Under pole prefabricated transformer substations

Up to 36 kV, 250 kVA

IEC 62271-202 Standard

Reliable innovation. Personal solutions.
Preface
After decades producing different types of industrialised enclosures and prefabricated transformer substations, in 1994 Ormaozbal developed the ctc as a solution for rural distribution networks up to 36 kV.
A ctc is a kiosk-type prefabricated transformer substation installed at ground level under pole and is the non-walk-in-type, for medium-voltage networks up to 36 kV. It is characterised by the fact that the inside of its enclosure houses the transformer and the low-voltage board and all auxiliary elements and interconnections, while the protection and MV operation remain in the pole.

ctc prefabricated transformer substations are used in a multitude of Distribution Network Solutions (DNS) for utilities (public distribution) and end-users of electrical energy (infrastructure, industry and tertiary).

Its application is mainly aimed at rural environments, natural spaces, water catchment areas, high fire-risk forest areas and areas with restricted or reduced space.

Up to now close to 5,000 rural transformer substations have been installed all over the world.

Safety
» Products, standard-built, tested and supplied as a unit
» Heightened safety for persons against accidental direct contact, step voltage and contact voltage.
» Fire barrier protection components: layer of pebbles on the pit
» Pedestrian access to the transformer through two side doors, and to the low-voltage board via a side door

Reliability
» Fully factory-assembled (transformer, and internal earthing circuit in the enclosure)
» Elimination of problems associated with birds nests
» Decreased alteration features due to solar radiation, pollution or atmospheric agents, compared to on-pole solutions
» Protection against heavy external impacts

Efficiency
» Ventilation by natural circulation of air, class 10, via two grilles installed in the transformer compartment covers
» Quick and simple replacement
» Input/output of MV and LV cables through pre-punched orifices at the base of the building

Sustainability
» Reduced environmental, visual and noise impact
» Protection of birds as the transformer is under pole
» Reduced dimensions
» Low risk for discharges of the insulators to the public highway: dielectric liquid collection pit that is watertight and has resistant coating

Continuous innovation
» Great ability for aesthetic integration into its environment
» Low-voltage auxiliary supply from cables from a generator set

Standards
IEC / UNE-EN 62271-202
High voltage/low voltage prefabricated transformer substations

On request:
Specific regulations of the Utility.
Applicable local regulations.

Technical data
ctc
» Concrete monoblock enclosure with removable cover.
» MV/LV distribution transformer, oil filled in dielectric liquid up to 36 kV and up to 250 kVA.
» LV Switchgear: Low-Voltage Board
» Direct MV and LV cable interconnections.
» Earthing circuit connection.
» Lighting and auxiliary services.

Technical specification

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage [kV]</td>
<td>12/24/36*</td>
</tr>
<tr>
<td>Frequency [Hz]</td>
<td>50</td>
</tr>
<tr>
<td>Transformer</td>
<td></td>
</tr>
<tr>
<td>No. of transformers</td>
<td>1</td>
</tr>
<tr>
<td>Power [kVA]</td>
<td>≤250</td>
</tr>
<tr>
<td>Low-Voltage Board</td>
<td></td>
</tr>
<tr>
<td>Rated voltage [V]</td>
<td>440</td>
</tr>
<tr>
<td>Rated current [A]</td>
<td>630</td>
</tr>
</tbody>
</table>

* Executing a ctc of 36 kV / 250 kVA under a customised study

Outer dimensions and weights

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length [mm]</td>
<td>1330</td>
</tr>
<tr>
<td>Width [mm]</td>
<td>2170</td>
</tr>
<tr>
<td>Height [mm]</td>
<td>2980</td>
</tr>
<tr>
<td>Visible height [mm]</td>
<td>1600</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>4600</td>
</tr>
</tbody>
</table>

(*) with a 250 kVA/36 kV transformer
For other configurations and/or values consult Ormaozbal

Design

1. Concrete enclosure
2. Transformer and access door
3. Low-voltage board and access door