Preface
In 1996 Ormazabal launched the PFS, its first monoblock prefabricated concrete enclosure for underground transformer substations after years of experience in manufacturing PFUs, 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 in 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) type
» 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

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 substations
» Available solutions with pitched roof

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

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<th>Depth [mm]</th>
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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: 2 L + 1 S + 1 P + 1 M
MV cubicles (2T): 3 L + 2 P + L + LV + 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

Family
PFS-48
PFS-62-1T
PFS-62-2T
PFS-75-1T / PFS-75-2T
PFS-93-1T / PFS-93-2T