2ry Distribution Switchgear

Up to 40.5 kV  IEC standards
Up to  38 kV  ANSI / IEEE standards

Reliable innovation.
Personal solutions.
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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 +35 countries
- Application: DNS (Distribution Network Solutions for secondary distribution)

Your business and DNS applications

Segments

- **Utility**
  - Smart Grid
  - Transmission & Distribution
  - Generation

- **End Users**
  - Infrastructures
  - Industrial
  - Tertiary

- **RES**
  - Wind
  - Solar
  - Dispatchable RES
II. Main features

Safety
- **Internal arc** tested AFL®
- 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

- **I**
  - 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

- **riv**
  - CB protection, rise and feeder functions
# III. Technical details

## General ratings

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<tr>
<th></th>
<th>IEC</th>
<th>ANSI / IEEE</th>
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<tr>
<td><strong>Rated Voltage</strong></td>
<td>Ur [kV]</td>
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<td><strong>Rated frequency</strong></td>
<td>fr [Hz]</td>
<td>50 / 60</td>
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<tr>
<td><strong>Rated normal current</strong></td>
<td>[A]</td>
<td>400 / 630</td>
</tr>
<tr>
<td>Busbars and cubicle interconnection</td>
<td>[A]</td>
<td>400 / 630</td>
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<tr>
<td>Feeder</td>
<td>[A]</td>
<td>400 / 630</td>
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<tr>
<td>Output to transformer</td>
<td>[A]</td>
<td>400 / 630</td>
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<tr>
<td><strong>Rated short-time withstand current</strong></td>
<td>[kA]</td>
<td>16 / 21 (1/3 s) / 25 (1s)</td>
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<tr>
<td>with tk = (x) s</td>
<td>40 / 52.5 / 62.5</td>
<td>52.5 / 62.5</td>
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<tr>
<td><strong>Rated insulation level</strong></td>
<td>[kV]</td>
<td>70 / 80</td>
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<td><strong>Rated power-frequency withstand voltage [1 min]</strong></td>
<td>Ud [kV]</td>
<td>75 / 85</td>
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<td><strong>Rated lightning impulse withstand voltage</strong></td>
<td>Up [kV]</td>
<td>16 / 21 kA 1s / 21 kA 1s</td>
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<td><strong>Internal arc classification according to IEC 62271-200</strong></td>
<td>IAC</td>
<td>AFL 21 kA 1s / 25 kA 1s</td>
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<td>(IEE Std C37.20,7)</td>
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<tr>
<td><strong>Degree of protection</strong></td>
<td>IP</td>
<td>IPX8 (Gas tank)</td>
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<tr>
<td><strong>Colour of equipment</strong></td>
<td>RAL</td>
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<td><strong>Partition class</strong></td>
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<td>PM</td>
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- Other local/regional specific standards: GB (China)…
IV. Design characteristics
Constructive structure: Modular cubicles

**General view**

1. Gas tank
2. Busbar connection
3. Driving mechanism
4. Base
5. Cable compartment
6. Gas relief duct
7. 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

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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

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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 (Budhist 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
V. References

Solution Notes

Utility

Villa Flandria TS (Cooperativa Eléctrica de Luján)
Argentina

Rhyl Flats Offshore windfarm
UK

Thanet Offshore windfarm
UK

RES

Bordeaux PV plant
France
Thank you!
more information:
www.ormazabal.com
and social networks

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Designed for you, letting you know everything about Ormazabal

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Flyer: CA-435
Manual: IG-136 / 183