



MV/LV Transformers for
Distribution Network Solutions

transforma.smart

Transformer with on-load tap changer

Up to 24 kV 1000 kVA

IEC standards



Reliable innovation. Personal solutions.

Preface

Ormazabal designs, develops, tests, manufactures and supplies medium voltage (MV) distribution transformers (**transforma**) and has done so for decades.

transforma.smart: smart transformers with an on-load tap changer (OLTC) capable of regulating the low voltage are the newest member of Ormazabal's wide range of electrical distribution transformers, with a power range up to 1000 kVA, and insulation levels up to 24 kV.

The smart transformer keeps the voltage stable in distribution grids by compensating for fluctuations in MV and dynamically reacting, at low-voltage, to distributed generation (renewable energy sources) and load changes.

The innovative design of the OLTC allows a compact smart transformer design keeping a similar footprint to that of conventional **transforma**.

Currently more than 170,000 of Ormazabal's **transforma** are installed in electric distribution networks, industry, wind farms and photovoltaic plants in more than 20 countries.

Sustainability

- » Renewable energy integration
- » CO₂ footprint reduction (investment deferral)
- » Reduced volume: oil, steel, weight, height...

Continuous innovation

- » Innovative compact design
- » Smart start: temperature checking before OLTC operation
- » Easy fit reactor kit
- » Control cabinet with LCD display: local status check without PC
- » Easy read tap position (periscope)

Standards

IEC 60076

Power transformers

IEC 60214

Tap-changers

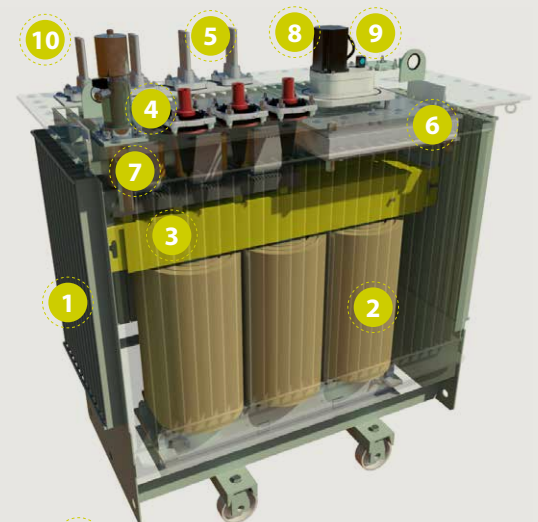
IEC 61000

Electromagnetic compatibility (EMC)

EU Directive:

Regulation No. 548/2014 (Ecodesign)

Design



- 1 Tank and dielectric liquid
- 2 MV and LV windings
- 3 Ferro magnetic core
- 4 MV plug-in bushings
- 5 Low voltage (LV) terminals
- 6 OLTC device
- 7 OLTC reactors
- 8 OLTC motor
- 9 OLTC position indicator
- 10 Dielectric liquid temperature, pressure and level sensor

Safety

- » Tested according to IEC 60076, IEC 60214 and IEC 61000
- » Own laboratory facilities: UDEX, Ormazabal Smart Grid Lab connected to our High Power Lab (2500 MVA)

Reliability


- » Maintenance free
- » Proven vacuum technology
- » Balanced mechanical operation
- » Service life equivalent to an off load tap changer transformer

Efficiency

- » Retrofitting: similar footprint as conventional transformers
- » Transformer losses according to EU Regulation No. 548/2014 (Ecodesign)

Technical data

Rated power	[kVA]	Up to 1000
Rated voltage	[kV]	Up to 24
Insulation level		LI 125 AC 50
OLTC positions		Up to 9
Step voltage	[V]	Maximum 600
Low voltage	[V]	In accordance with customer requirements
Winding material		Cu or Al
Losses		According to EU 548/2014
Short-circuit voltage		In accordance with customer requirements
Vector group		In accordance with customer requirements
Frequency	[Hz]	50 or 60
Type of cooling		ONAN
Max. ambient temperature		40 °C
Protective devices / accessories		Temperature sensor & customer requirements

 For other values, consult Ormazabal

