ENERGEKS

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CATALOGUE SHEET

Oil-immersed Distribution Transformer

2500 kVA 10/0.69 kV

Technical Parameters		
	Description	**Value**
1	Transformer Type	MarkoEco2 2500/10-0.69 AkAAo (Tier2)
2	Construction Type	
•	hermetically sealed	YES
•	with conservator	NO
3	**Rated Power (kVA)**	**2500 kVA**
4	Frequency (Hz)	50 Hz
5	PRIMARY WINDING - H.V.	
•	rated voltage (V)	**10000 V**
•	tapping	±3×2,5%
•	windings material	Cooper (Cu)
•	insluation level Um/AC/LI	12/28/75
6	SECONDARY WINDING - L.V.	
•	rated voltage (V)	**690 V**
•	windings materia	Cooper (Cu)
•	insluation level Um/AC/LI	1.1/8/–
7	**Vector Group**	**Dd0**
8	Standards	EN 60076, EN 50588-1, EN 50708-1
9	Cooling	ONAN
10	Mounting	Outdoor / Indoor
11	Altitude	do 1000 m
12	Ambient Temperature	-25 °C ... +40 °C
13	Nominal temperature increase	
•	oil	60 K
•	windings	65 K
14	**No-Load Losses (W)**	**1575 W**
15	**Load Losses (W)**	**18500 W**
16	**Short Circuit Impedance (%)**	**6%** (±10%)
17	Approximate Dimensions	
•	length (mm)	2100 mm
•	width (mm)	1300 mm
•	height (mm)	2200 mm
•	wheel gauge (mm)	1070 mm
18	Approximate Weight	
•	Cooper (kg)	1206 kg
•	core (kg)	2120 kg
•	tank (kg)	1180 kg
•	oil (kg)	1100 kg
•	total mass (kg)	6606 kg
19	Corossion Protection	Galvanization plus RAL7033 final coating

Standard Equipment			
Item		szt.	Additional Description
1	Porcelain insulators on the MV side	3	
2	Porcelain insulators on the LV side	4	
3	Tap changer	1	+/- 3 x 2,5% (knob)
4	Nameplate	2	
5	Lifting lugs	2	
6	Earthing terminals	3	
7	Bidirectional castor wheels	4	
8	Thermometer pocket	1	
9	Oil valve	1	
10	Lockable oil filling cap	1	
11	Ekrany elektrostatyczne	-	implementation for photovoltaic solutions
12	Electrostatic shields	-	
Additional equipment			
1	Anti-vibration pads		
2	TOC MV transformer terminals		
3	TOC LV transformer terminals		
4	EUROMOLD ® 250A		
5	Integrated OLTC by Reinhausen		
6	Paint-free version		
7	Version with conservator		

Technical description

Energeks MarkoEco2 hermetic oil transformers are designed and manufactured in accordance with European standards and applicable operating standards for MV/LV equipment. The design is based on **ONAN natural oil cooling** and **copper windings ensuring low load losses** thanks to high thermal and mechanical resistance. The equipment meets the requirements of **EN 60076, EN 50588-1** and **EN 50708-1,** and complies with **EcoDesign (Stage II)** and **EU REG 548/2014** regulations**.**

Short circuit parameters

Transformers with **rated power above 400 kVA are manufactured with short circuit voltage of 6% (±10%)** at rated tap position, in accordance with commonly applied technical requirements in distribution networks and design documentation for this power class.
All transformers are equipped with **regulation tappings ±3 × 2.5%**, enabling proper voltage level compensation.
Each transformer is supplied with a **complete set of equipment required for grid operation, compliant with standards applicable to MV/LV transformers used in distribution, industrial and commercial networks.**

Anti-corrosion protection

All steel components of the tank, cover and external equipment are protected by **a coating system compliant with PN EN ISO 12944, corrosion category C3H**, intended for operation in environments with increased corrosive aggressiveness.
The protection system includes a primer layer and a top coat, each in a different colour, in accordance with dual layer coating principles. The top coat is grey and resistant to insulating cooling medium, weather conditions and UV radiation.

Documentation and conformity

Each transformer is supplied with:

• catalogue data sheet, installation instructions & technical documentation
• type test reports or certified copies
• documents confirming compliance with EN 60076 1 Transformers Part 1 General requirements
• reports issued by PCA accredited bodies or bodies being signatories to EA MLA, IAF MLA or ILAC MRA agreements
• confirmation of participation of the accreditation body in international accreditation recognition agreements
• EC Declaration of Conformity confirming compliance with applicable EU directives and regulations
• warranty card defining warranty conditions and operating rules
• documentation confirming that the transformer is manufactured under a quality management system compliant with ISO 9001
• documentation confirming that the manufacturer operates an environmental management system compliant with ISO 14001
The documentation is complete and compliant with requirements applicable to MV transformers within the European Union, facilitating acceptance procedures, approvals and integration with power installations.

Applications

MarkoEco2, hermetically sealed oil immersed transformers are intended for a wide range of applications in distribution, industrial and commercial power engineering. T**echnical parameters and equipment configurations meet standards applied by distribution system operators in Poland**, including PGE, Tauron, Enea and Energa Orlen, as well as other DSOs, facilitating integration with MV/LV infrastructure.

The transformers are used in:

• industrial installations and manufacturing plants supplying CNC machines, production lines and automation systems, stabilizing voltage under dynamic load changes and cooperating with UPS systems and backup power systems
• photovoltaic installations as voltage step up elements from inverters to LV or MV level, compliant with EN 50588 1, used in rooftop and ground mounted farms, also in versions with electrostatic screens for PV
• prefabricated container substations, where compact dimensions and rolling system enable easy integration with E House modules and station enclosures
• backup and emergency power supply systems cooperating with generator sets and automatic transfer systems, ensuring stability and continuity of supply for critical facilities
• commercial facilities and local distribution networks such as office buildings, shopping centres and logistics hubs, with the possibility of integration with SCADA and BMS systems