Transformer Substations

**ormaSET-P**

Kiosk type Prefabricated Transformer Substation

Up to 24 kV - 630 kVA

Reliable innovation. Personal solutions.

www.ormazabal.com
Description

ormaSET-P kiosk type substations are designed for cable and overhead networks utilized by utilities or industry. Due to small dimensions this substation is an excellent solution for places like housing estates or hard-to-reach localizations not available for heavy construction equipment.

Internal equipment

ormaSET-P substations are designed to contain 630 kVA oil transformer, Ormazabal’s SF₆ insulated MV switchgear up to 24 kV and a LV board.

Structure

ormaSET-P substation consists of main body and roof - both of them made of reinforced concrete.

Main body is divided by low partitions into three functional compartments containing: MV switchgear, LV board and transformer. The roof is screwed to the main body through profiles installed above doors and angle plates.

Each compartment has an individual door with ventilation grates enforcing internal equipment cooling and proper ventilation of the substation. These elements are made of hot galvanized steel sheet or aluminium and are powder varnished in requested colour.

Bottom part of transformer compartment is an oil pan covered with oil-proof paint preventing leakage and environment pollution in case of transformer failure.

A cooling grate made of metal is installed in the panel under the MV switchgear in order to ensure controlled expansion of explosion gases in case of fault in MV section.

Safety

Substations are compliant with EU regulations regarding arc protection. It means that their structure ensures full safety for both servicemen and by-passers in case of fault arching.

These tests have been proved by independent research institutes according to IEC standard as well as requirements of German institutes: IPH and PEHLA. Substations have been certified by Warsaw located “Instytut Energetyki” and approved by “Instytut Techniki Budowlanej”

Environment protection

Oil pans in transformer compartments are designed to contain 100% of the transformer oil. Substations are made from recyclable and environment friendly materials that have been certified by “Państwowy Zakład Higieny”.

Fire resistance

It has been proved by due authorities that walls without openings and roofs have 120 minutes fire resistance (REI 120 standard). It allows to locate the substation directly along the border of the ground parcel. Below there are different examples of minimum distances between the housing and neighbouring building or border of ground parcel.

Transport and installation

Due to small dimensions ormaSET-P substations are transported to destination in one piece, ready for foundation.

For excavation and installation, please ask Ormazabal for the necessary technical documentation.

It is the installer’s responsibility to calculate and create the external earthing network.
Technical details

ormaSET-P Range

ormaSET-P 173: 1730 mm width series
ormaSET-P 210: 2100 mm width series

Dimensions and weights

<table>
<thead>
<tr>
<th>ormaSET-P</th>
<th>173 / 283</th>
<th>210 / 240</th>
<th>210 / 290</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width [mm]</td>
<td>1730</td>
<td>2100</td>
<td>2100</td>
</tr>
<tr>
<td>Length [mm]*a</td>
<td>2830</td>
<td>2400</td>
<td>2900</td>
</tr>
<tr>
<td>Depth [mm]</td>
<td>800</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Height [mm]</td>
<td>2415</td>
<td>2415</td>
<td>2415</td>
</tr>
<tr>
<td>Visible height [mm]</td>
<td>1615</td>
<td>1615</td>
<td>1615</td>
</tr>
<tr>
<td>Total weight [t]</td>
<td>6.9</td>
<td>7.2</td>
<td>7.2</td>
</tr>
<tr>
<td>Roof weight [t]</td>
<td>1.5</td>
<td>1.7</td>
<td>1.7</td>
</tr>
</tbody>
</table>

*ormaSET-P enclosures are characterized by its constructional flexibility which allows customized dimensions. (*) Any other length under consultation.

Electrical configurations

ormaSET-P enclosures are designed to house Ormazabal MV switchgear, such as, gas insulated CGMCOSMOS cubicles and GA-GAE cubicles up to 24 kV.

<table>
<thead>
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<th>ormaSET-P</th>
<th>173 / 283</th>
<th>210 / 240</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Typical MV configurations*</td>
<td>2LP</td>
<td>3LP</td>
<td>3LP</td>
</tr>
<tr>
<td>LV Board [max outputs]</td>
<td>16</td>
<td>16 / 8</td>
<td>16 / 13 / 9</td>
</tr>
<tr>
<td>Transformer (oil type) [kVA max]</td>
<td>630</td>
<td>630</td>
<td>630</td>
</tr>
</tbody>
</table>

*According to gas insulated CGMCOSMOS cubicles up to 24 kV.
**According to air insulated EA cubicles up to 24 kV
For other cubicle systems such as GA-GAE up to 24 kV, please consult Ormazabal.
Note: For other configurations, please consult Ormazabal.
Where:
L = Cubicle / Feeder Function
P = Cubicle / Fuse Protection Function
Typical configurations

ormaSET-P 173/283

ormaSET-P 210/240

ormaSET-P 210/290
Complexes

ormaSET-P concrete housings can be combined to enable construction of complexes with two distribution transformers and switchgears.

Foundation of several housings combined with each other requires previous construction of properly levelled continuous footings. After the foundation of housings, gaps between them are sealed and their roofs are combined with ridge tiles.

Examples of modular solutions made of ormaSET-P:

Adaptation to the environment

Roofs

In order to adjust substations appearance to the surrounding various types of roofs are offered. Standard roof is a low hip roof made of a concrete slab covered with waterproof paint. In case of a ridge or hip roof the slab is topped with a roof construction covered with bituminous shingle, ceramic tiles, metal tiles or other requested material.

Colours

Standard colours are shown below (other colours available on request).

<table>
<thead>
<tr>
<th>Doors &amp; Roof</th>
<th>Exterior</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAL 8014</td>
<td>RAL 9003</td>
</tr>
<tr>
<td>RAL 3003</td>
<td>x</td>
</tr>
<tr>
<td>RAL 5005</td>
<td>x</td>
</tr>
<tr>
<td>RAL 6016</td>
<td>x</td>
</tr>
</tbody>
</table>

Pipe: Grey or brown