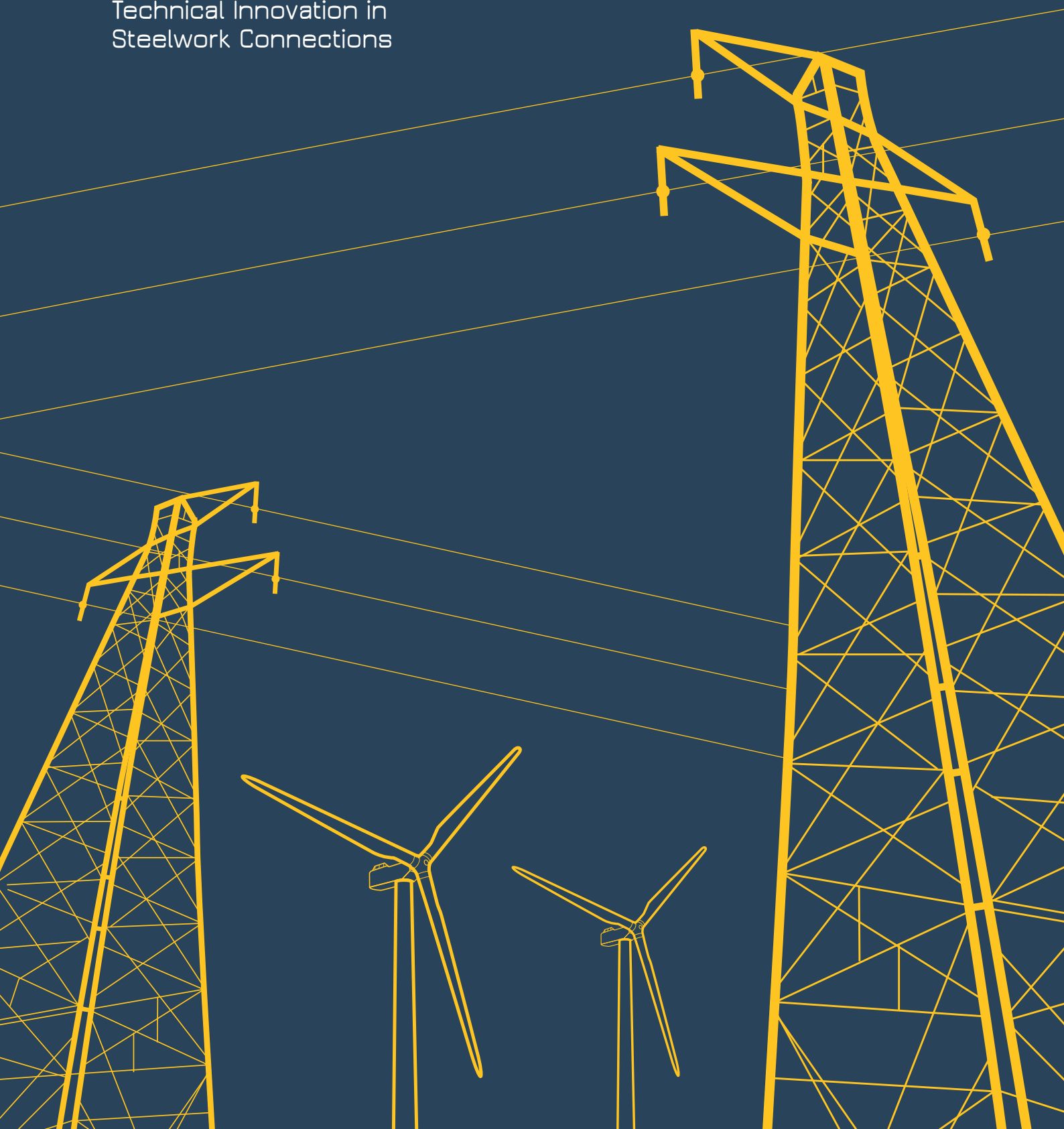


Energy Infrastructure

**lindapter®**

Technical Innovation in  
Steelwork Connections

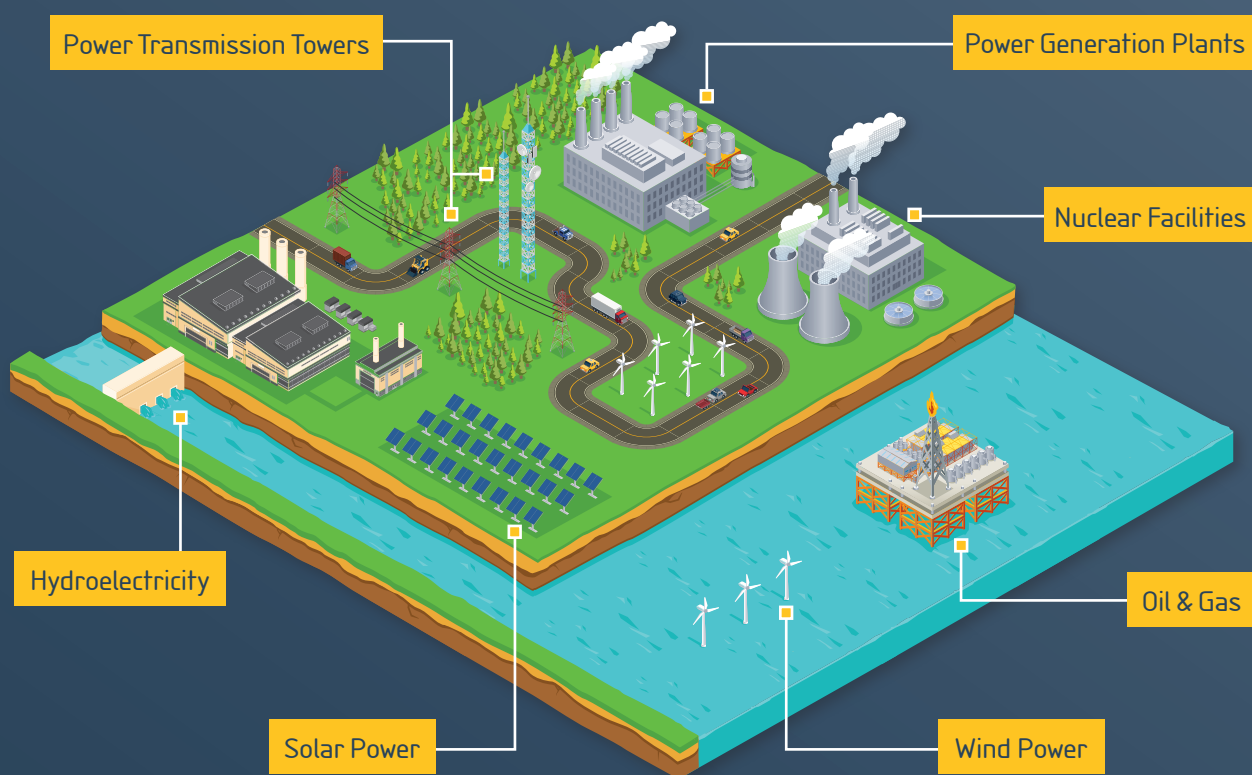


# Welcome

## **lindapter**<sup>®</sup>

### Safely securing steelwork for over 80 years

Lindapter products are used extensively around the world on new build, refurbishment and decommissioning in a range of energy infrastructure projects, including:



## 10 Reasons to use Lindapter connections

- Faster installation, lower labour costs
- Adjustable on-site for accurate positioning
- No drilling or welding on-site
- No damage to steelwork and coatings
- Hot work permits not required (suitable in hazardous areas)
- Sustainable construction (can dismantle for reconstruction or multicycling)
- Can be pre-assembled to minimise installation time
- Suitable for permanent and temporary connections
- Independently approved Safe Working Loads
- Technical support includes free connection design

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#### 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.

#### © Lindapter International 2016

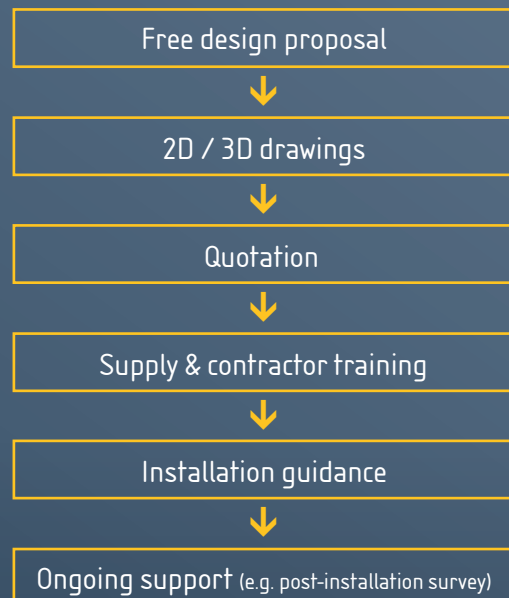
LINDAPTER, HOLLO-BOLT, LINDIBOLT, FLOORFAST, GRATE-FAST etc., are all registered trademarks. Lindapter may also have trademark rights in other terms used herein.

**Whether securing structural steel sections, heavy duty pipes, instrumentation, solar panels or flooring, Lindapter has a proven and accredited connection solution.**

As the inventor and pioneer of steelwork clamping systems, Lindapter's extensive experience and product range are perfectly suited to the varied steel connection requirements in all sectors of the renewable and non-renewable energy industries for new builds, development and decommissioning.

The fundamental benefit of a Lindapter connection is that it eliminates the need to drill or weld on-site meaning that hot work permits are not needed, allowing a safer, faster installation in hazardous environments while significantly reducing costs.

Comprehensive technical support from Lindapter's experienced Engineers ensures an efficient specification process with a free design service and even bespoke product development, passionately referred to as 'Engineered Solutions'.



This brochure provides examples of secondary steelwork assemblies, designed for permanent or temporary applications. Please ask Lindapter to design the solution to your connection requirement.



# Piping Support

**Lindapter support assemblies allow piping to be simply clamped onto structural or secondary steel sections for a safe, fast installation.**

Piping can be installed without drilling or welding and with no interference to plant productivity. The ability to adjust Lindapter assemblies on-site is particularly beneficial as pipes can be easily positioned for speed and convenience.

## Connections for:

- Pipe guides
- Pipe suspension
- Pipe support frames

## Product Performance:

- Maximum load of 250kN for a standard four bolt assembly (based on M24 Type AF, grade 10.9 bolts)
- Working temperatures ranging from -30°C to +350°C (dependent on material and bolt grade)
- Lloyd's Register Approved products tested for tensile, frictional, vibration and shock performance (Type A, Type B and Type LR)

## Corrosion Protection Options

- Bright zinc plated
- Hot dip galvanised
- Stainless steel
- Plastic coated
- Sherardised

## Recommended components for piping applications:



Girder Clamp



Type A



Type B



Type LR



Type AF



Type AAF



Type CF

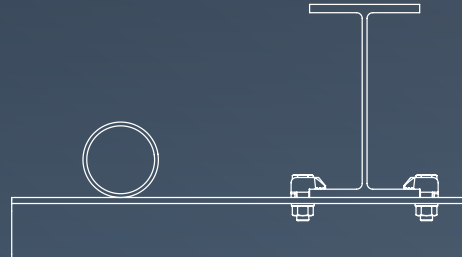
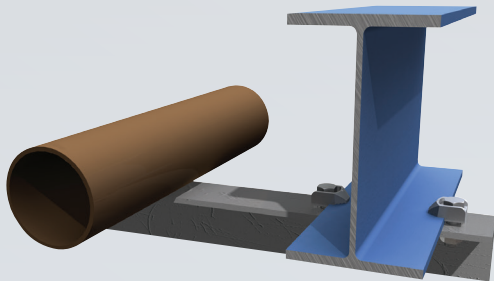


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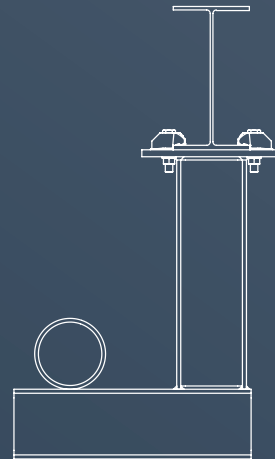
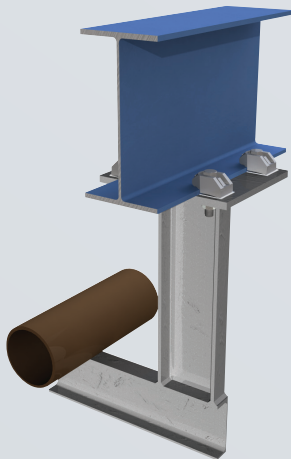
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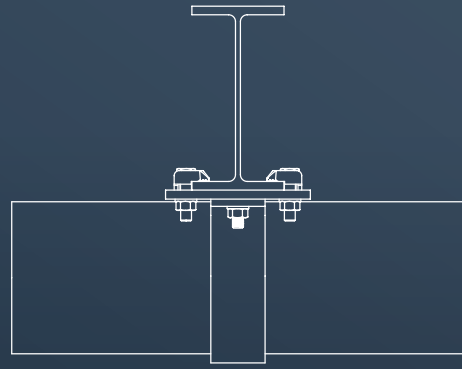
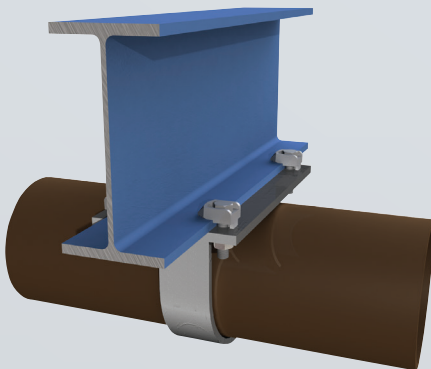
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PS002

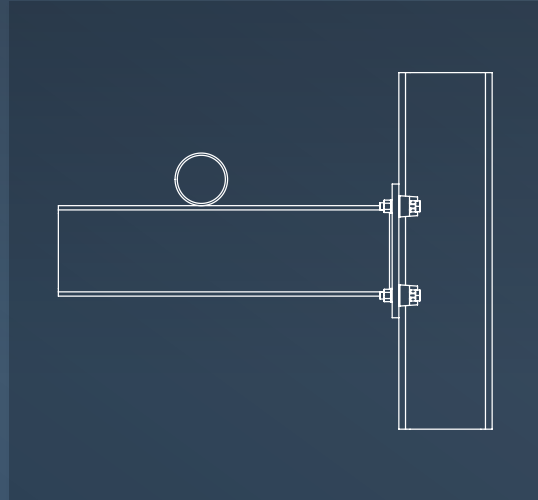
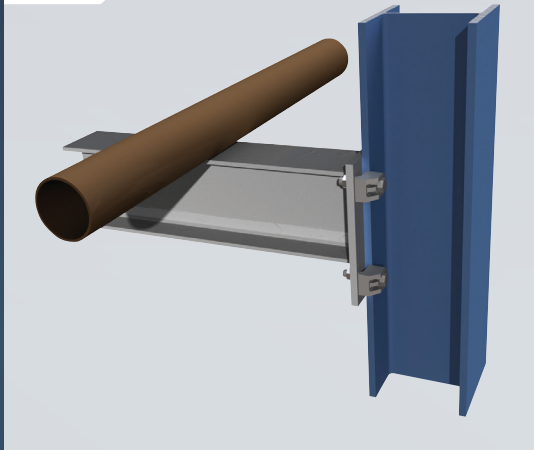


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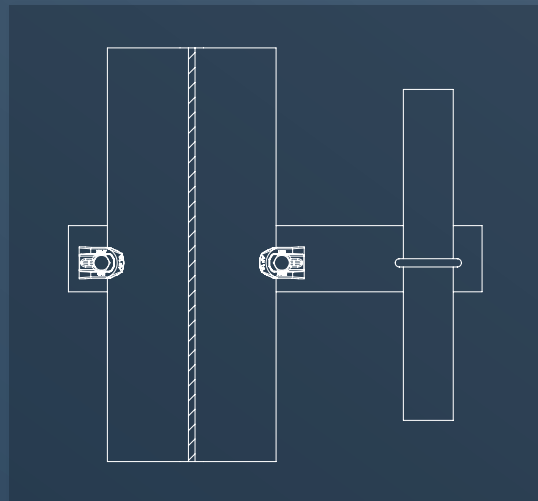
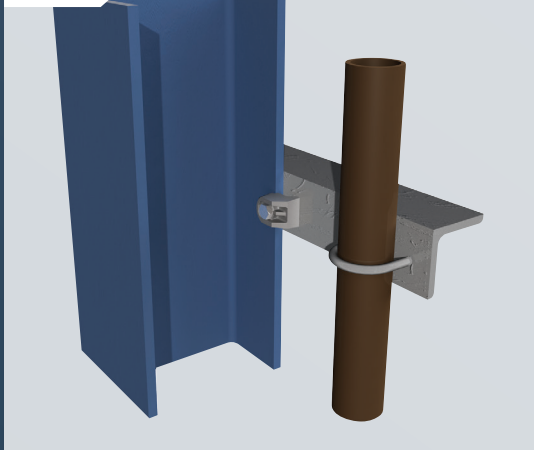


# Piping Support

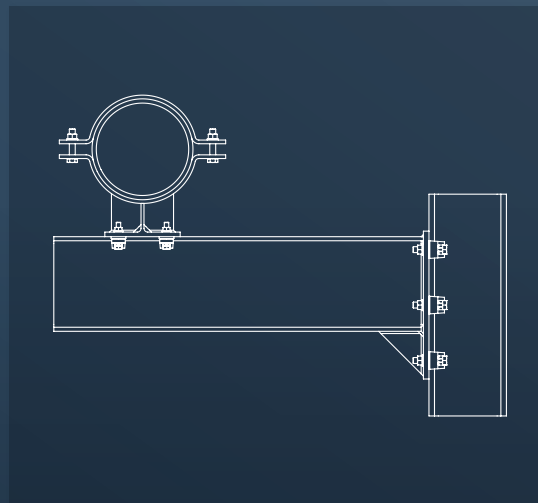
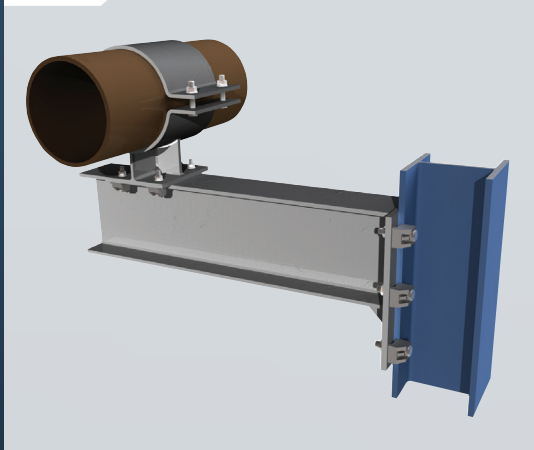
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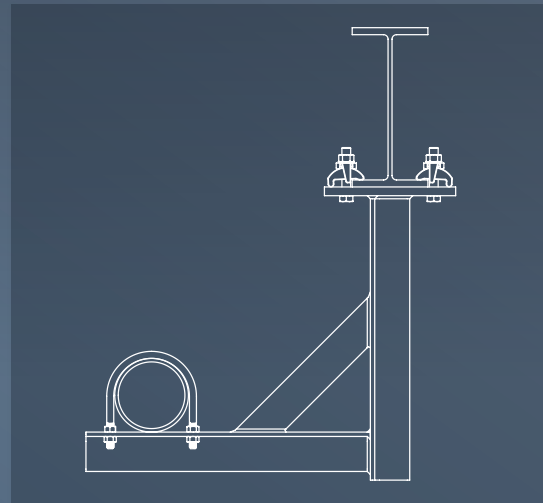
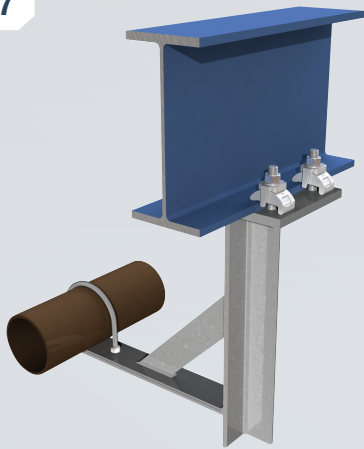
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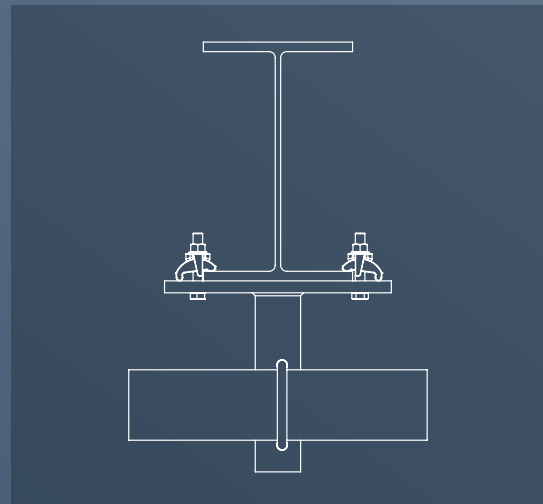
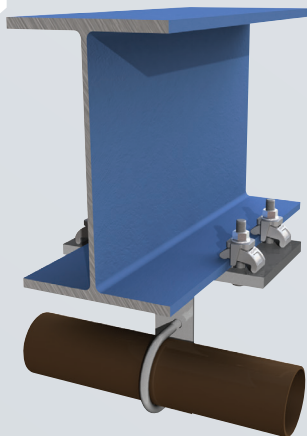
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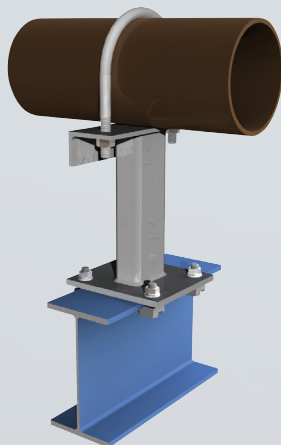
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PS008



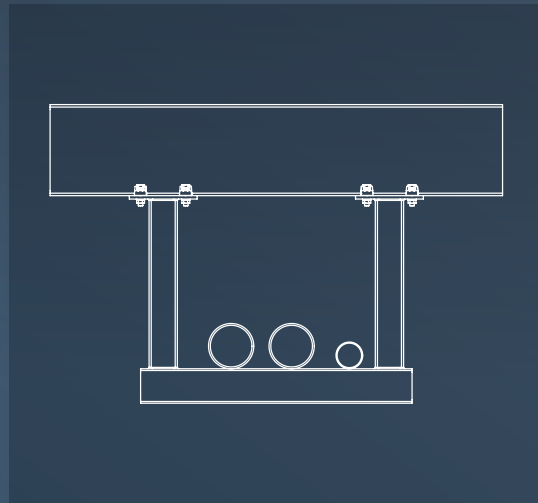
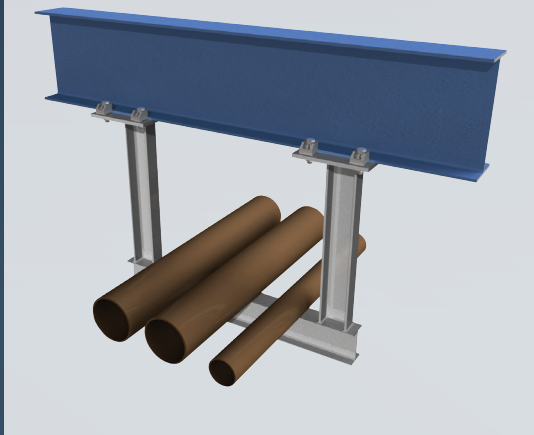
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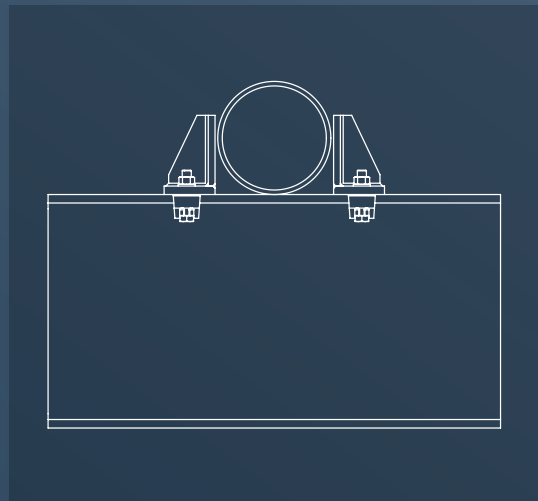
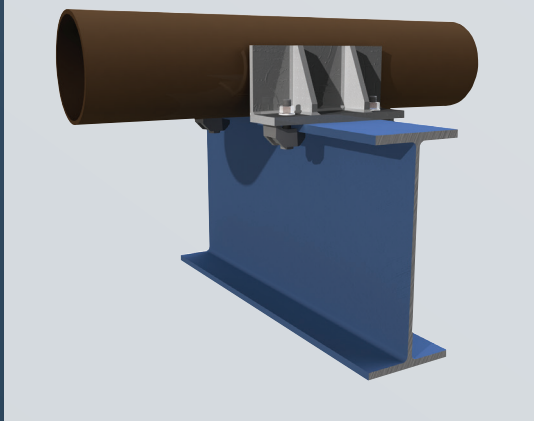


# Piping Support

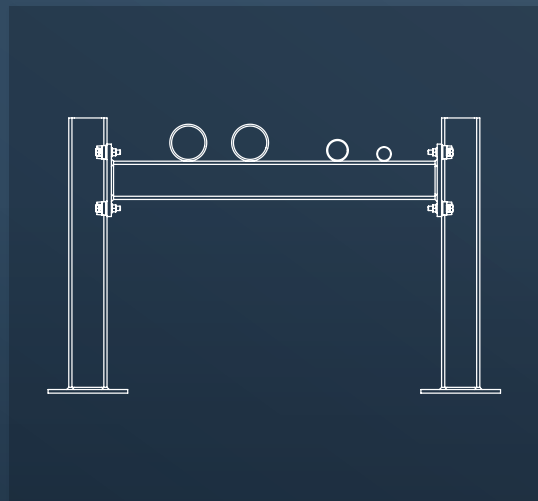
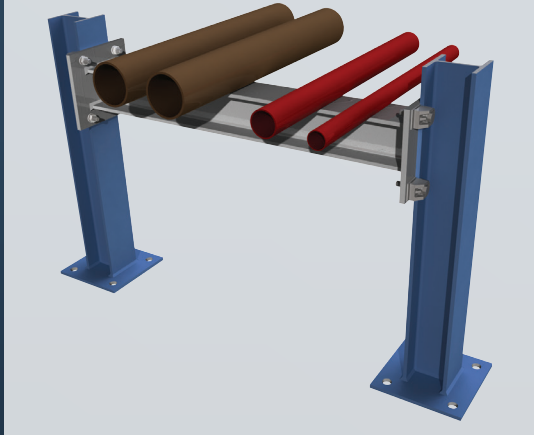
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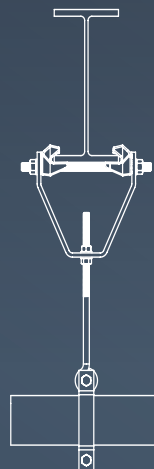
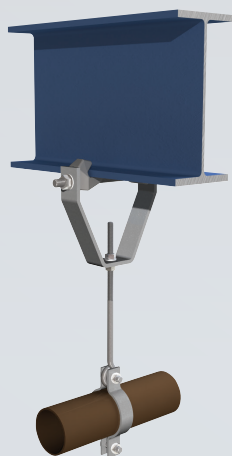
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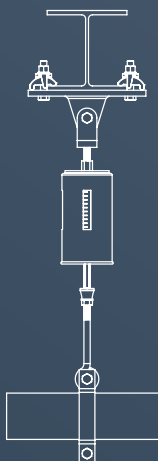
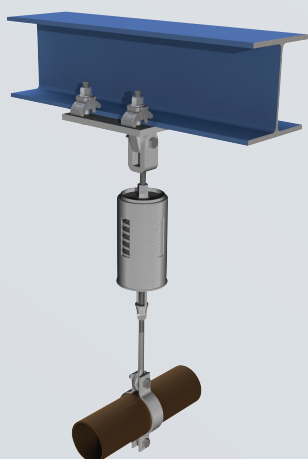
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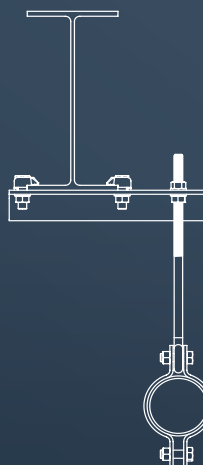
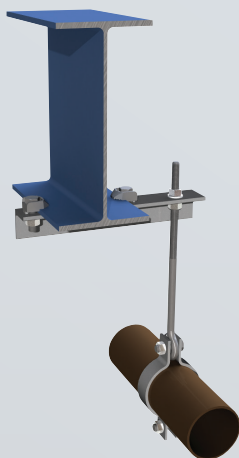
PS013



PS014



PS015



# Electrical & Instrumentation

**Lindapter provides assemblies for supporting cable trays, cable ladders and electrical equipment from primary or secondary beams.**



Cable trays or equipment can be secured in simple tensile arrangements, or in vertical column applications withstanding frictional loads. Fast adjustability allows multiple cable tray / ladder systems to be easily setup to intersect one another.

## **Connections for:**

- Cable trays and ladders
- Piping and conduit supports
- Instrumentation and associated cabling
- Junction boxes and cabling

## **Fast, time saving installation:**

- Quick and simple installation using only hand tools
- Reduce installation time
- Projects require less man hours
- Site safety is increased

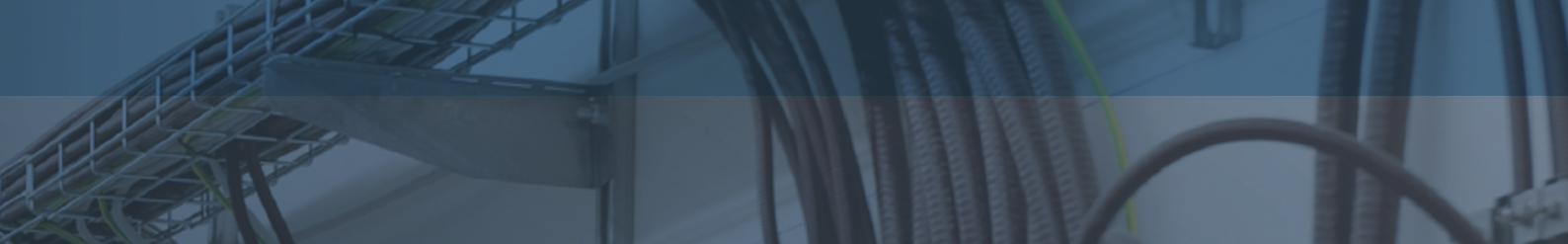


## **Recommended components for electrical and instrumentation applications:**

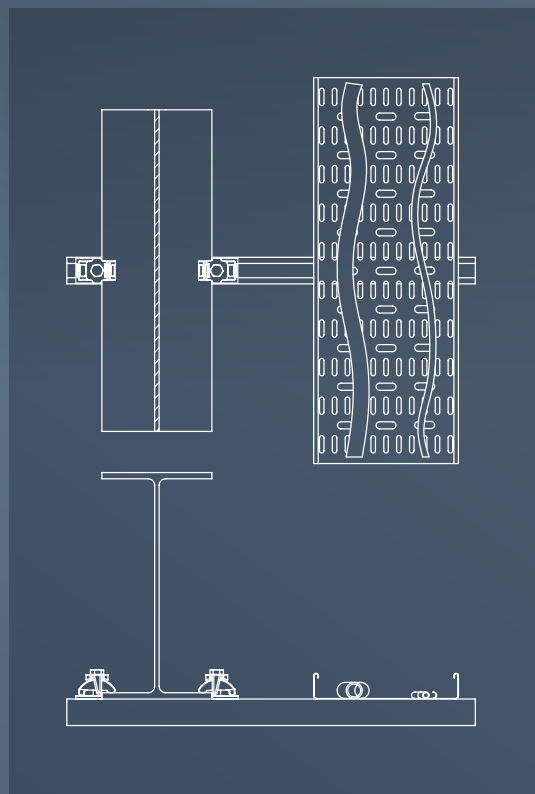
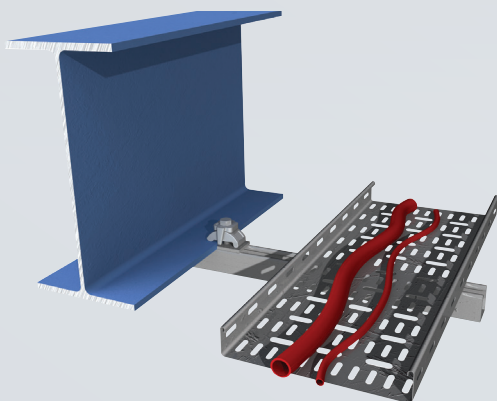


Please refer to the Lindapter catalogue or website for full product data.

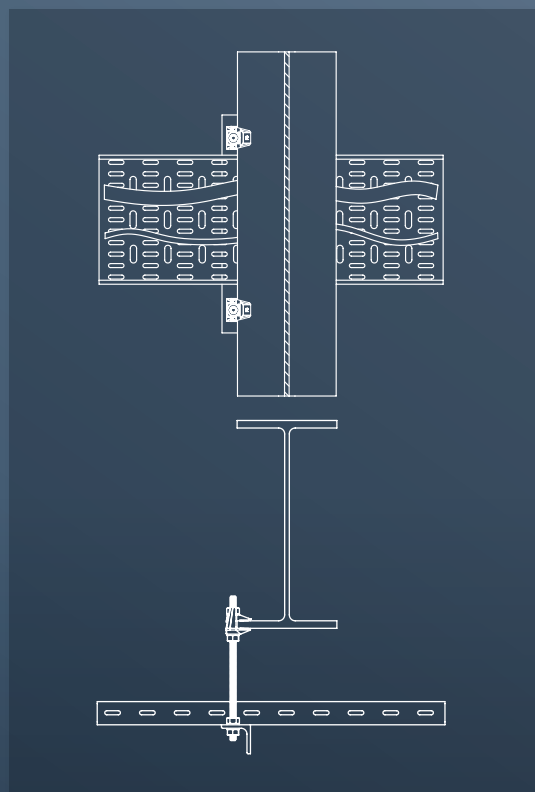
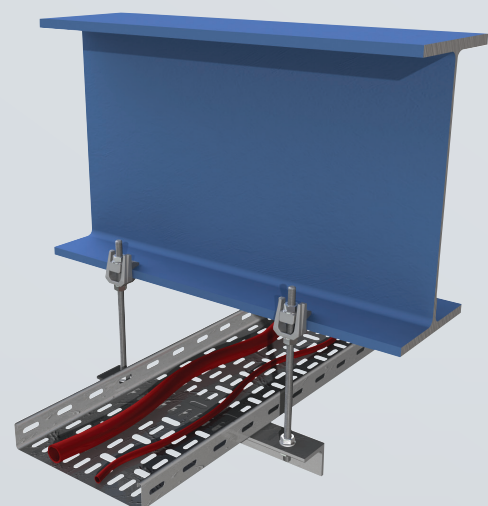




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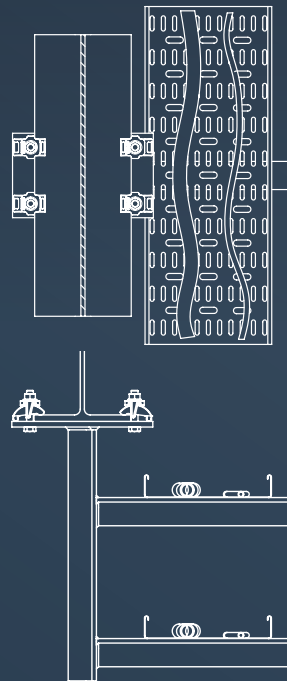
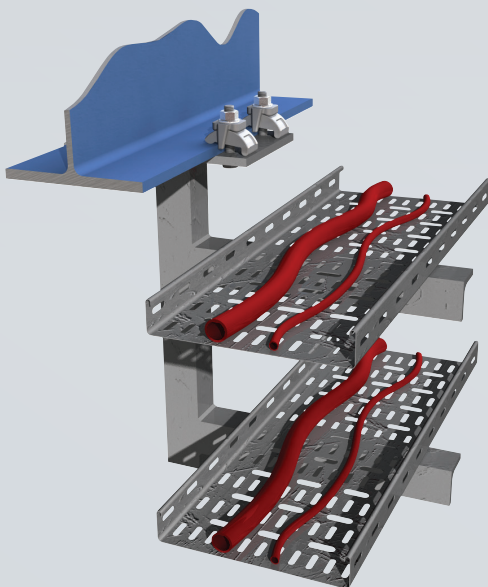


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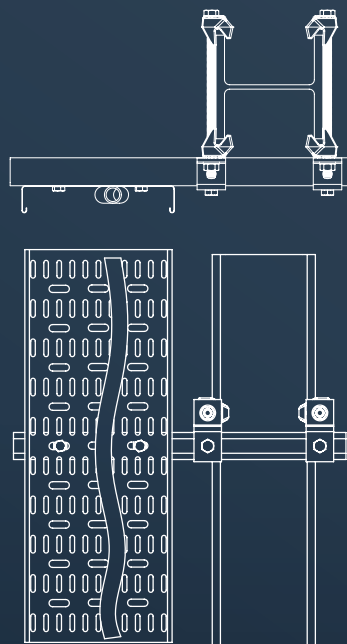
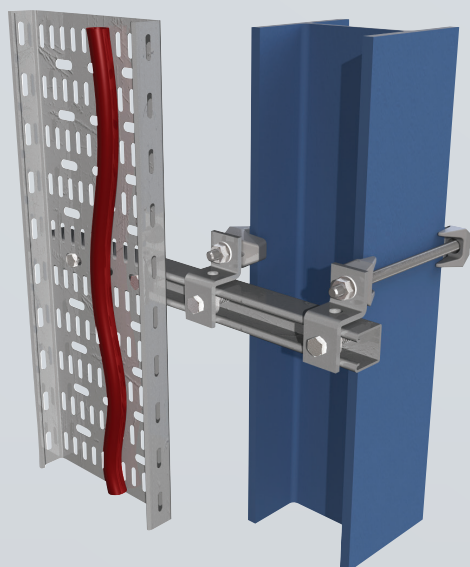




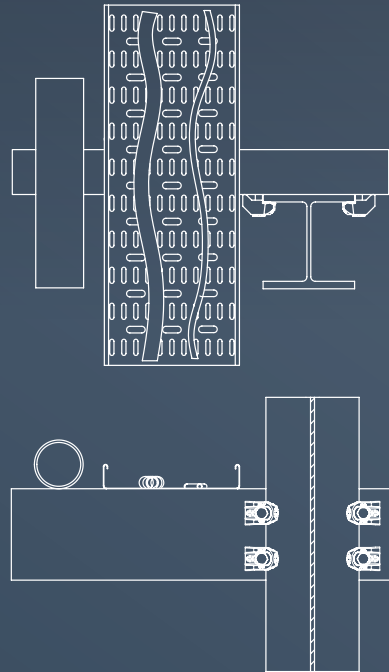
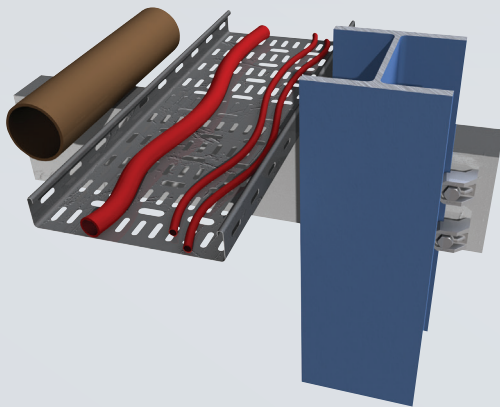
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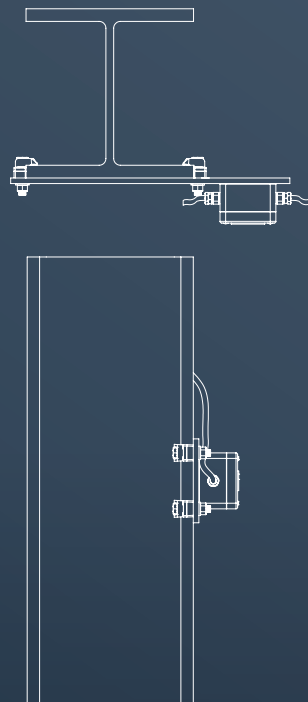
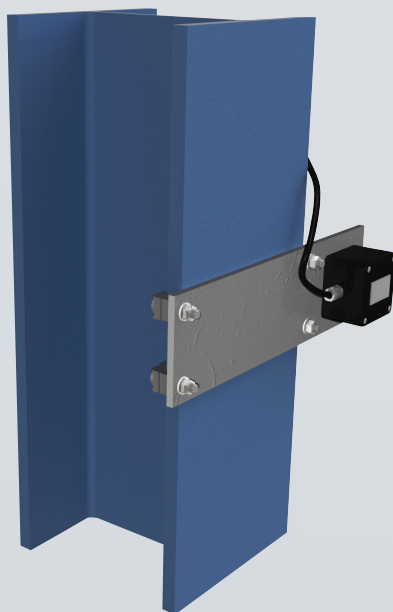
EI005



EI006



EI007



# Solar Panels

**Lindapter provides a range of connection solutions for fastening solar panels to steel support frames.**



Wherever solar panels are installed, Lindapter offers adjustable connection solutions to secure and precisely align panels onto the supporting frames and for structural connections of the support frames themselves.

## **Connections for securing solar panels to:**

- Support frames
- Buildings / Roofs
- Bridges

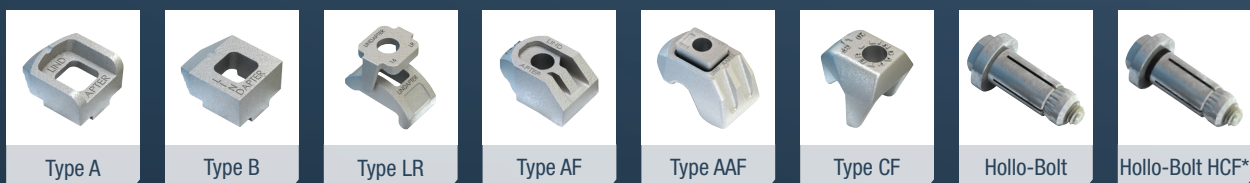
## **Steelwork Fixings for I-Beams & Brackets:**

- Highly adjustable for precise alignment
- Wide product range, each with specific benefits
- High strength Type AF for heavy duty or friction applications
- Self-adjusting Type AAF is suitable for temperatures down to -60°C
- The adjustable Type LR is suitable for a wide range of steel sizes

## **Hollo-Bolt for Hollow Section Frames:**

- The only expansion bolt with full seismic approval from ICC-ES for all seismic design categories (A-F)
- For the connection of solar panels to hollow section
- Independently verified SWLs and Eurocode 3 values
- Easy to install with hand tools
- A range of head variants are available for an aesthetic finish

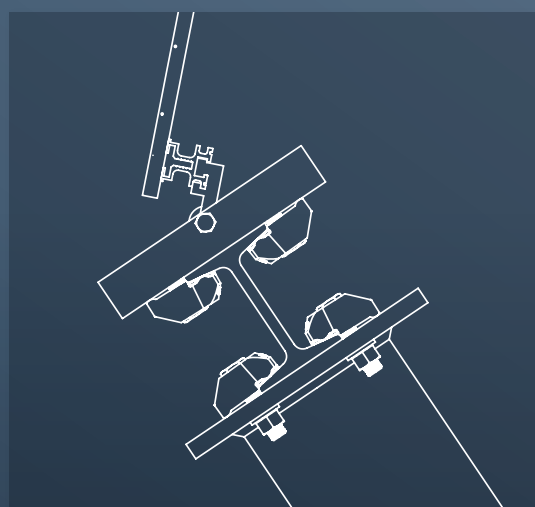
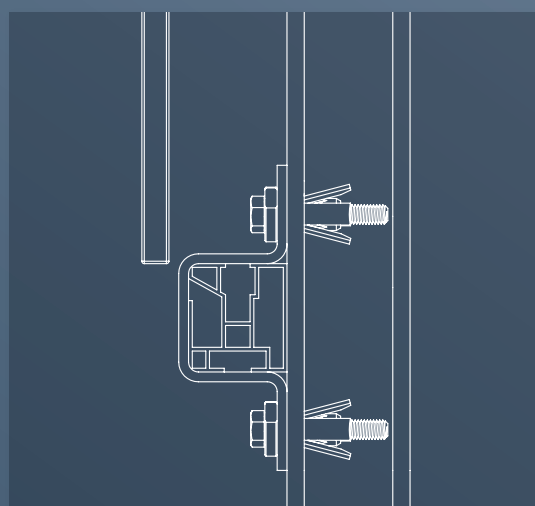
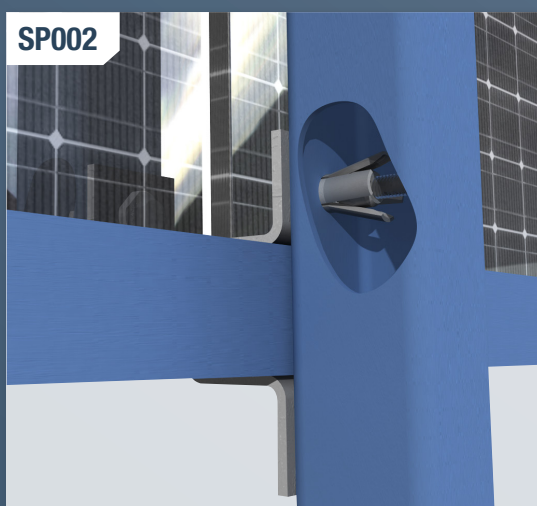
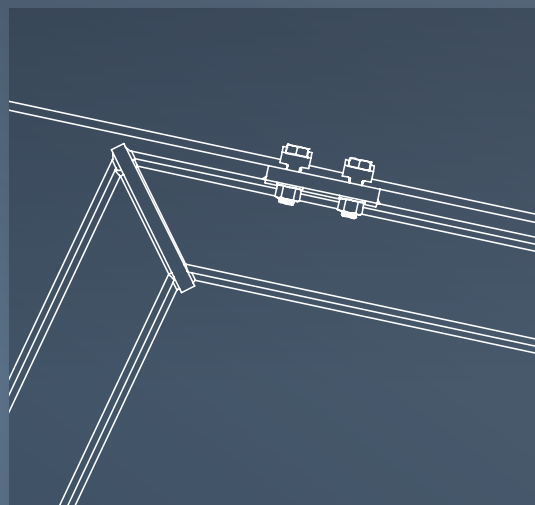
## **Recommended components for solar panel connection applications:**



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

\* High Clamping Force





# Towers & Pylons

**Lindapter connections can be used to facilitate the security and maintenance of transmission towers and pylons.**

The easy to install connections can be used in countless ways on steel towers and pylons, securing services and both enabling and restricting access as required, ensuring a smooth and effective process of channelling electricity into the grid.

## **Connections for:**

- Ladders
- Cable trays
- Communication dishes
- Piping
- Anti-climbing systems

## **Weld free connections:**

- No hot work permits
- No site shut-downs
- Skilled labour not required
- Saves time and money

## **Free design service:**

- Lindapter Engineers will design your connection
- Solutions available for virtually any steel to steel connection

## **Recommended components for transmission, tower and pylon applications:**



Type A



Type B



Type LR



Type AF



Type AAF



Type CF



Hollo-Bolt

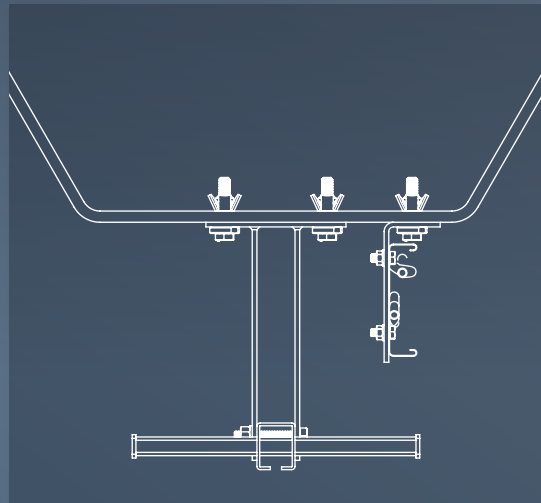


Hollo-Bolt HCF\*

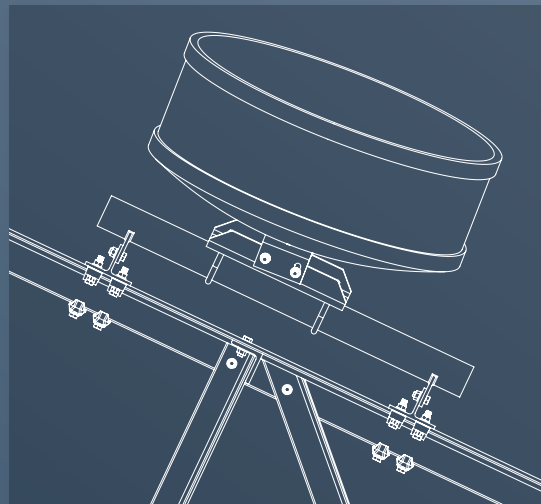
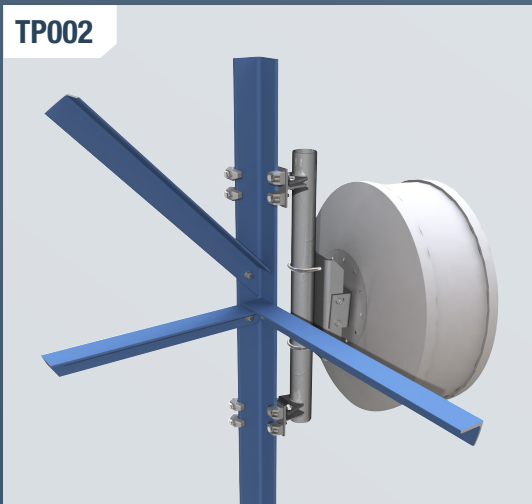
Please refer to the Lindapter catalogue or website for full product data.

\* High Clamping Force

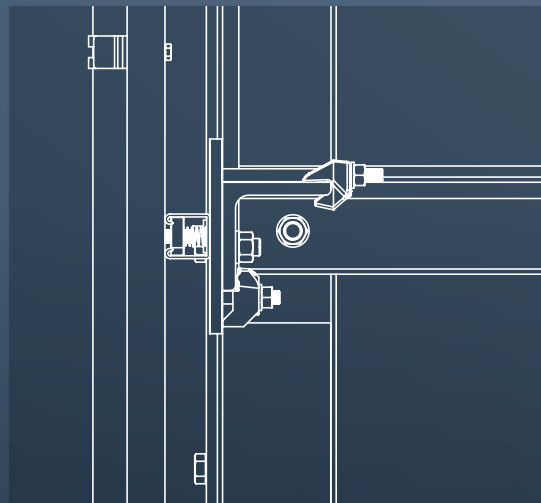
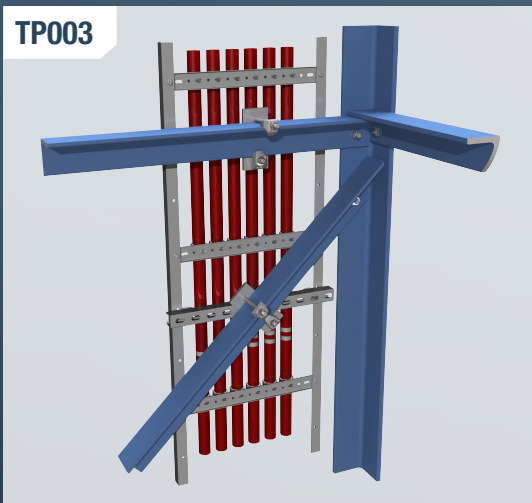
TP001



TP002



TP003





# Steelwork

Connecting safety with efficiency since 1934, Lindapter connections remove the need for hot work permits with its weld-free steelwork fixing systems.

The Girder Clamp symbolises the Lindapter philosophy perfectly; boldly challenging the need to drill or weld, when a safe, high strength connection can be quickly accomplished by clamping two steel sections together.

## Connections for:

- Secondary steel frames
- Monorails and lifting beams
- Conveyor systems
- Strengthening existing steelwork
- Almost any steel-to-steel connection
- Refurbishments

## Multiple configurations:

- For beams, channels, angles and fabricated sections
- Standard and bespoke assemblies available
- Suitable for new construction and refurbishment
- Lindapter's expertise gained through global project experience

## Independently Approved:

- CE marked Girder Clamp
- Additional approvals include Lloyd's Register, TÜV Nord and DIBT
- Independently verified Safe Working Loads
- SWLs based on a factor of safety (typically 5:1)

## Recommended components for steelwork applications:



Girder Clamp



Type A



Type B



Type LR



Type AF



Type AAF



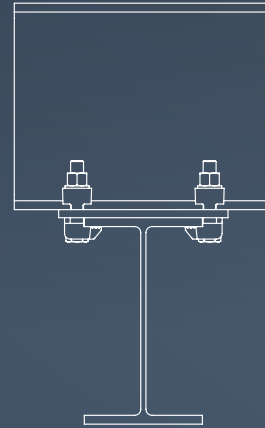
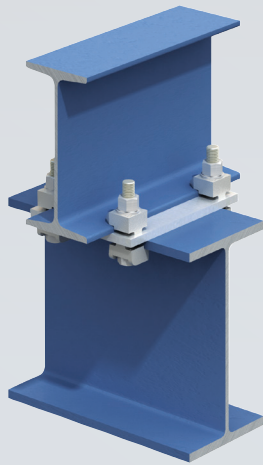
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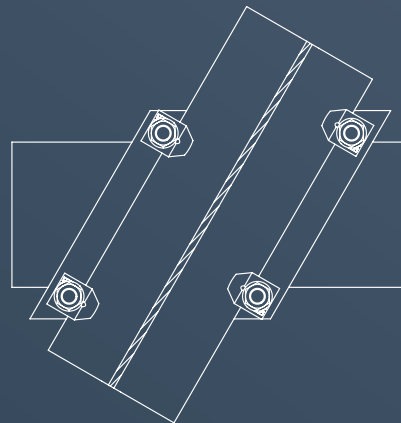
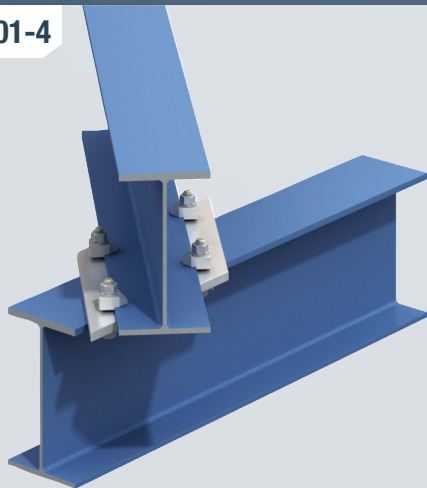
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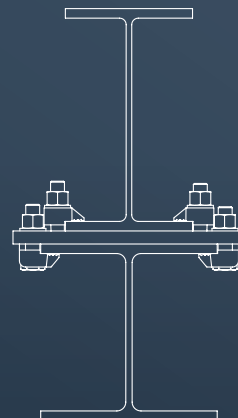
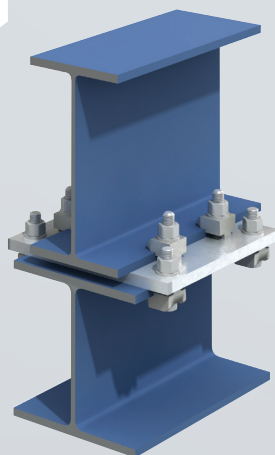
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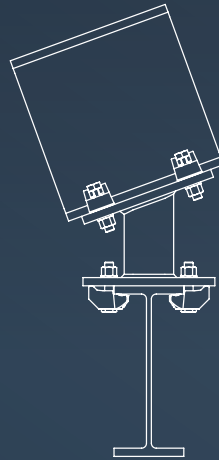
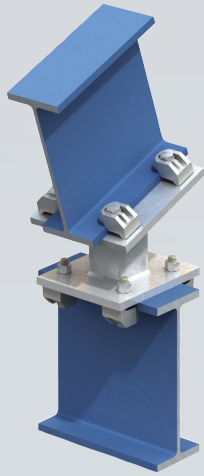
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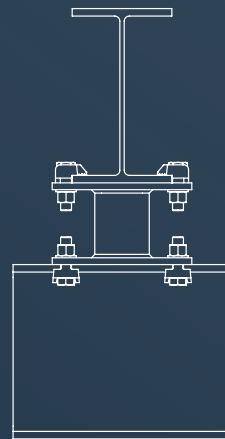
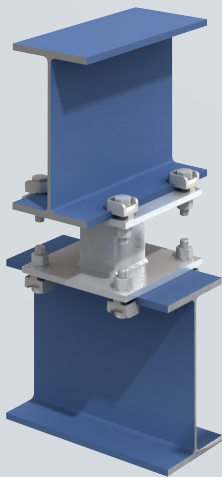
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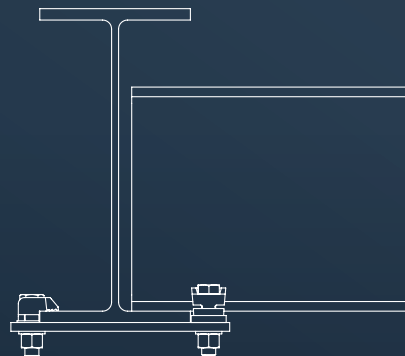
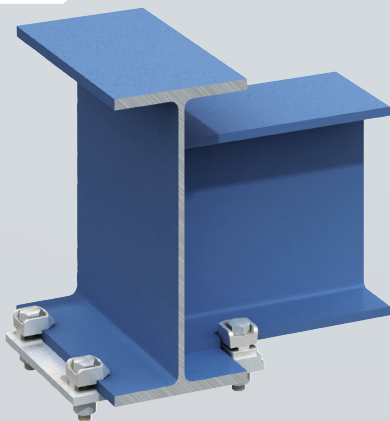
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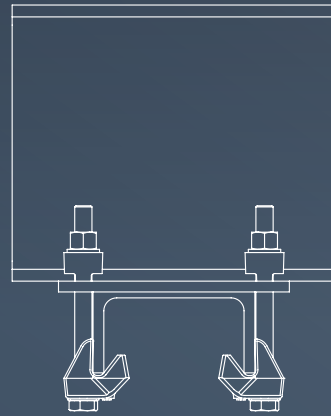
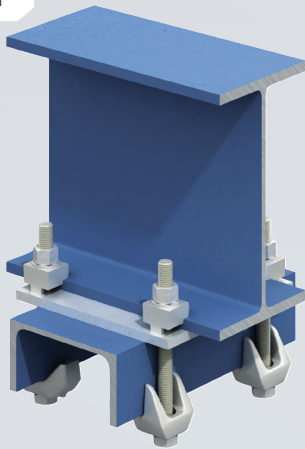


GC005-1

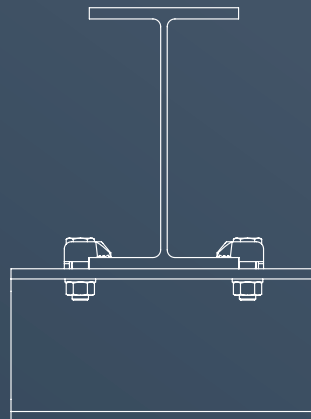
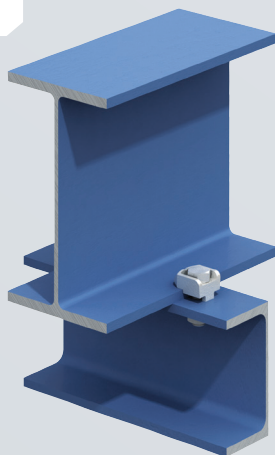




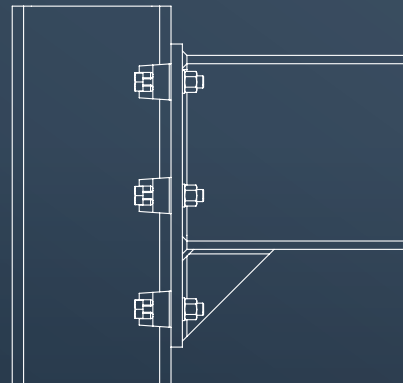
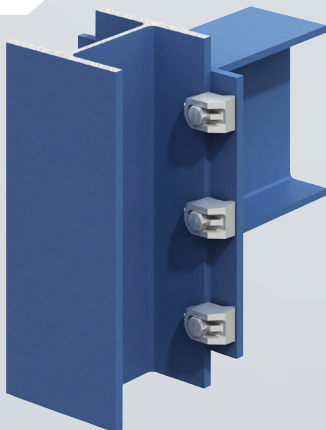
GC006-1



GC006-6



GC009-1



# Structural Hollow Section

The CE marked Hollo-Bolt® and Lindibolt® are ideal for connecting Structural Hollow Sections (SHS) or other sections where access is only available from one side.

Lindapter expansion bolts eliminate the need for conventional through-bolting or welding. Installation is carried out quickly and safely by inserting the product into a pre-drilled hole then tightening to the recommended torque using standard hand tools.

## Connections for:

- Primary and secondary steelwork
- Blast wall reinforcement
- Staircases and handrails
- Almost any connection to hollow section
- Can also be used on I-beams

## Hollo-Bolt®: Perfect for new-build projects

- The only expansion bolt with full seismic approval from ICC-ES for all seismic design categories (A-F)
- Available in a range of diameters, lengths and finishes
- A selection of head variants
- Compatible with virtually any shape or size of hollow section profile
- Recognised as a primary structural connection by the SCI and the BCSA

## Lindibolt®: Ideal for refurbishments

- Specifically for refurbishment projects
- Designed to fit into pre-drilled steelwork to standard sizes M10 – M24
- Adjustable to fit a wide range of steel thicknesses

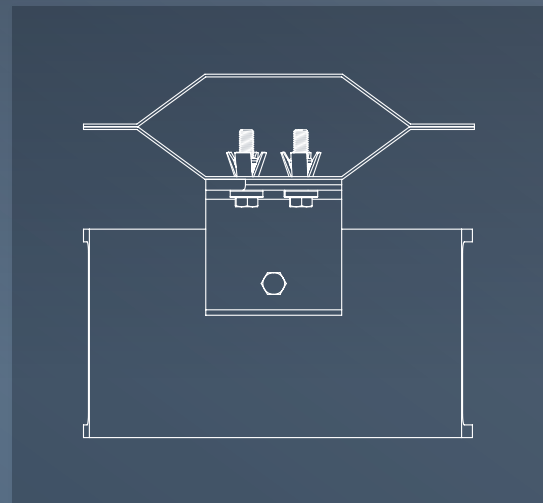
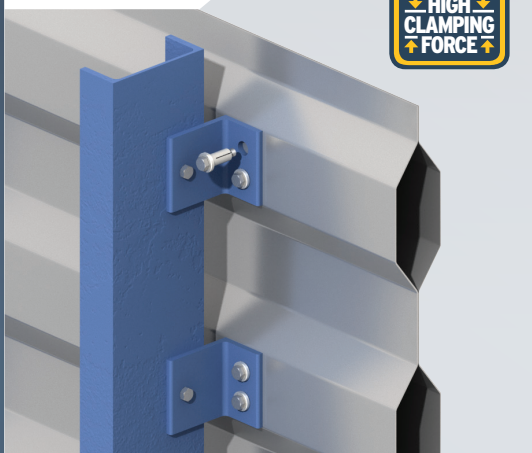
## Recommended components for structural hollow section applications:



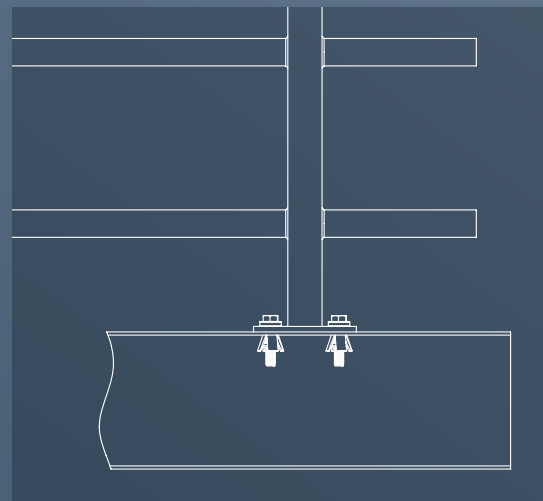
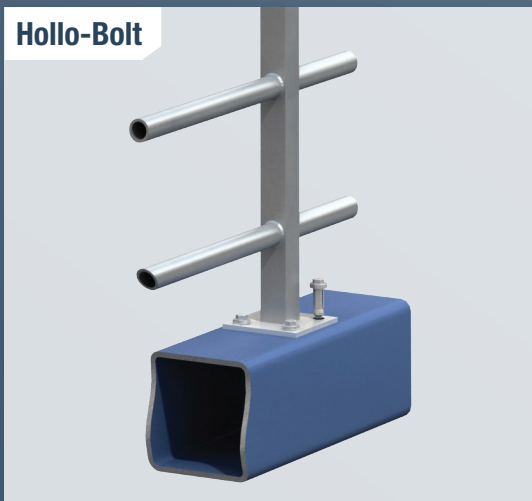
Please refer to the Lindapter catalogue or website for full product data.

\* High Clamping Force

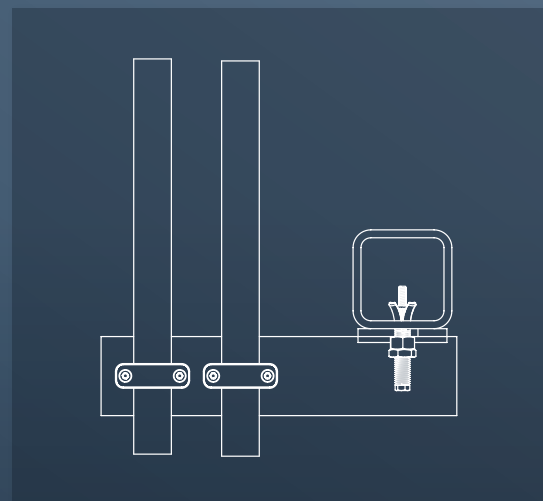
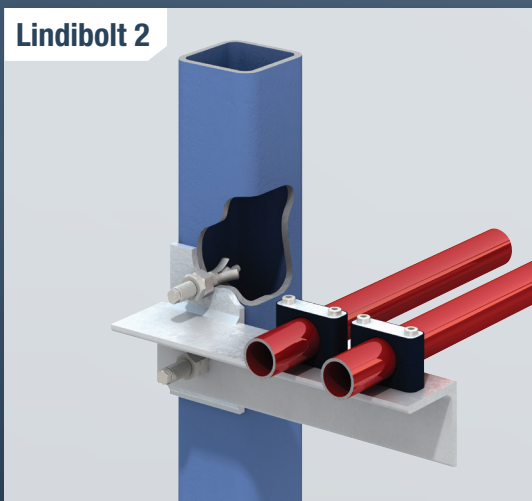
Hollo-Bolt HCF



Hollo-Bolt



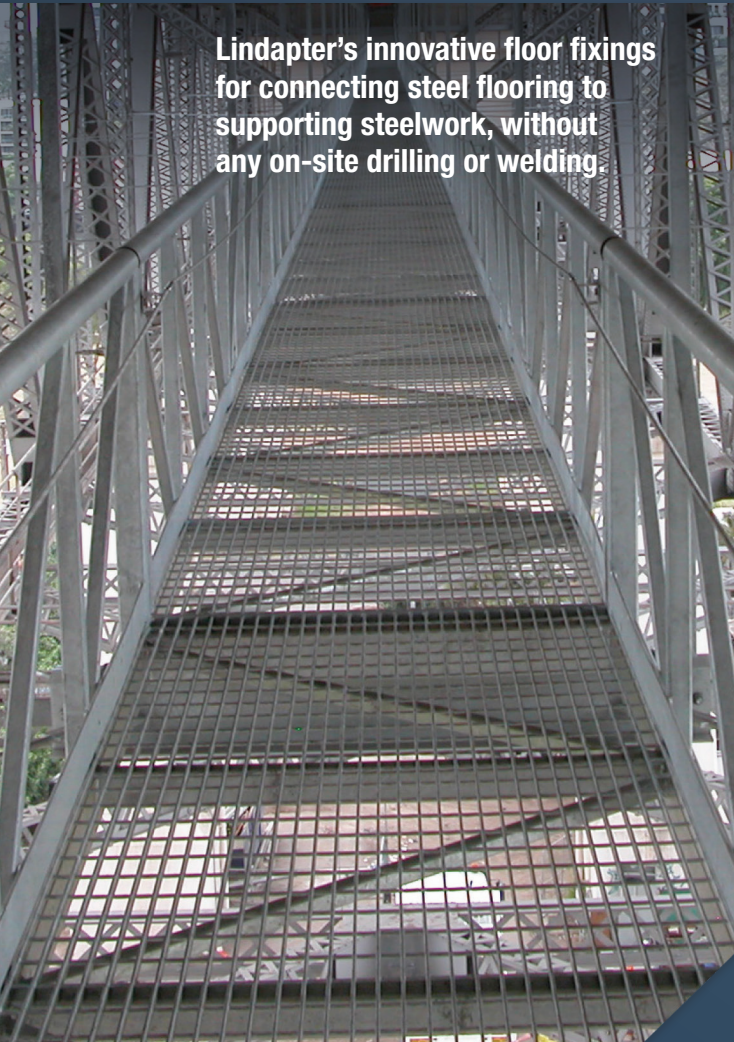
Lindibolt 2





# Steel Flooring

**Lindapter's innovative floor fixings for connecting steel flooring to supporting steelwork, without any on-site drilling or welding**



Access to the underside of the flooring is not required, eliminating the need for costly scaffolding or elevated floors. Installation can be carried out quickly and safely from above, often by one person. Lindapter floor fixings significantly reduce installation costs in comparison to other methods such as shot firing.

## **Floorfast®**

- For chequer plate floor
- No need for access to underside of flooring
- Unique stepped design locks under the flange
- Can be safely removed for maintenance access
- Lloyd's Register approved for vibration resistance
- Available hot dip galvanised or in stainless steel

## **Grate-Fast®**

- For open bar grating
- High-strength cast body
- Lloyd's Register approved for vibration resistance
- Fits a wide range of beams and grating
- Hot dip galvanised

## **Type 1055**

- Developed at the request of Amec / Shell
- For fitting solid plate to open-grid flooring
- Plates can be positioned at any orientation
- Permanent or temporary fixing
- Stainless steel

## **Recommended components for steel flooring applications:**



Floorfast



Grate-Fast

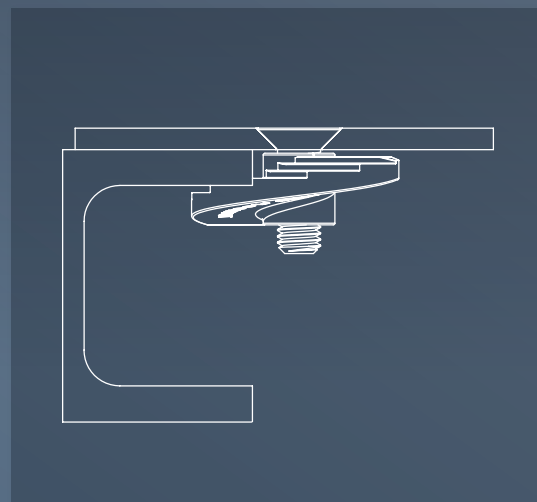
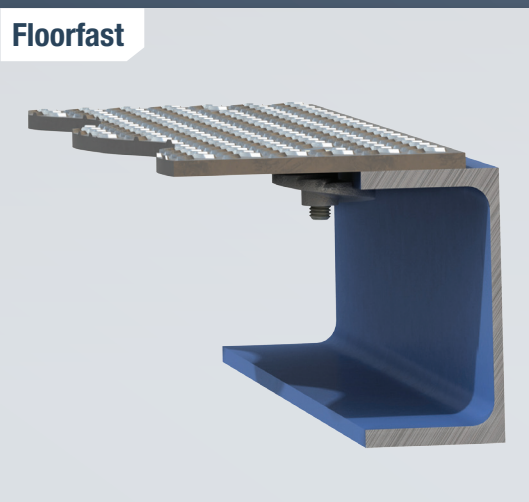


Type 1055

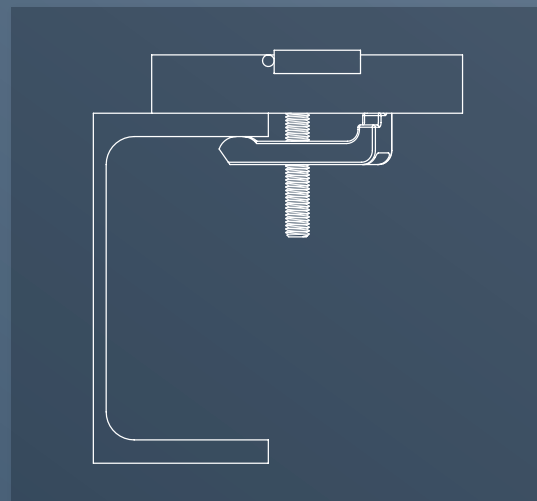
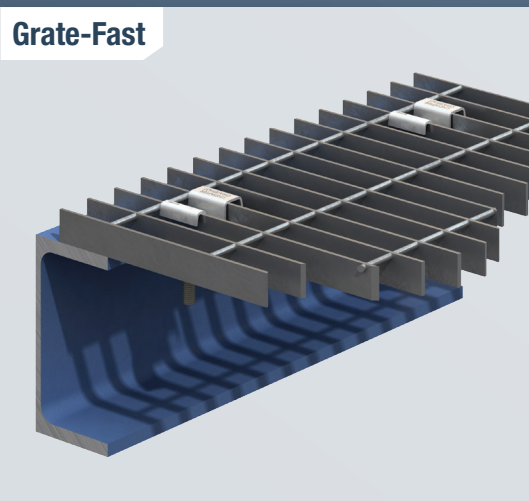
Please refer to the Lindapter catalogue or website for full product data.



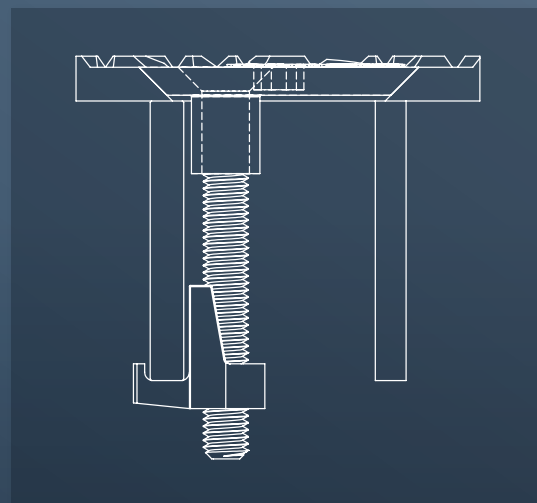
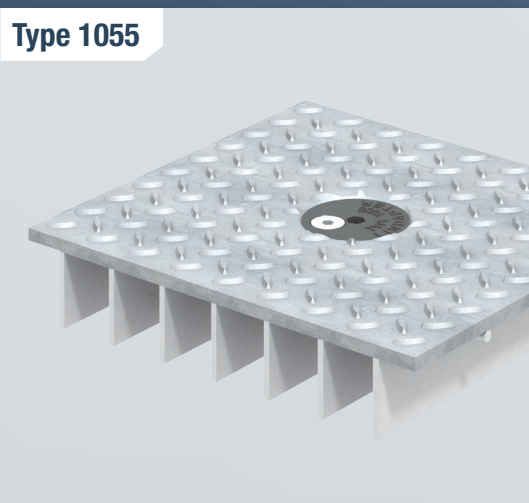
**Floorfast**



**Grate-Fast**



**Type 1055**







## Wind Power

**Wind farms have become a key industry within the Renewable Energy sector, with the number of farms around the world set to increase significantly over the coming years.**

Applications for Lindapter connections can be found at multiple stages within the infrastructure of wind power generation, from flooring, ladder and support fixings within turbines to tower and mast connections in transmission to the grid.

With a large wind farm consisting of multiple turbines, Lindapter systems bring the fundamental benefit of a quick installation. If flooring or support fixings must be installed within each turbine, transformer or substation, time is of the essence and a quick connection method can save money by reducing time and hence labour costs.

## Case Study Enercon Windkraft, Germany



**Product:**  
Type FF - Floorfast®

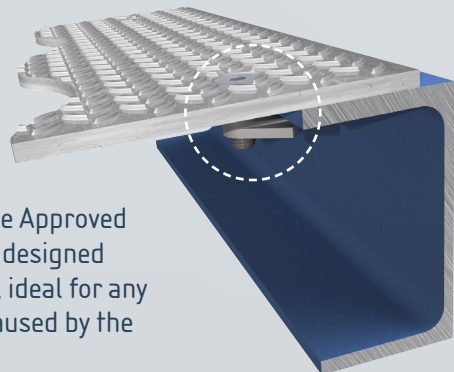
**Application:** Securing  
chequer plate maintenance  
walkways within wind turbines.



Enercon, Germany's leading wind turbine manufacturer, used Lindapter Floorfast connections to install chequer plate flooring within the towers of new wind turbines.

The Floorfast fixings were installed by one person from above for a quick and simple installation process.

As a Lloyd's Register Type Approved product, the Floorfast is designed to be vibration resistant, ideal for any movement in the tower caused by the rotating blades.



Visit [www.Lindapter.com](http://www.Lindapter.com) to read more Lindapter case studies.





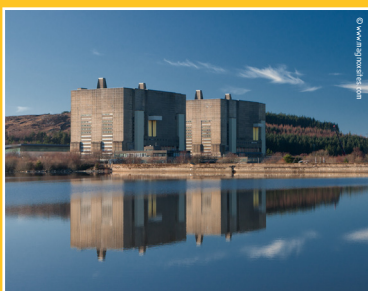
## Nuclear Sites

**Lindapter connections are applied to a wide range of applications from pipe supports on new build projects, to temporary steelwork frames on decommissioning sites.**

Lindapter products are used on nuclear sites, such as Sellafield, for structural hollow section connections, secondary steelwork connections and services support. Sellafield Ltd have made particular use of the Hollo-Bolt and made the following statement:

“Sellafield Ltd have utilized Lindapter Hollo-Bolts in a number of facilities within RHS connections. A Good Practice Note (Ref: CS&A GPN 005) has been issued by Sellafield Ltd to give advice and endorse the appropriate use of these bolts. In addition, Sellafield makes significant use of Lindapter steel fixings for secondary steelwork and services support.”

## Case Study Trawsfynydd, UK

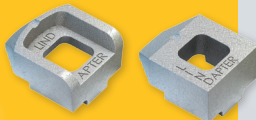


### Product:

Type A & B

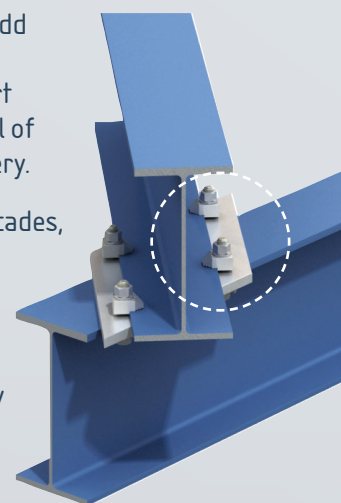
### Application:

Temporary secondary structural steelwork connections.



The decommissioning of Trawsfynydd Nuclear Power Station required a network of temporary steel support structures to facilitate the removal of the original buildings and machinery.

As a process which spans many decades, temporary structures involved in decommissioning can be required to remain in place for several years. Lindapter clamps, suitable for both permanent and temporary applications, provide ideal solutions for such structures.



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# Industry Focus



## Solar Panels

**Solar panels have become widely used around the world and are installed across a range of different applications, from the roofs of buildings to large scale solar farms.**

Lindapter connections can be used as easy to install connections both to secure solar panels to supporting frames as well as to assemble the supporting frames themselves.

The adjustability of Lindapter steelwork connections facilitates the precise alignment of solar panels at every scale. The versatile clamps can be used in countless configurations to suit the requirements of specific applications.

## Case Study Energy Bunker, Germany



**Product:**  
Type B

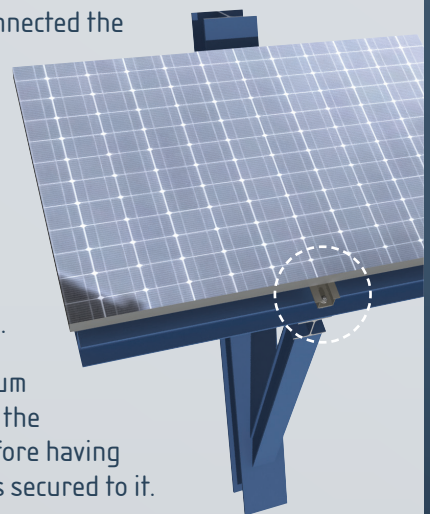
**Application:** Connecting the aluminium profile to support a solar panel façade.



Over 800 M12 Type B clamps connected the aluminium profile supporting a solar panel façade on the south side of Wilhelmsburg's renovated 'Energy Bunker'.

The conversion of the 1940s flak bunker into a biomass heat and power plant produces energy for thousands of homes.

The clamps allowed the aluminium frame to be quickly fastened to the Energy Bunker's south side before having a 1600m<sup>2</sup> façade of solar panels secured to it.



Visit [www.Lindapter.com](http://www.Lindapter.com) to read more Lindapter case studies.





## Oil & Gas

**Lindapter products are specified on onshore plants and offshore platforms in a range of applications including piping, electrical and instrumentation.**

Major companies in the Oil & Gas Industry have found Lindapter products save time and money in decommissioning, active plants, refineries and platforms. The adjustable, high strength connections are suitable for permanent connections, but they are easy to remove making them just as suitable for temporary installations.

However, in Oil & Gas, the most significant benefit of Lindapter connections must be the no weld, no drill method which saves the inconvenience and potential hazards of hot work permits for fast, safe installation of steelwork connections.

### Case Study ExxonMobil Refinery, USA

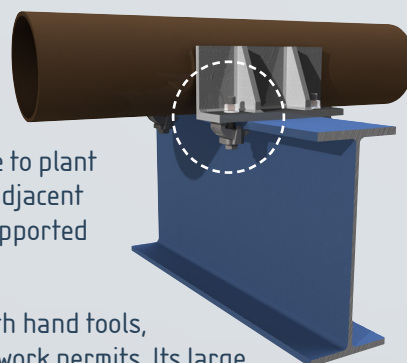


**Product:**  
Type LR

**Application:**  
Pipe supports.



Lindapter's adjustable steelwork clamps were used to install pipe guides along a new pipeline without interference to plant production. It was installed adjacent to the existing piping and supported by existing cantilever beams.



The Type LR was installed with hand tools, eliminating the need for hot work permits. Its large clamping range enabled the contractor to use a single product across the entire length of pipeline despite varying beam thicknesses and slopes of the original steelwork.

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# Approvals

## 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](http://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.



**ICC-ES** Holo-Bolt is the only expansion bolt for structural steel approved for use in all Seismic Design Categories (A to F), in compliance with the International Building Code.



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



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



## Quality and Environment

Accredited to **ISO 9001** since 1986, Lindapter strictly enforces a quality management system that includes vigorous product testing to ensure consistently high manufacturing standards. Lindapter also operates an **ISO 14001** certified environmental management system and constantly monitors and improves aspects of the business that may have an impact on the environment, including the use of natural resources, the handling and treatment of waste and energy consumption.



## Associations

Lindapter is a member of the following organisations: **British Constructional Steelwork Association**, **The Steel Construction Institute**, **American Institute of Steel Construction** and **Southern African Institute of Steel Construction**.



## Technical Support

Experienced Engineers offer an unrivalled support service, including free design and bespoke new 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 upon 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)

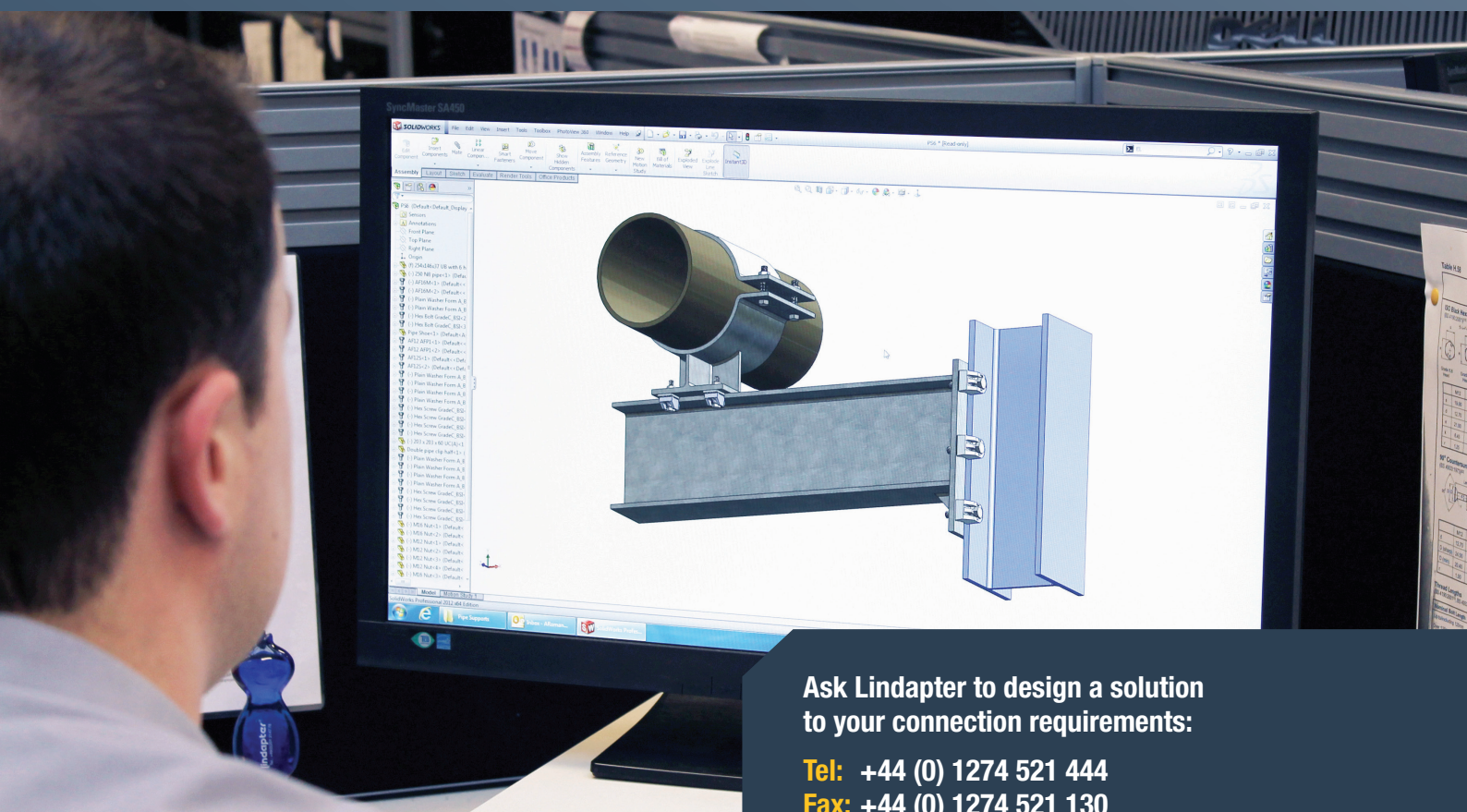
## Engineered Solutions

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



*(Above)* One of two 1000kN 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](mailto:enquiries@lindapter.com)

**Technical Support:** [support@lindapter.com](mailto:support@lindapter.com)



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