

MV/LV Substations for Distribution
Network Solutions

PFS

Concrete enclosure for underground
Transformer Substations

Up to 40.5 kV, 1000 kVA IEC Standards

Reliable innovation. Personal solutions.

Preface

In 1996 **Ormazabal** launched the **PFS**, its first monoblock prefabricated concrete enclosure for underground transformer substations after years of experience in manufacturing PFU's, ground level walk-in type monoblock enclosures.

Following its success, the compact version miniSUB was marketed in 1998.

Since then, **PFS** has continuously evolved into a more extended range with flexible configurations for different MV distribution diagrams.

All **PFS** buildings consist of industrialized monoblock concrete enclosures for **Ormazabal's** walk-in type underground **Transformer Substations** up to 40.5 kV.

PFS is used into several Distribution Network Solutions (DNS) for utilities (public distribution, smart grids..) and end users (infrastructures, industry, tertiary). Currently over 10,000 underground transformer substations have been installed worldwide.

Safety

- » Same equipotential earthing throughout the whole structure: walls, floor and roof
- » Transformer fence with protection mesh
- » Dielectric liquid collection pits
- » Individual accesses for staff and equipment
- » Non-slip cover(s) located in the roof. Assisted opening/closing, with opening of perimeter fence
- » Option of vertical access consisting of concrete outdoor enclosure with metal door
- » Addable physical separation between the utility and private cubicles
- » Additional fire barrier protection elements (pebbles over the pit)

Reliability

- » Industrialized uniform quality
- » Fully factory assembled, process controlled and tested
- » Simple and quick installation, optimizing times and costs
- » Suitable for limited space areas

Efficiency

- » Switchgear can be factory installed
- » Ventilation: natural air circulation (class 10). Horizontal (H) or vertical (V) types
- » MV and LV cables input/output through sealed feedthroughs
- » Impermeability and sealing

Sustainability

- » Minimum visual, environmental and acoustic impact
- » Integration with the surrounding area
- » Long operational life against harsh environmental conditions
- » Reduction in manufacturing energy consumption and emissions
- » Research on mechanical properties and durability of the concrete

Technical data

PFS

- » PFS monoblock enclosure (base and walls) with removable roof.
- » Fully gas insulated MV switchgear: CGMCOSMOS system (up to 24 kV) CGM.3 system (up to 40.5 kV).
- » Up to 2 MV/LV distribution transformers filled with dielectric liquid up to 40.5 kV and a unit power of 1000 kVA(1) per transformer
- » Low Voltage Boards(s) with up to 8 outlets
- » Ormazabal's protection, control and metering units (remote control, remote metering, integrated control, remote management, etc.).
- » Direct interconnections by means of MV and LV cable.
- » Earthing circuit.
- » Lighting and auxiliary services circuit.

External dimensions and weight

		Height [mm]		Width [mm]	Depth [mm]	Weight [kg]
		Body	Ventilation			
PFS-48	H	2840	0	6230	2460	25220
	V	2840	0	5140	2460	23800
PFS-62	H	2840	0	7650	2460	≤32300
	V	2840	565	6560	2460	≤30000
PFS-75	H	3200	0	9090	3200	≤56000
	V	3200	565	8000	3200	≤56000
PFS-93	H	3200	0	10840	4000	≤86000
	V	3200	565	9750	4000	≤86000

Typical configuration

PFS-48

1 Transformer of up to 1000 kVA
MV cubicles: 3 L + 1 P / 1 L + 1 P + 1 M
1 LVB with up to 8 outputs

PFS-62-1T / PFS-62-2T

1 or 2 Transformers of up to 1000 kVA
(1 T or 2 T models respectively)
MV cubicles (1T): 2 L + 1 S + 1 P + 1 M
MV cubicles (2T): 3 L + 2 P / L+L+V+V
1 or 2 LVBS with up to 8 outputs

PFS-75-1T / PFS-75-2T

1 or 2 Transformers of up to 1000 kVA
(1 T or 2 T models respectively)
MV cubicles: Wide variety of Utility and private diagrams, with control and remote control
1 or 2 LVBS with up to 8 outputs

PFS-93-1T / PFS-93-2T

1 or 2 Transformers of up to 1000 kVA
(1 T or 2 T models respectively)
MV cubicles: Wide variety of Utility and private diagrams, with control and remote control
PFS-62-2T 1 or 2 LVBS with up to 8 outputs

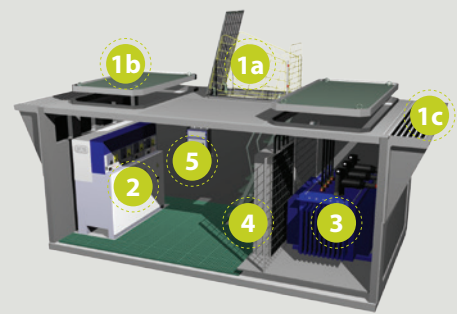


Where:
L = Feeder Function / Cubicle
P = Fuse Protection Function / Cubicle
V = Vacuum Circuit-Breaker Protection Function / Cubicle
S = Busbar Switch Function / Cubicle
M = Metering Function / Cubicle
LVB = Low Voltage Board
(1) For other voltage configurations, please consult **Ormazabal**.

Continuous innovation

- » Ventilation modelling and testing optimized with Ormazabal transformers
- » Great capacity for integration to the environment
- » Prefabricated solutions in accordance with IEC 62271-202
- » Smart-Grids ready substation
- » Available solutions with pitched roof

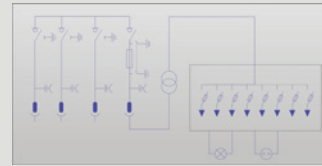
Design



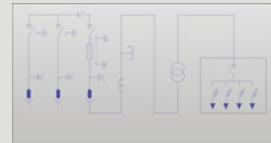
- 1 PFS enclosure
 - 1a Staff access
 - 1b Equipment access
 - 1c Ventilation (H=Horizontal / V= Vertical)
- 2 MV Switchgear:
 - 2a CGMCOSMOS Up to 24 kV
 - 2b CGM.3 Up to 40.5 kV
- 3 Transformer(s): Up to 2 x1000 kVA
- 4 Low voltage board
- 5 Protection, control and metering units

Family

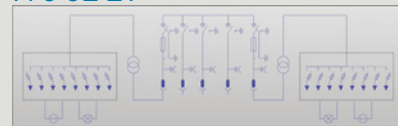
PFS-48



PFS-62-1T



PFS-62-2T



PFS-75-1T / PFS-75-2T

PFS-93-1T / PFS-93-2T

