



Transformer Substations

ormaSET-P

Kiosk type Prefabricated
Transformer Substation

Up to 24 kV -630 kVA

mediumVOLTAGEAG
Langackerstrasse 25
CH 6330 Cham
+41 41 783 18 18
info@mediumvoltage.ch
www.mediumvoltage.ch

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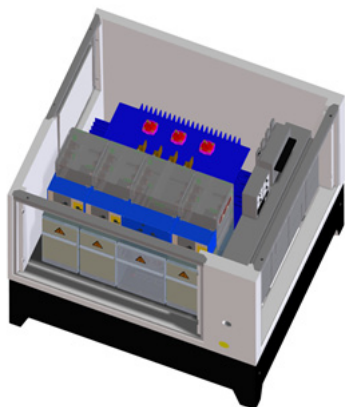
Description

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.

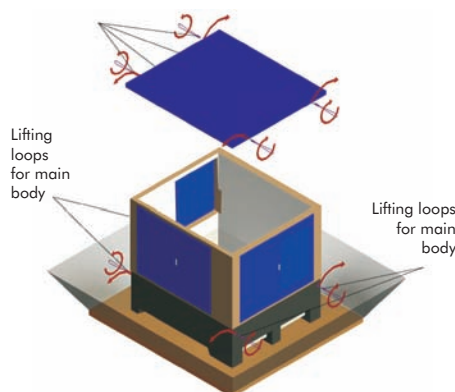
Main body is divided by low partitions into three functional compartments containing: MV switchgear, LV board and transformer. The roof is screwed to the main body through profiles installed above doors and angle plates.

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.

Lifting loops for roof



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 arcing.

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



ormaSET-P 173/283



ormaSET-P 210/240



ormaSET-P 210/290

Dimensions and weights

ormaSET-P	173 / 283	210 / 240	210 / 290
Width [mm]	1730	2100	2100
Length [mm]*	2830	2400	2900
Depth [mm]	800	800	800
Height [mm]	2415	2415	2415
Visible height [mm]	1615	1615	1615
Total weight [t]	6.9	7.2	7.2
Roof weight [t]	1.5	1.7	1.7

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.

ormaSET-P	173 / 283	210 / 240	210 / 290
Typical MV configurations [#]	2LP	3LP	3LP
LV Board [max outputs]	16	16 / 8	16 / 13 / 9
Transformer (oil type) [kVA max]	630	630	630

(#) 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

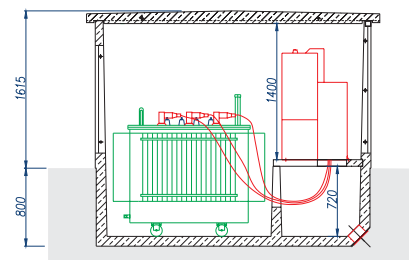
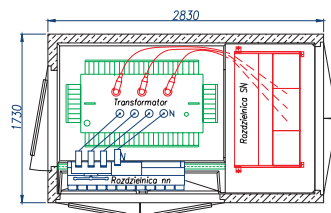


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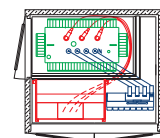
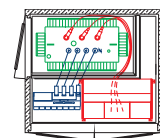
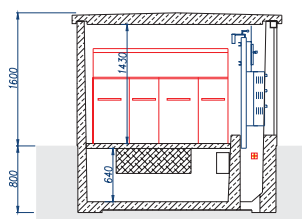
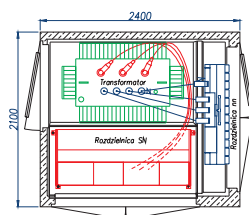
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Typical configurations

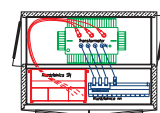
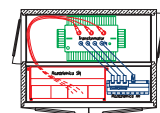
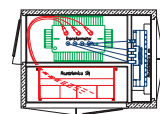
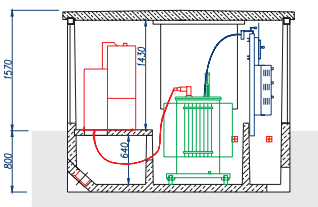
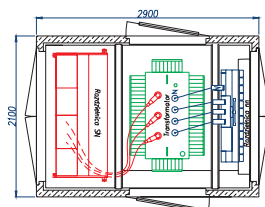
ormaSET-P 173/283



ormaSET-P 210/240



ormaSET-P 210/290

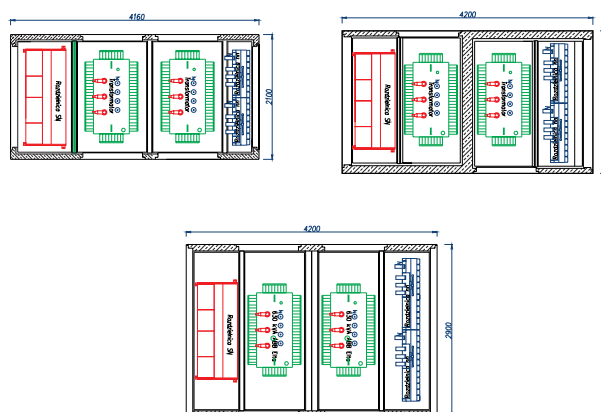


Complexes

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**:

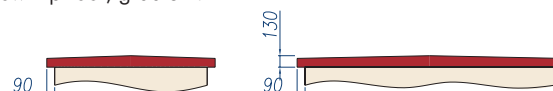


Adaptation to the environment

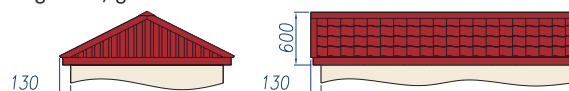
Roofs

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.

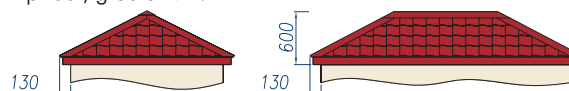
Low hip roof; gradient: 1°



Ridge roof; gradient: 27°



Hip roof; gradient: 27°



Colours

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

		Exterior		
		RAL 1013	RAL 9003	RAL 7032
Doors & Roof	RAL 8014	X	X	X
	RAL 3003	X	X	X
	RAL 5005	X	X	X
	RAL 6016	X	X	X

→ Pipe: Grey or brown



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