



ORMAZABAL

Focus on Medium Voltage

**Medium Voltage Switchgear
Primary Distribution**

CPG.1

Gas insulated, single busbar cubicle range

Up to 27 kV / 2000 A / 31.5 kA

Up to 38 kV / 2000 A / 31.5 kA

IEEE Standards



General description

PRESENTATION

Ormazabal's CPG System includes the **CPG.1** range of GIS Primary Distribution modular cubicles, with Single Busbar, and SF₆ insulated.

Designed mainly to ensure people's safety and reliability of service, the **CPG.1** range contributes to improving electrical distribution in Medium Voltage networks up to 38 kV.

Highly automated manufactured processes, the performance of routine tests across the various phases of the assembly procedure and the use of the most innovative manufacturing techniques assure the highest level of quality in **Ormazabal's** products.

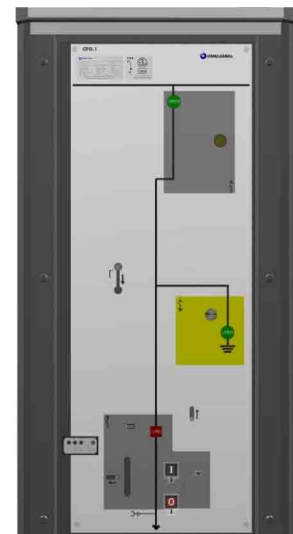
Most notable features:

- Certification of internal **arc withstand** (up to **31.5 kA / 1s**) **Class IAC AFL**
- Sealed SF₆- insulated assembly: **Installation**, assembly on site, **extension and replacement without gas handling**.
- **Cable bushings** up to **2000 A** for elbow connectors.
- Complete single busbar range up to 38 kV.
- Independent compartmented metal structure with separate switchgear compartments.
- Pressure gauges in each of the switchgear compartments.
- Accessible from the front.
- Driving mechanism areas (automated and manual).
- Modularity and future extensibility.
- Voltage detection device (VDS): voltage presence/absence indicator providing permanent non-withdrawable indication according to standards.

AREAS OF IMPLEMENTATION

Designed for use in a wide range of installations, its main applications include the following:

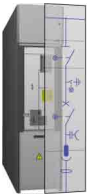



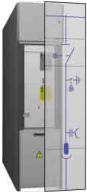
- **Utilities**
 - Primary distribution substations.
- **Large infrastructures**
 - Wind farms.
 - Airports and Railways.
- **Power stations**
 - Substation.
- **Industrial sector**
 - Cement industry.
 - Chemical and petrochemical industry.
 - Mining industry.
 - Iron and steel industry.
 - Automobile industry.
 - Textile industry.
 - Food industry.



Operation interface



Types of cubicles

CPG.1- V1	Circuit-breaker cubicle		CPG.1-CC	Compact busbar coupling cubicle	
CPG.1- F1	Fused protection cubicle		CPG.1- C	Longitudinal busbar coupling cubicle	
CPG.1- S1	Disconnecter cubicle				

TECHNICAL CHARACTERISTICS				
Rated voltage	U_r	[kV]	27	38
Frequency	f_r	[Hz]	50 / 60	50 / 60
Rated current				
in busbars	I_r	[A]	2000	2000
outgoing line	I_r	[A]	2000	2000*
Short-time power frequency withstand voltage (1 min)				
between phases and phase-to-earth	U_d	[kV]	60	80
isolating distance	U_d	[kV]	66	88
Lightning impulse withstand voltage				
between phases and phase-to-earth	U_p	[kV]	125	170
isolating distance	U_p	[kV]	145	195
Rated short-time withstand current	I_k / t_k	[kA / 1 s - 3 s]	31.5	31.5
Rated peak value withstand current	I_p	[kA]	82	82
Rated short-circuit breaking capacity	I_{sc}	[kA]	31.5**	31.5**
Rated short-circuit making capacity	I_{ma}	[kA]	82**	82**
Internal arc classification	IAC		AFL 31.5 kA - 1 s	AFL 31.5 kA - 1 s
IP rating			IP3X	IP3X

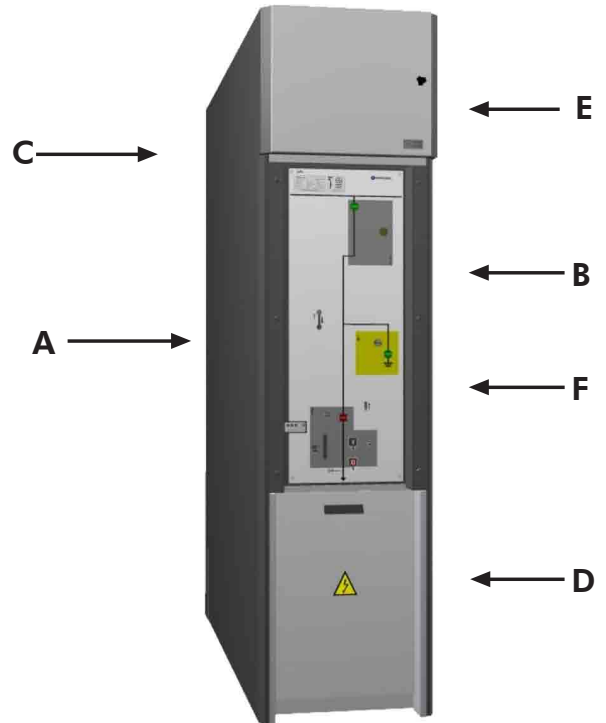
* Fuse protection cubicle = 200 A

**Only Circuit-breaker Cubicle and Longitudinal Busbar Coupling Cubicle

PHYSICAL CHARACTERISTICS						
Cubicle		CPG.0-V1	CPG.0-F1	CPG.0-S1	CPG.0-CC	CPG.0-C
Width	[inches (mm)]	23 (600)	23 (600)	23 (600)	23 (600)	46 (1200)
Depth	[inches (mm)]	74 (1900)	74 (1900)	74 (1900)	74 (1900)	74 (1900)
Height	[inches (mm)]	98 (2500)	98 (2500)	98 (2500)	98 (2500)	98 (2500)
Weight	[pounds (kg)]	500 (1100)	455 (1000)	455 (1000)	682 (1500)	682 (1500)

APPLICABLE STANDARDS

CAN CSA C22.2 No. 31-04	Switchgear assemblies
IEEE C37.74	IEEE Standard Requirements for Subsurface, Vault, and Pad-Mounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems Up to 38 kV
IEEE C37.20.3	IEEE Standard for Metal-Enclosed Interrupter Switchgear
IEEE 1247	Standard for Interrupter Switches for Alternating Current, Rated Above 1000 Volts
IEEE C37.123	IEEE Guide to Specifications for Gas-Insulated, Electric Power Substation Equipment
IEEE Std C37.20.4	IEEE Standard for Indoor AC Switches (1 kV-38 kV) for Use in Metal-Enclosed Switchgear
IEEE C37.04	IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers
IEEE C37.06	AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis- Preferred Ratings and Related Required Capabilities
IEEE Std C37.09	IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis
IEEE Std C37.20.7	IEEE Guide for Testing Medium-Voltage Metal-Enclosed Switchgear for Internal Arcing Faults
IEC 60529	Degrees of protection provided by enclosures.
IEC 61243-5	Voltage detecting systems (VDS).



MAIN CHARACTERISTICS

The CPG.1 cubicles present an architecture divided into independent compartments:

- (A) Feeder disconnecter compartment.
- (B) Circuit-breaker compartment
- (C) Busbar compartment
- (D) Cable compartment
- (E) Control compartment
- (F) Operation interface

INTERNAL ARC

Both as a whole and in their various MV compartments, CPG.1 cubicles are designed to withstand an internal arc of 31.5 kA / 1s (IAC-AFL class).



Safety

Protected against harsh environmental conditions (dust, pollution, humidity, salinity, etc.), **protected** against indirect contacts and long service life provided by its gas insulation, with its gas insulation, with the breaking and connection components housed in separated stainless steel switchgear compartments, totally sealed for life.

Internal arc withstand, accredited by means of tests conducted.

IP rating: IP65 for the tank, and IP3X for the cubicle assembly.

Visual indication of the position of the switchgear in the mimic diagram. Optional screen for visual inspection of switchgear position.

Temperature-compensated monitoring of the **gas pressure inside each** of the **cubicle** switchgear compartments.

Continuous presence / absence of voltage indicator, with optional contacts for remote display and / or creating electromagnetic interlocks.

Whole power circuit fully insulated, including the cable terminals, and entirely screened, earthed and installed inside a metal enclosure.

Ergonomic design, secure access to the control and signalling areas, located outside the switchgear compartment.

Safe, simple operation.

Interlocks between the switching and breaking components in accordance with the criteria of standard IEEE C37.20.3.



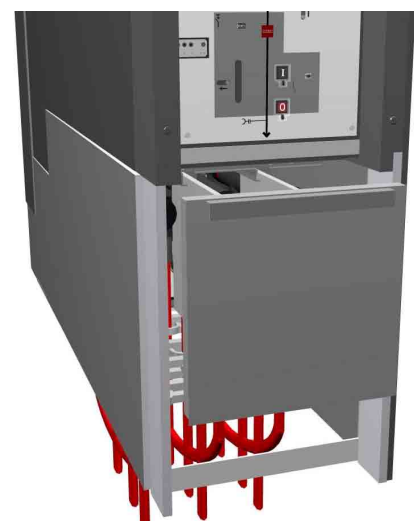
Control compartment



QUALITY OF THE ELECTRICAL SUPPLY

The CPG system contributes to improving the electrical distribution in Medium Voltage networks:

- **Testing, including routine tests** of all equipment in the factory.
- Sealed assembly: **Installation** and **assembly** on site, without gas handling.
- **Circuit-breaker** with **vacuum breaking** technology, compact and with excellent reliability, including extended electrical endurance (class E2) with rapid reclosing cycle, and hence **maintenance-free** during its whole service life.
- **No maintenance** on the live parts of the cubicles, which ensures greater continuity of service.
- **Ease and reliability of connecting** the control and signalling circuits via connectors.
- **Ormazabal's** protection, metering and control electronic units: **ekorRPS** and **ekorRPG**.



Phase segregation in the cable compartment (optional)



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TECHNICAL-COMMERCIAL DEPARTMENT

Tel.: 203 983 8176
ygi@ormazabal.com

www.ormazabal.com

Products, applications, solutions:

- Primary distribution switchgear
- Secondary distribution switchgear
- Automation, protection, remote control and communications in electrical networks
- Distribution transformers
- Low Voltage boards
- Transformer substations
- Medium Voltage applications for renewable energy

