

# Lille Interurban Tramway

Lindapter Girder Clamps provided a solution for securing overhead line equipment and electrification catenary systems.

## Project Background

**Location:** Lille, Hauts-de-France, France

**Product:** Type LR Girder Clamps

**Market:** Overhead Line Equipment

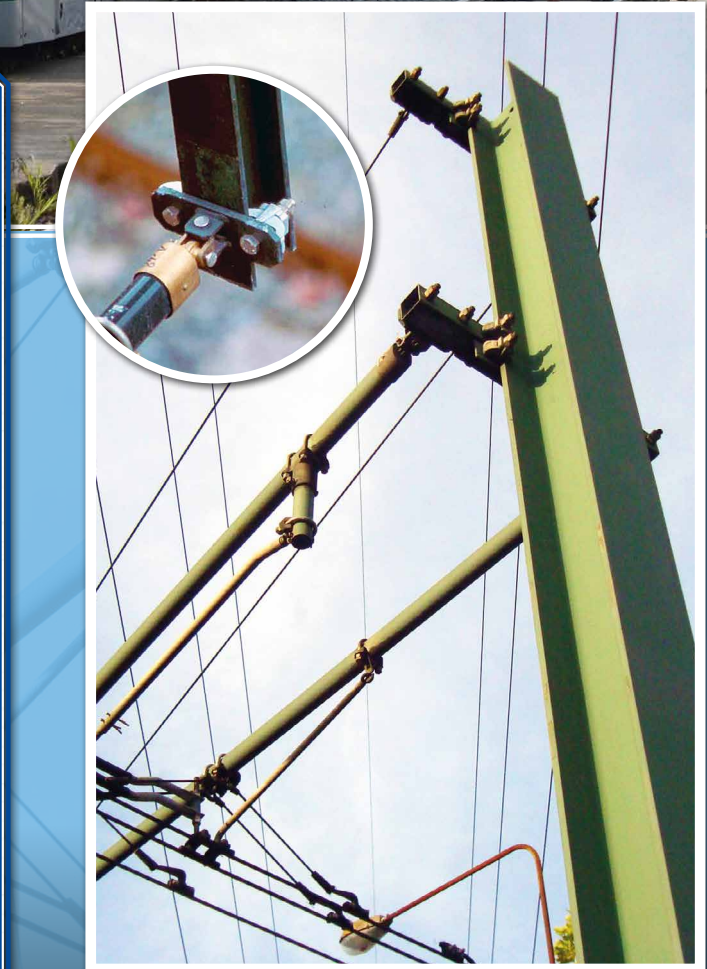
**Client:** Ilévia



The Lille interurban tramway is a transit system located in the city of Lille that connects to the cities of Roubaix and Tourcoing. The tramway has operated continuously since opening in 1874 with trams originally drawn by horse until the electrification of the town system began in 1894. The two current interurban lines were built in 1909 and serve 36 stations with 14 miles of track and are powered by electricity from overhead catenary.

## Client Requirement

Ilévia, the public transport operator for the metropolitan area of Lille, needed to update the overhead line equipment due to its age. They were looking for a solution that was easy to install and versatile to accommodate various shapes and sizes of equipment being connected to the vertical steel masts that line the tramway route. This included end plates and hollow structural sections (HSS) attached to the end of single and double cantilevered support arms as well as end plates connected to catenary wire.

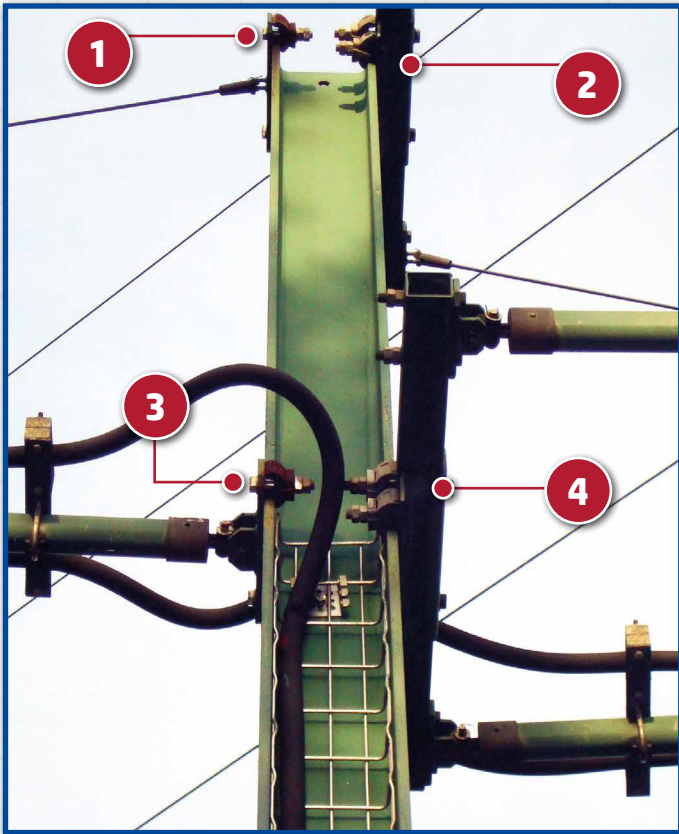


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## Design Solution

The Lindapter technical support team were asked to propose a solution, and after reviewing the client's brief in full, recommended the Lindapter Type LR Girder Clamp. This clamp consists of two parts, the clip and the saddle, which allow the clamp to self-adjust to suit flange thicknesses between 1/8" and 5/8" (size 5/8") and was therefore the ideal solution. Various connection details for the end plates and HSS to column were designed including two and four bolt assemblies using size 5/8" girder clamps.



- 1) Two-bolt configuration connect an end plate with catenary wire attached to the top of the vertical steel mast.
- 2) Four-bolt configuration connect a HSS with catenary wire attached to the top of the vertical steel mast.
- 3) Two-bolt configuration connect the end plate of a single cantilevered support arm to the vertical steel mast.
- 4) Four-bolt configuration connect the HSS of a double cantilevered support arm to the vertical steel mast.

## Installation

Each connection point consisted of a Type LR clamp, grade A325 bolt, washer, and nut all of which could be installed quickly and easily without drilling and using only hand tools. For the two-bolt assemblies the clamps and bolts were simply inserted into predrilled holes in the end plate of the single cantilevered support arms and connected to the masts using the washers and nuts tightened to the recommended torque.

The four-bolt assemblies also included a pre-drilled location plate that was installed between the HSS and steel masts to achieve a secure connection.

## Result

Type LR girder clamps provided an easy to install solution at height and one that could accommodate the different pieces of equipment being connected to the vertical steel masts due to their self-adjusting design. They were also able to provide the necessary slip and tensile resistance to safely support the cantilevered arms over the track.

During installation, and before achieving full torque in the connection, the height of the cantilevered support arms could also be easily adjusted by sliding the girder clamp assembly up or down on the steel mast to ensure perfect positioning.

## Key Benefits

- ✓ Versatile "One clamp fits all"
- ✓ Quick and easy to install
- ✓ High slip and tensile resistance
- ✓ Only hand tools required
- ✓ Safer installation

