WE TRANSFORM
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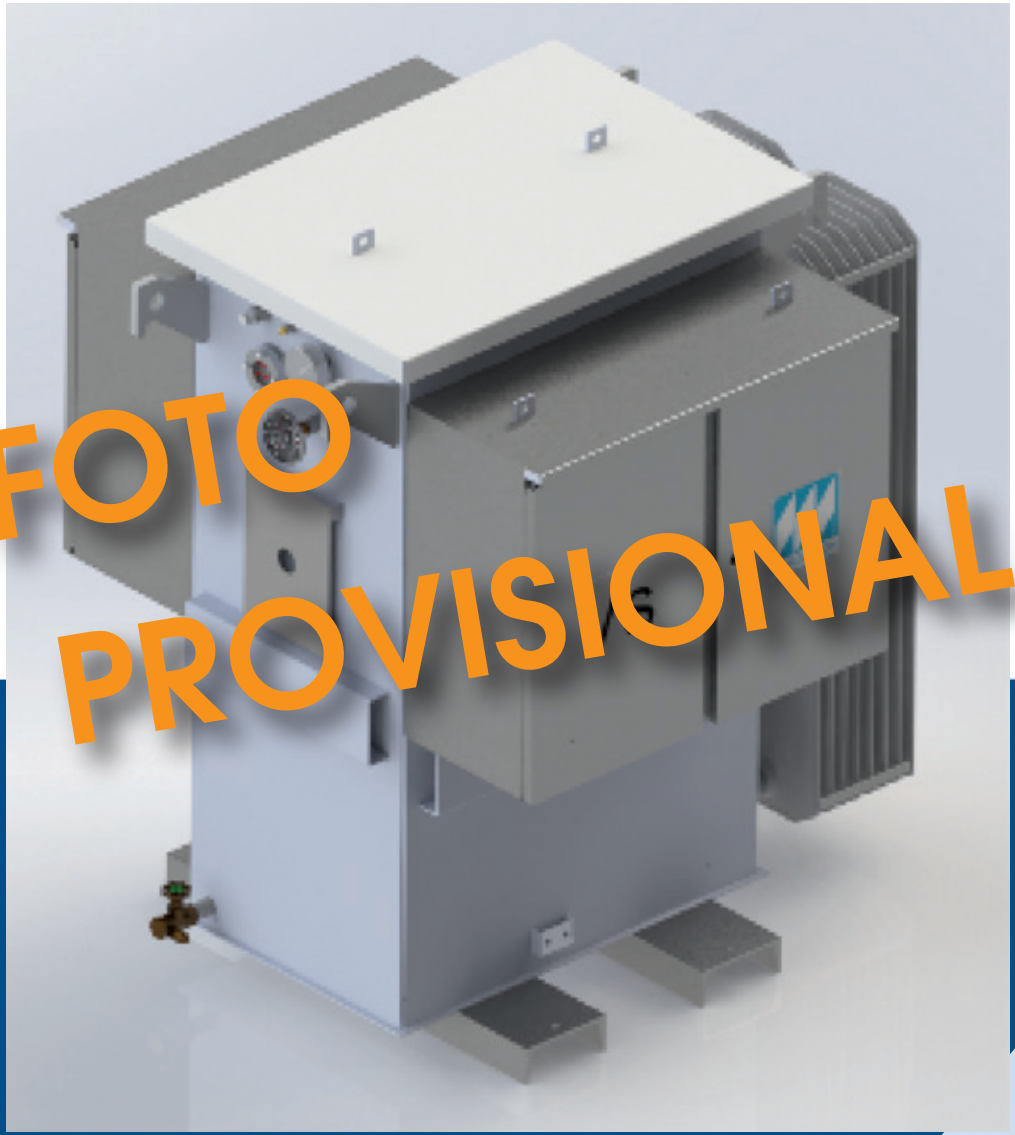
MAGNETRON

TECHNICAL SHEET
24 PULSE PHASE SHIFT TRANSFORMER



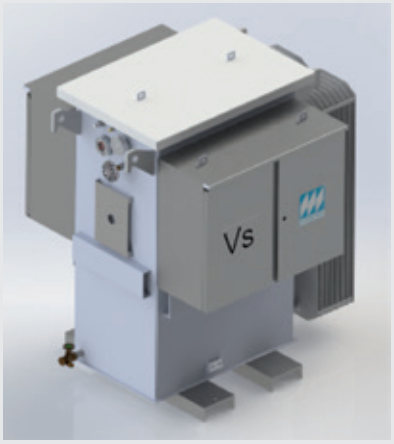
CARBON NEUTRAL

UN GLOBAL COMPACT

TECHNICAL SHEET:
24 PULSE PHASE SHIFT TRANSFORMER

General Information:

Due to the multiple benefits generated by the use of variable speed drives (VSD) in electrical oil-submersible pumping systems (ESP), its use has become widespread in production fields that handle high volumes of fluids. The use of the VSD generates some drawbacks when connected to the electric power network, because it contains static power converters, which produce non-linear loads affecting the natural sine waveform of alternating current by introducing harmonic currents to the electrical grids, which can cause interference in the communication circuits and problems in the equipment connected to the same network. In order to attenuate the effect produced by the variable speed drives when connected to the network, special transformers that allow the reduction of the harmonics that are directed to the network have been designed, depending on the number of pulses of the VSD. This harmonic distortion can be attenuated by increasing the number of rectifier sections used in the VSD, for example, a 12 pulse drive contains 2 rectifying sections shifted 30°, an 18 pulse drive contains 3 rectifying sections shifted 20° and a 24 pulse drive contains 4 rectifying sections shifted 15°. Therefore, a greater number of pulses make the firing distance between waves smaller; for this reason the distance between wave peaks is smaller and as a consequence, the harmonic distortion is reduced. It is necessary to consider that increasing the number of pulses also increases the complexity of the system and therefore, the cost of the required equipment rises significantly.



Offer scope:

These products are manufactured in compliance with applicable NTC, IEC, ANSI standards and/or customer specifications.

Three phase from 200kVA to 1600kVA

Connection type:
Delta - ZigZag

Product description:

The 24 pulse PST has been specifically designed to connect the speed drives used in ESP to the electric power distribution grids, based on Magnetron's extensive knowledge of transformer design and manufacture and on the technological developments of the main manufacturers of variable speed drives, resulting in a device that is the perfect fit to meet the technical and economic needs of the oil industry.

phase shifter has a primary winding designed to be connected to power supplies with voltages of 34.5 kV, 13.8 kV, 13.2 kV, 4.1 kV, 0.48 kV (Note that the transformer is designed only for a type of supply voltage). It is not switchable from 13.8 kV to 13.2 kV, nor to any of the other options. The secondary windings are four, at 480V each, shifted 15° between them, for connection to 24 pulse speed drives.

Special cases: Primary or secondary voltages different to the ones listed above may be manufactured, nevertheless, it will require previous revision from our engineering department.

Typical construction type: Transformers typically consist of an active part made up of the core (magnetic circuit), the coil (electric circuit) and the yoke clamp, determined in accordance with the type of transformer, and placed in a tank that provides the equipment with specific features, depending on its intended application.

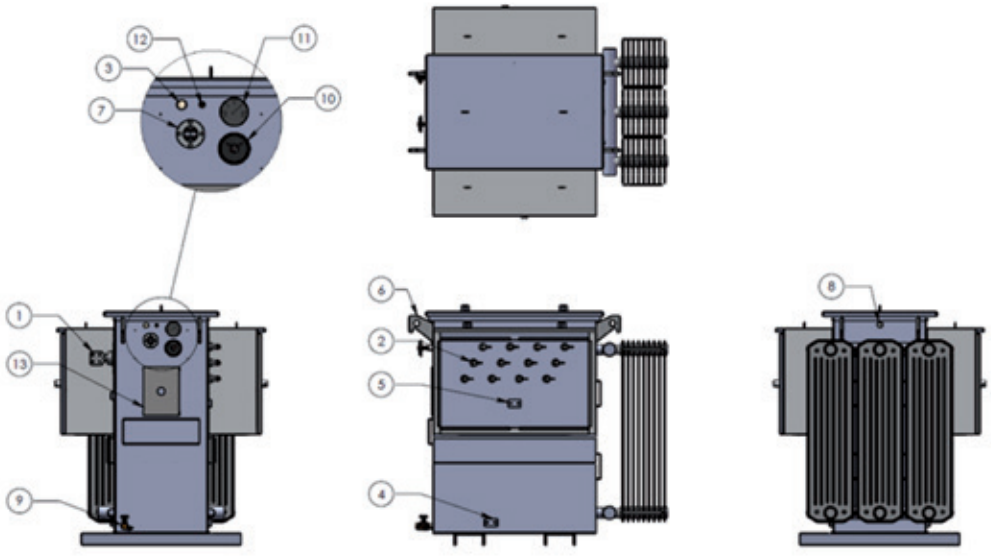
Coils: Concentric circular or rectangular sections with copper or aluminum windings.

Insulation: High-quality paper coated with epoxy resin.

Cores:

- Shelltype or core type, rolled or stacked, arranged in groups for easy assembly and disassembly without loss of dimensional characteristics, ensuring low levels of loss and exciting currents.
- Cold-rolled grain-oriented silicon electrical steel sheet with on both sides, with low losses and high permeability.

Tanks: Rectangular in shape, made of ASTM A36 steel (AISI 304 Stainless steel as optional) plates with reinforcements capable of withstanding internal pressures due to temperature rise and mechanical stresses due to equipment installation and handling. Three-phase TANKS include a cabinet that is bolted or welded to the transformer and serves as protection for the Low Voltage and Medium Voltage circuits, with a mechanical locking system which, for safety reasons, prevents opening of the compartments without the appropriate key.



ITEM	DESCRIPTION	QTY
1	Primary bushing	3
2	Secundary Bushing	12
3	Pressure relief valve	1
4	Tank grounding	2
5	Neutral grounding	2
6	Lifting lugs	4
7	Oil level indicator	1
8	Filling plug	1
9	Drain valve	1
10	Oil thermometer	1
11	Pressure vacuum gauge	1
12	Schrader valve	1
13	Nameplate	1

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