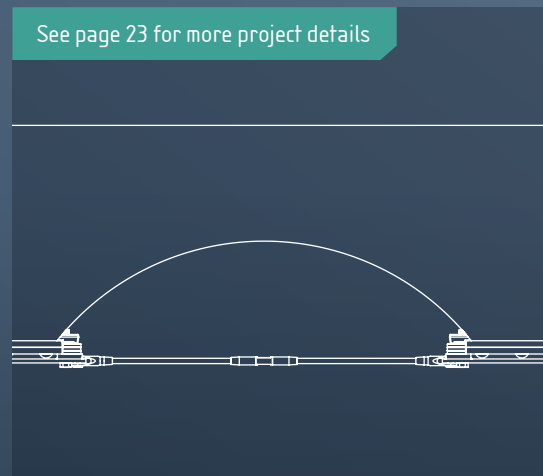


Type AF Girder Clamps strengthening the up line girders of a steel bridge (Morton's Leam Bridge, UK).

BR003



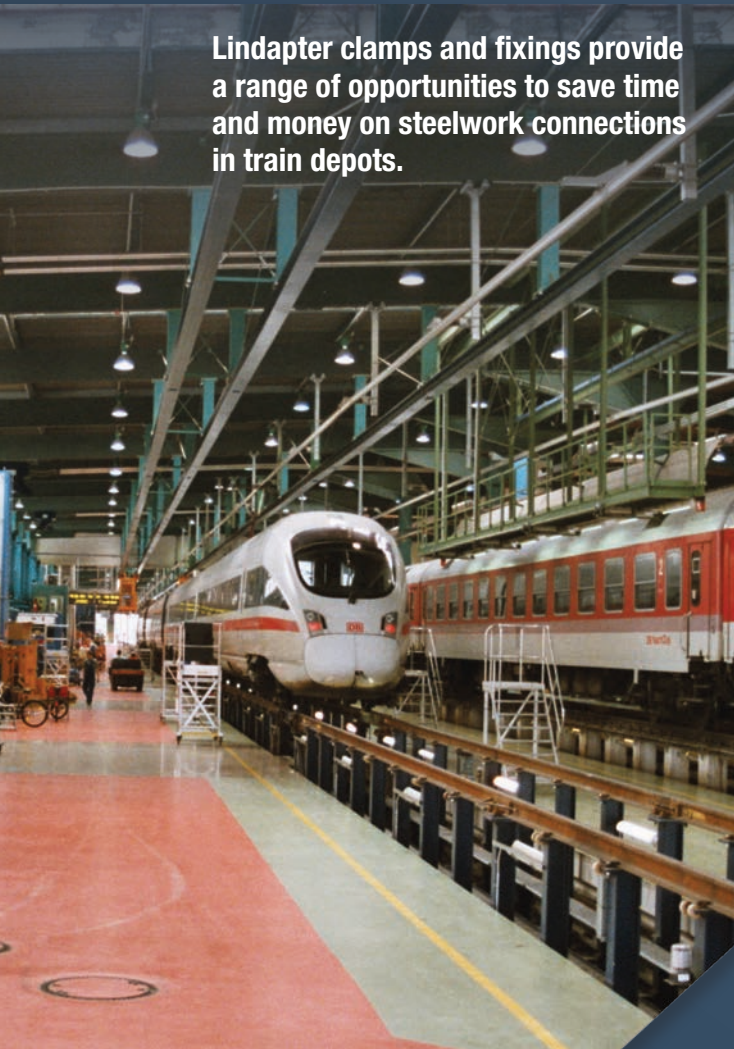
See page 23 for more project details



Type RCs connecting tie bar assemblies to existing jack arch bridge structure (HS1 Camley Street Bridge, UK).

Depots

Lindapter clamps and fixings provide a range of opportunities to save time and money on steelwork connections in train depots.



Lindapter designs and manufactures a range of rail clips, ideally suited for low speed rails such as those found in train depots and workshops. Lindapter's general steelwork fixings also provide connection solutions for other steelwork connections, as listed below.

Typical applications include:

- Low speed rail clamps
- Crane and lifting point connections
- Maintenance access frame fixings

Versatile product range:

- Adjustable products available
- Packing pieces and washers for a precise fit
- Rail fixings, such as the Type RC Rail Clip, are designed to fit most rail types

A range of Network Rail approved products:

- Many Lindapter steelwork fixings have been approved for use by Network Rail
- The entire product range comes with independently verified safe working loads and leading product approvals
- See page 26 for more information

Recommended components for depot applications:



Type LR



Type BR



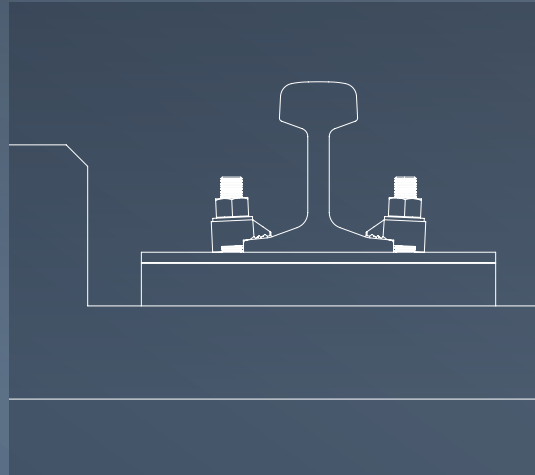
Type RC



Type HD

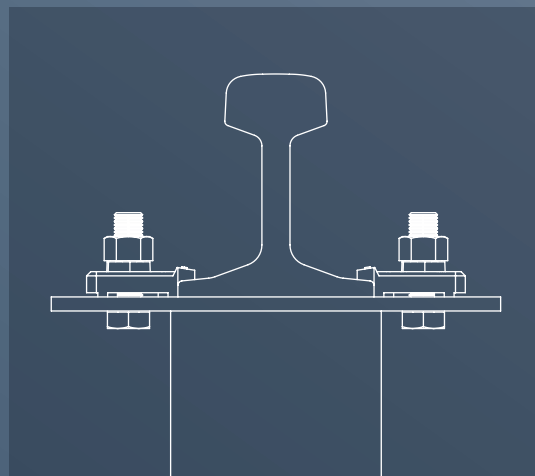
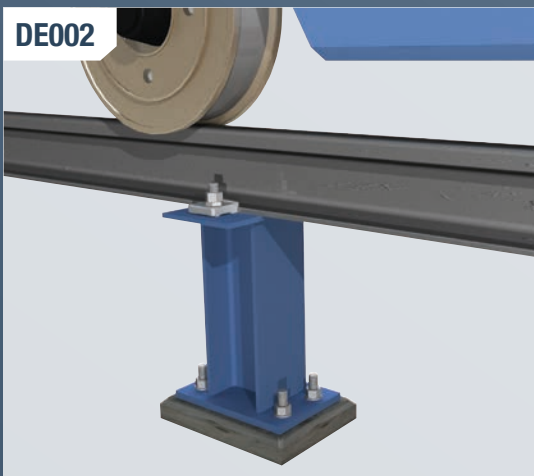
Please refer to the Lindapter catalogue or website for full product data.

DE001



Type BR rail clamps used to connect a low speed rail in a depot (Manchester MPT, UK).

DE002

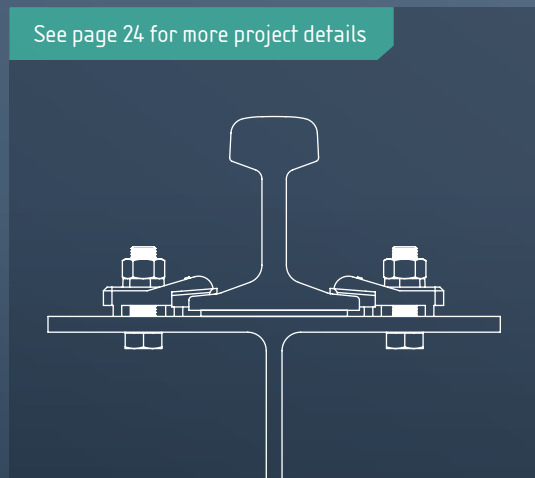


Type HD rail clips securing low speed rails to the end plates of steel supports (Derby Rail Depot, UK).

DE003



See page 24 for more project details



Type HD rail clips safely connecting rails onto elevated way beams (Hitachi Ashford Depot, UK).

Access Walkways

Access walkway is fitted throughout rail networks, in station buildings, depots and alongside railway lines.



Lindapter's innovative floor fixings for connecting steel flooring to supporting steelwork, without any drilling or welding, provide a connection solution for maintenance walkway across vast rail networks. Access to the underside of the flooring is not required and installation and removal can be carried out quickly and safely from above for convenient maintenance access.

Typical applications include:

- Securing chequer plate flooring
- Fastening open bar grating walkways
- Fixing open bar grating stairways

Significantly reduced installation costs:

- Easy to install from above
- Often requires only one installer
- Specialist labour is not required

Permanent, but easy to remove connections:

- Corrosion resistant for a long-lasting connection
- Products are Lloyd's Type Register approved for vibration resistance
- Easy to remove individual plates for quick maintenance access

Recommended components for maintenance access applications:

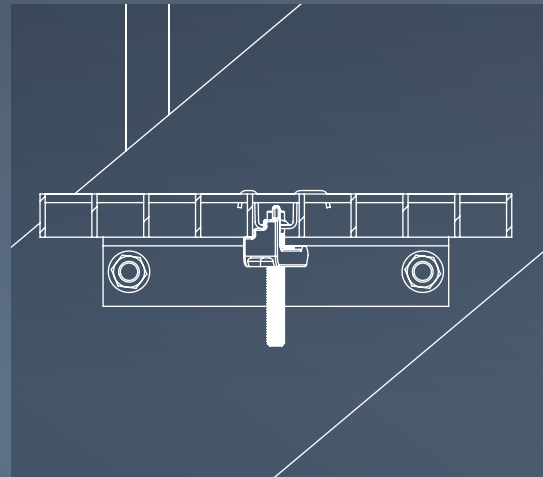


Floorfast®

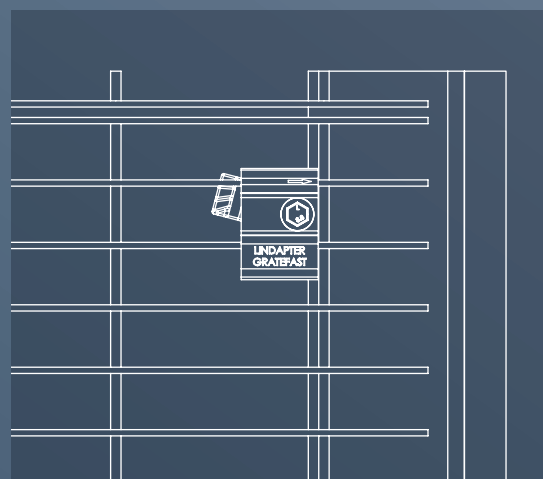
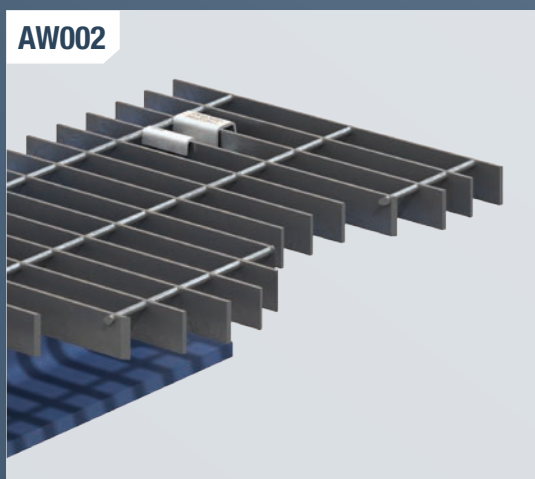


Grate-Fast®

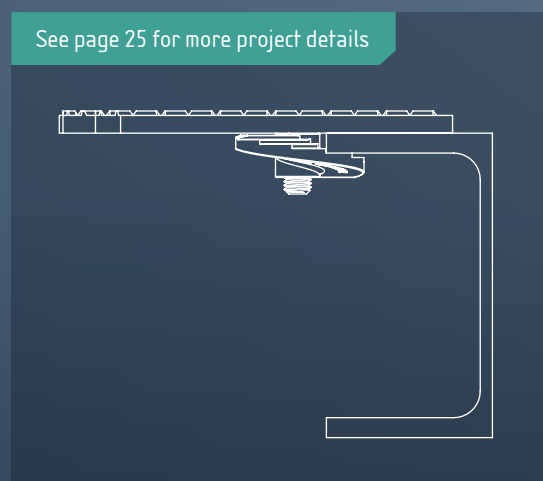
Please refer to the Lindapter catalogue or website for full product data.



Grate-Fast used to connect an open bar grating stairway to the supporting steel frame.



Grate-Fast used to connect steel grating walkway to supporting steelwork (State Railway NSW, Australia).



Floorfast steel floor fixings securing chequer plate walkway to supporting steel (Arnside Viaduct, UK).

Project Experience

St Pancras Station



APPLICATION

Connecting the steel framework of the new roof to the station's existing structure

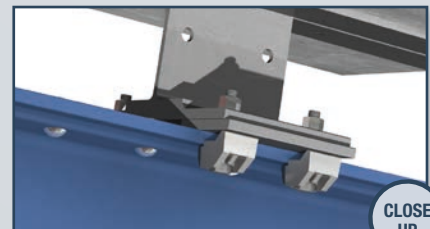
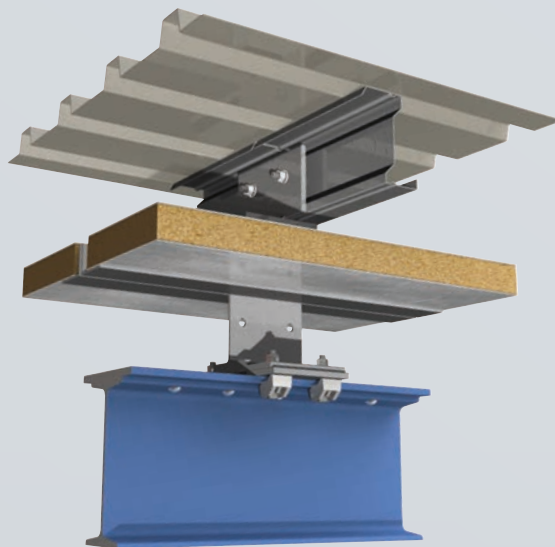
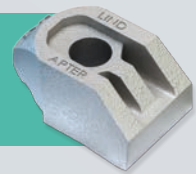
LOCATION

London, UK



PRODUCT

Type AF



CLOSE
UP

The Type AF was specified to secure the steel framework of a new roof to the existing structure of the Grade 1 listed shed designed by William Henry Barlow at St Pancras Station. In the most crucial part of the refurbishment, Lindapter's high strength clamps avoided drilling or welding, thereby removing the risk of damaging the historic Victorian arches.



Camley Street Bridge (HS1)



Image: Matt Buck - billy/WESRO

APPLICATION

Connection of a bespoke tie bar application to strengthen the Victorian 'jack arch' bridge

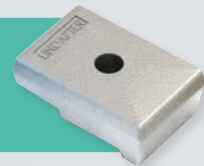
LOCATION

London, UK



PRODUCT

Type RC



Lindapter's Type RCs were used to upgrade Camley Street Bridge (the former Channel Tunnel Rail Link) to High Speed 1 (HS1), replacing corroded tie bars supporting the bridge's arches. The Type RCs were used in a bespoke assembly, securing steel plates to the bridge's original cast iron beams without any damage. Adjustable tendon assemblies were then connected to the plates, allowing tightening of the tie bars to strengthen the arches and prevent any lateral movement.

Project Experience

Hitachi Ashford Depot



APPLICATION

Connecting low speed lines at Hitachi's Ashford Train Maintenance Centre

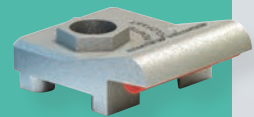
LOCATION

Kent, UK



PRODUCT

Type HD



CLOSE
UP

Lindapter's M20 Type HD Rail Clips were used to safely secure FB rails along lengths of UKC way beam, in turn supported by reinforced concrete plinths. These low speed rails were installed in pairs down the length of the new depot building to give access for maintenance and repair work on the trains. The Type HDs facilitated the precise alignment of the rails by allowing a high degree of stepless lateral adjustability.



Arnside Viaduct

Image: Network Rail



APPLICATION

Securing maintenance walkway alongside the replacement viaduct deck

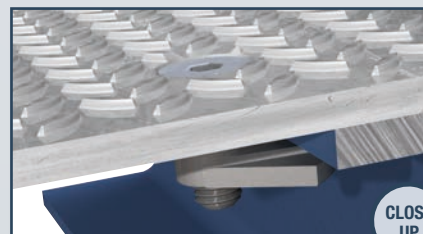
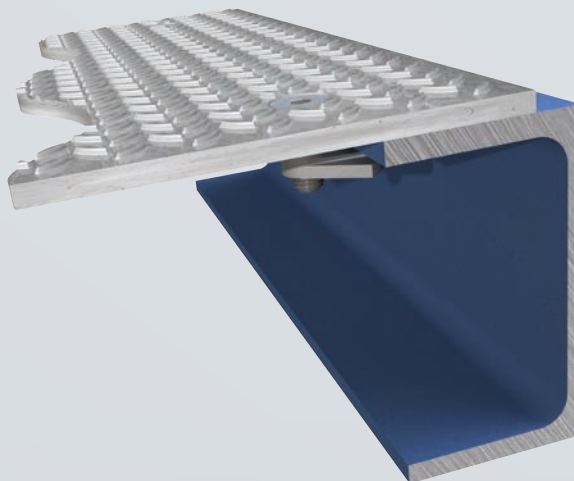
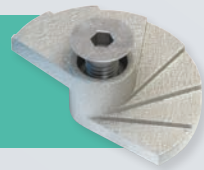
LOCATION

Cumbria, UK



PRODUCT

Type FF - Floorfast®



CLOSE UP

The major upgrade of the 150 year old Arnside Viaduct required the replacement of the entire deck. Chequer plate flooring was secured to supporting box girder sections along the length of the new deck using 8,000 of Lindapter's quick and easy to install Floorfast fixings. The ease of installation allowed the flooring to be fitted as the deck units were removed, helping the major renovation to be completed on schedule.

Approvals

Network Rail

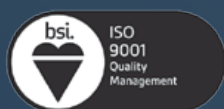
The following products have been approved for use in specific rail applications by Network Rail:

Product	Size	PADS Cat No.
Type A (short)	M16	0011/137015
Type A (medium)	M16	0011/137014
Type A (long)	M16	0011/137013
Type CW	M16	0011/137515
Type P1S	M16	0091/041420
Type F3	M10	0011/137160
Type F3	M12	L121/153002
Type F3	M16	L121/153003
Type F3	M20	L121/153004
Type HB HCF	M16	0091/030201
Type HB HCF	M20	0091/030202
Type HD	M20	0057/077061

Quality, Environment & Associations

ISO 9001 Accredited to ISO 9001 since 1986, Lindapter enforces a quality management system that includes vigorous product testing to ensure consistently high manufacturing standards.

ISO 14001 Lindapter also operates an ISO 14001 certified environmental management system, constantly monitoring and improving aspects of the business that may have an impact on the environment.



Q 05143



EMS 546660

Lindapter is also a member of the following organisations:



(From left to right) British Constructional Steelwork Association, The Steel Construction Institute, American Institute of Steel Construction and Southern African Institute of Steel Construction.

Approvals

Lindapter has manufactured to the highest standard for over three quarters of a century, earning a multitude of independent approvals and a reputation synonymous with safety and reliability. Current accreditations include:

CE Marking For Lindapter products in compliance with the provisions of the EC Construction Product Regulation, please visit: www.lindapter.com/About/CE



Deutsches Institut für Bautechnik is a body that approves construction products for use in structural and civil engineering industries in Germany.



Lloyd's Register Type Approved

products have been subjected to tensile, frictional, vibration and shock tests, witnessed and verified by Lloyd's Register.



TÜV NORD is the certifying authority for safety, quality and environmental protection in Germany.



Det Norske Veritas has approved the use of Lindapter products in lifting applications. This includes their use on both mobile and fixed offshore installations.



Factory Mutual, the American insurance organisation, offers an approval which is recognised by the fire protection industry worldwide.



Verband der Schadenversicherer e.V. is one of Germany's leading independent testing institutions for products used in fire protection applications.



Technical Support

Experienced Engineers offer an unrivalled support service, including free design and bespoke product development. Lindapter's philosophy is to deliver the highest quality at every stage of the service, from initial connection design to installation guidance.

- Specialist advice from experienced Engineers
- Free connection design based on your requirements
- Bespoke drawings delivered in 2D and interactive 3D formats
- CAD files available to import into all major software applications
- Contractor training and on-site visits (where required)

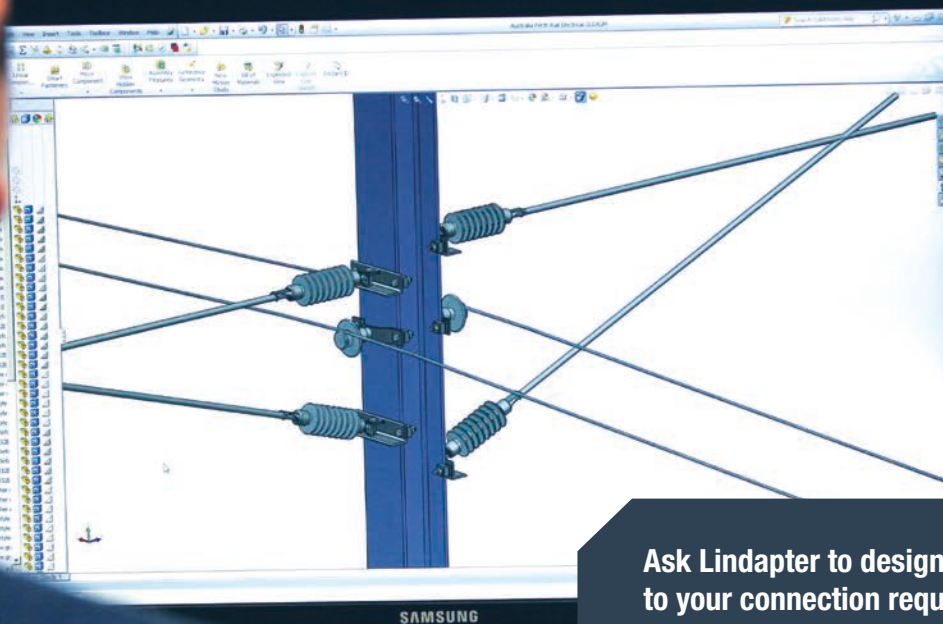
Engineered Solutions

- Design and development of custom products, manufactured to Lindapter's exacting standards
- Thoroughly tested with detailed reports



(Above) One of two 1,000 kN testing machines in Lindapter's Research & Development Facility

(Left) An example of Lindapter's bespoke interactive 3D drawings; just one part of the connection design service on offer



Ask Lindapter to design a solution to your connection requirements:

Tel: +44 (0) 1274 521 444

Fax: +44 (0) 1274 521 130

General Enquiries: enquiries@lindapter.com

Technical Support: support@lindapter.com



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