

cgm.3

2^{ry} Distribution Switchgear

Up to 40.5 kV

IEC standards

Up to 38 kV

ANSI / IEEE standards

Location:

Date:

Speaker:

**Reliable innovation.
Personal solutions.**

Contents

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30'

I. Introduction

Preface

cgm.3

Fully gas insulated modular and compact (RMU) system

- Up to 40.5kV / 630 A / 20 kA 1-3 s - 25 kA 1 s / 50 - 60 Hz. IEC standards
- Up to 38 kV / 600 A / 21 kA 1-3 s - 25 kA 1 s / 50 - 60 Hz. IEEE-ANSI standards
- Launched in 2008
- Successor of **cgm-cgc**: worldwide first modular and extensible fully gas insulated cubicle
- +165,000 units in service in +35countries
- Application: **DNS** (Distribution Network Solutions for **secondary** distribution)



Your business and DNS applications

Segments



Smart Grid
Transmission & Distribution
Generation



Infrastructures
Industrial
Tertiary



Wind
Solar
Dispatchable RES



II. Main features

Safety

- **Internal arc** tested AFL[R]
- All live components inside a **hermetically sealed gas tank**
- Mechanical and electrical **interlocks** to **prevent unsafe operations**

Reliability

- **Fully insulated** and **sealed** for life
- **Immersion tested** for 24 hours
- **100 % routine tested** at factory

Efficiency

- **Modular design** extensible to both sides via **ormalink**
- **Easy frontal access** to install and to test MV cables and fuses
- **Small size** and **light weight**

Sustainability

- **No SF₆** use during **installation**
- **En-of-life** management and **recycling**
- **Investment** in alternative **materials** and **own technology**

Continuous innovation

- **Smart-grid** ready system
- Updated ratings: Up to **25 kA** and **-30°C**
- **New metering** cubicles



III. Technical details

cgm.3 range

Modular cubicles

l



Feeder
function

p



Fuse
protection
function

v



Vacuum circuit
breaker protection
function

s



Busbar switch
function
Optional earthing: **s-pt**

rb



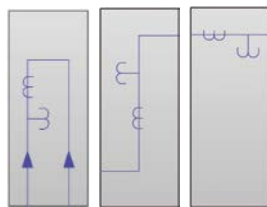
Busbar rise
function
optional earthing:
rb-pt

rc



Cable rise function

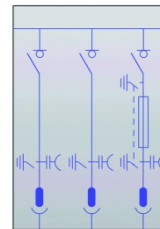
m



Metering
function

Compact cubicles

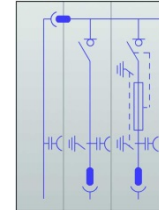
2lp (RMU)



Fuse protection
and feeder
functions

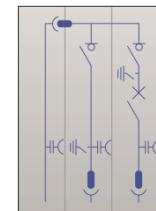
RES configurations

rlp



Fuse protection, feeder and
busbar rise functions

rlv



CB protection, rise and
feeder functions

III. Technical details

General ratings

cgm.3				IEC			ANSI / IEEE
Rated Voltage		Ur	[kV]	36	38.5	40.5	38
Rated frequency		fr	[Hz]	50 / 60	50		50 / 60
Rated normal current		Ir					
	Busbars and cubicle interconnection		[A]	400 / 630	630		600
	Feeder		[A]	400 / 630	630		600
	Output to transformer		[A]	200	200		200
Rated short-time withstand current							
	with tk = (x) s	Ik	[kA]	16 / 21 (1/3 s) / 25 (1s)	21 (1/3 s) / 25 (1 s)		21(1/3 s) / 25 (1s)
	Peak value	Ip	[kA]	40 / 52.5 / 62.5	52.5 / 62.5		52.5 / 62.5
Rated insulation level							
	Rated power-frequency withstand voltage [1 min]	Ud	[kV]	70 / 80	80 / 90	95 / 118	170 / 195
	Rated lightning impulse withstand voltage	Up	[kV]	75 / 85	180 / 210	185 / 215	150 / 165
Internal arc classification according to IEC 62271-200 (IEE Std C37.20,7)		IAC		AFL 16 kA 1s / 21 kA 1s AFLR 21 kA 1s / 25 kA 1s	AFL 21kA 1s AFLR 21 kA 1s / 25 kA 1s		AFL 21 kA 1s / 25 kA 1 s
Degree of protection		IP		IPX8 (Gas tank) IP2X (enclosure)			
Colour of equipment		RAL		Grey 7035 & Blue 5005			
Loss of service continuity category		LSC		LSC2			
Partition class				PM			

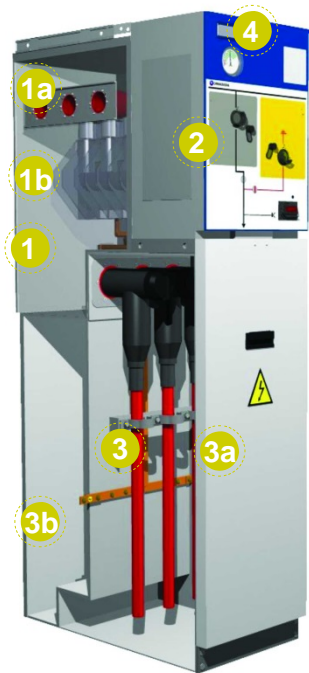
▪ Other local/regional specific standards: GB (China)...



IV. Design characteristics

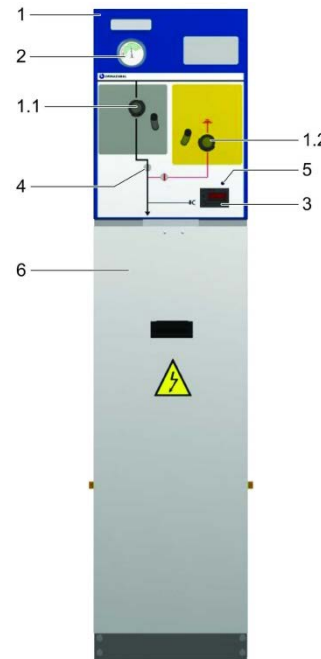
Constructive structure: Modular cubicles

General view



- 1 Gas tank
- 1a Busbar connection
- 1b Switching devices
- 2 Driving mechanism
- 3 Base
- 3a Cable compartment
- 3b Gas relief duct
- 4 Control box

Detailed view



- 1. Mimic & driving mechanism cover:
 - 1.1 Switch-disconnector
 - 1.2 Earthing-switch
- 2. Manometer
- 3. Voltage indicator (**ekor.vpis**)
- 4. Switch-disconnector indication
- 5. Acoustic alarm (**ekor.sas**)
- 6. Cable compartment cover
- 7. **ormalink**
- 8. Side bushings

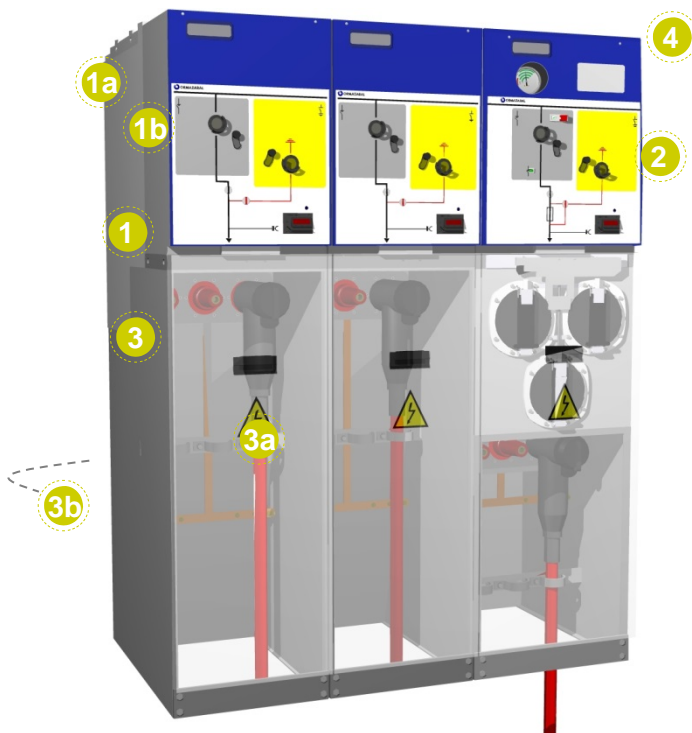
		l	p	v
Width	[mm]	418	480	600
Depth	[mm]	850	1010	850
Height	[mm]	1745	1745	1745
Weight	[kg]	162	230	255



IV. Design characteristics

Constructive structure: Compact cubicles

cgm.3-2lp (RMU)



1. Gas tank

1.a Busbar connection (if available)

1.b Switching devices

2. Driving mechanism

3. Base

3.a Cable compartment

3.b Gas relief duct

4. Control box

		2lp
Width	[mm]	1316
Depth	[mm]	1027
Height	[mm]	1745
Weight	[kg]	490

V. References

Project References

Utility



- Periodical tenders of the main worldwide utilities
- Non-stop supply to Endesa, Iberdrola, EDP, EDCO, UTE, PLN....
- Spain: STAR smart-grid (Iberdrola)
- Argentina: "Prosap" rural electrification project

End Users



- **Spain – France:** Bielsa tunnel
- **Spain:** San Mames football stadium
- **Thailand:** Wat Phra Dhammakaya (Buddhist temple)
- **Argentina :** Pascua Lama mine (4,800 meter above sea level)

RES



- **Ethiopia:** Ashegoda windfarm
- **Poland:** Marszewo windfarm
- **UK:** London Array off-shore windfarm
- **France:** La Motelle windfarm
- **Spain:** Arinaga off-shore windfarm
- **Mauritania:** Zouerate PV plant

Countries with cgm.3 cubicles installed:

Spain
UK
Austria
Switzerland
Tunisia
Israel
Turkey
Saudi Arabia
Argentina
Brazil
Mexico
Australia
China
....



V. References

Solution Notes

Utility



Villa Flandria TS
(Cooperativa Eléctrica de Luján)

Argentina

RES



Rhyll Flats
Offshore
windfarm

UK



Thanet
Offshore
windfarm

UK



Bordeaux
PV plant

France



Thank you!
more information:
www.ormazabal.com
and
social networks



cgm.3 downloads:

- | | | |
|--|-----------|--------------|
| | Brochure: | CA-112 |
| | Flyer: | CA-435 |
| | Manual: | IG-136 / 183 |