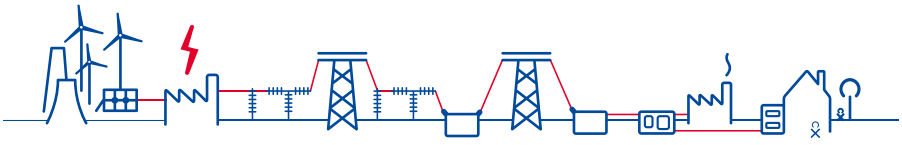
SGB-SMIT POWER MATLA

Your dedicated partner
of the SGB-SMIT Group

MEDIUM DISTRIBUTION TRANSFORMERS



SGB-SMIT AT A GLANCE

Combined, more than

450

YEARS OF EXPERIENCE

Basis for know-how and for know-why

More than

3,500

EMPLOYEES

take care of your project

In more than

80

COUNTRIES

satisfied customers

READY FOR YOUR MARKET

The SGB-SMIT Group manufactures transformers for applications worldwide. Sales and service centers on all continents ensure optimum processes.

Our products meet the requirements in accordance with the applicable national standards.

PRODUCTS

- large power transformers
- medium power transformers
- large liquid-cooled distribution transformers
- liquid-cooled distribution transformers
- cast resin transformers
- shunt reactors
- series reactors
- phase shifters
- Lahmeyer-Compactstationen®

Transformers from 50 kVA up to incl. 1,200 MVA in the voltage range up to 765 kV.

QUALITY MANAGEMENT

The SGB-SMIT Group is certified in accordance with:

- DIN ISO 9001
- DIN ISO 14001
- DIN ISO 50001
- OHSAS 18001

TECHNOLOGIES

Technologies for conventional and renewable energy.

Status: December 2019

SGB SMIT POWER MATLA
A MEMBER OF THE SGB-SMIT GROUP

SGB-SMIT POWER MATLA has over 70 years experience in successful design, manufacturing, testing, installation and commissioning of a full range of power and distribution transformers which include large power transformers of voltages up to 800MVA.

SGB-SMIT POWER MATLA

SGB-SMIT POWER MATLA (Pty) Ltd is owned by SGB-SMIT (GmbH) and Power Matla.

SGB-SMIT, is the largest independent and pure-play transformer manufacturer in the world, with headquarters in Regensburg, Germany. They are represented on 5 continents in 8 countries with plants in Germany, the Netherlands, USA, Romania, Malaysia, India, China and the Czech Republic. With transformer expertise since 1913 they produce transformers ranging from 50 kVA up to 1,200 MVA.

Power Matla (Pty) Ltd is a locally owned black empowered company with investments in various portfolios within the renewable energy, ICT, mining and power utilities markets providing good shareholder value and solid returns.

The company consists of Large Power Transformers manufacturing plant in Pretoria and Distribution Transformers plant in Cape Town and supplies a full range of transformers, from generator step-up to transmission and distribution transformers. The range includes three-phase and single-phase units, auto-transformers, arc-furnace, locomotive and traction transformers, miniature sub-stations, NECRT's as well as shunt reactors.

"CUSTOM DESIGNED"

Every SGB-SMIT POWER MATLA unit is custom-made from standardised design elements and using uniform manufacturing operations. This flexible, but well co-ordinated approach ensures the highest quality of design and construction for all our transformers and makes the best possible use of the valuable knowledge and experience gained over the years and best practices developed in our factory.

The Large Power Transformer factory in Pretoria is a well-equipped factory and is amongst the biggest and most sophisticated transformer manufacturing plants within the Southern Hemisphere and one of two large transformer manufacturers within sub-Saharan Africa.

The Distribution Transformers factory in Cape Town has been manufacturing distribution transformers and miniature substations for more than 60 years.

SMALL, MEDIUM AND LARGE POWER TRANSFORMERS ALL OVER THE WORLD

OVERVIEW

SGB-SMIT POWER MATLA is one of South Africa's largest and most experienced manufacturers of distribution transformers. Designed, tried and tested under the harshest of African conditions, our distribution transformers and miniature substations have proven themselves for more than 70 years. Our experience ensures our products are manufactured to meet the needs of local conditions whilst meeting all major national and international standards. Our products are used in utilities, local authorities, mines, industrial plants and motor manufacturers.

Our distribution transformer range starts at 16kVA to 5MVA transformers with primary voltages of up to 36kV and 200kVA to 2500kVA miniature substations with primary voltages of up to 36kV. We also produce neutral eathing resistors (NER's), neutral earthing compensators (NEC's) and NECRT combinations.

QUALITY, HEALTH, SAFETY & ENVIRONMENT

The distribution transformer plant located in Epping 2 (Western Cape) has a fully certified ISO 9001 quality management system, ISO 14001 environmental management system, as well as the ISO 45001 health and safety management system, ensuring stringent quality assurance programmes, in accordance with the very specific requirements is rigidly adhered to. This leads to products of the highest quality

The transformers and miniature substations carry the SABS Mark of Approval. At every stage during manufacturing, the materials and processes are inspected by suitably qualified and experienced inspectors, to ensure all required standards and manufacturing practices are adhered to.




SUPPLY CHAIN

SGB-SMIT POWER MATLA prides itself in our ability to leverage our global network. We also manufacture most of the transformer structural components in-house. Raw materials and components not manufactured in-house are sourced from world class suppliers. Procurement of material and components is done from a list of pre-qualified suppliers, locally and internationally, who are certified to conform with the highest standards in terms of Quality (ISO9001), Health and Safety (ISO 45001) as well as Environmental (ISO 14001) respectively.

Before a supplier is approved, their capability is assessed, by taking into consideration their technical ability; quality control system; safety, health and environmental controls; financial viability as well as other commercial factors. Supply Level Agreements are put in place with key suppliers to ensure availability of stock and continuity of supply. A number of enterprise development initiatives are considered for development of small independent business units.

SGB-SMIT POWER MATLA applies strict control of incoming raw material from pre-qualified suppliers. All incoming goods are quality-controlled and checked before they are released into the sub-assembly manufacturing lines. Where certification is required, the raw material is sent to our on-site SANAS accredited laboratory in Pretoria for material analysis, verification and certification. Any non-conforming product is rejected and returned to the supplier for rectification or replacement.

MEDIUM DISTRIBUTION TRANSFORMERS

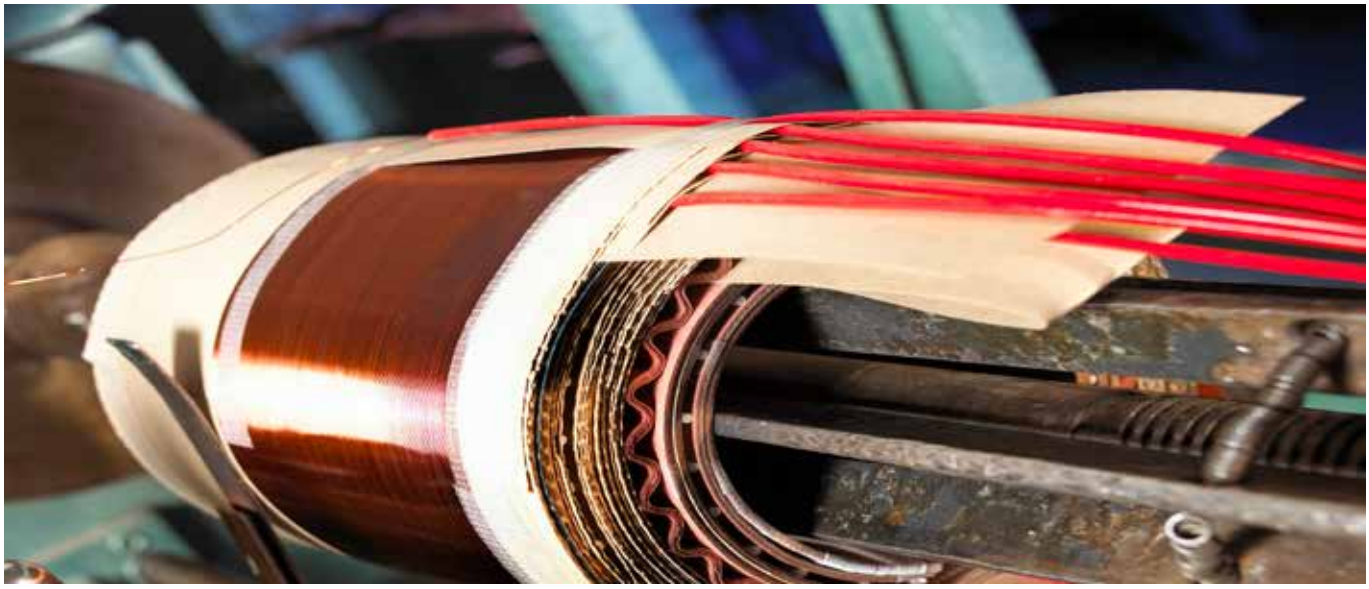
All oil distribution transformers manufactured within our factory in Cape Town comply with comply with SANS 780 and/ or SANS/IEC 60076.

Distribution transformer high voltage windings are made of copper. The low voltage windings are made of copper strip, but in certain ranges copper or aluminium foil is used. Diamond dot paper is used for interlayer insulation on the foil windings as this adds mechanical strength. Core and winding assemblies are clamped by means of top and bottom yoke clamps.

All oil distribution transformers cores are made of grain oriented, low loss magnetic cold-rolled silicon steel. Both sides of the steel sheets are laminated with ceramic insulation.

All distribution transformers are painted in any colour according to customer specification and requirement.

MEDIUM DISTRIBUTION TRANSFORMERS MADE BY SGB-SMIT POWER MATLA



DESIGN AND MANUFACTURE

Customer drawings are prepared for tender designs and finalised on order placement. All electrical and mechanical designs undergo an internal design review process. External design reviews by customers are also allowed for in the design process.

The core construction is optimised for cold-rolled steel properties so that best parameters for magnetic circuit are obtained, i.e. minimum no-load losses and small magnetising power.

CORROSION PROTECTION

The exterior and interior surfaces of the transformer tank, cover and conservator (when fitted) are carefully degreased. Rust and millscale is removed by a process of acid pickling or shot blasting.

The exterior surfaces of inland units are thereafter given a coat of high build primer, followed by a coat of high build alkyd base full gloss enamel, giving a total dry film thickness of at least 75µm. The method of application employed is either flow coating or spray painting.

Coastal units are shot blasted and hot zinc metal sprayed prior to painting to a finish of 125µm. Alternatively, twin pack;. three coat systems, as used by ESKOM, are also available.

MANUFACTURING PROCESS

The complete active part is processed in an oven to remove excessive moisture content. Following the drying cycle and within a prescribed time, pressure is applied to the windings, the unit is tanked and filled with heated, degassed and purified oil. This takes place under vacuum filling conditions.

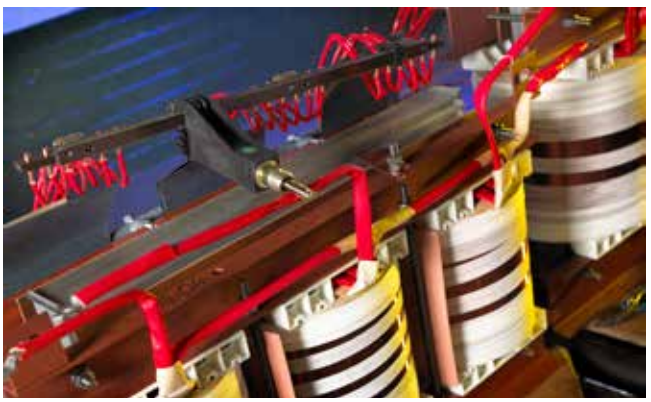
On offer is a range of cooling methods such as ONAN and KNAN (Ester fluids).

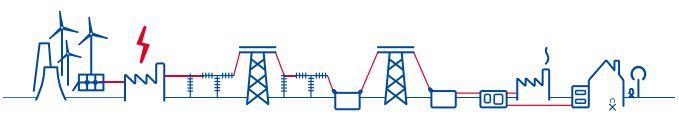
TRANSFORMER TANKS

Hermetically sealed transformers incorporate a tank with corrugated or tube radiator fins.

The transformer tank has a sturdy design that allows for normal transportation of an oil-filled transformer without any damage resulting from vibration.

Free breathing transformers have fixed or removable panel radiators and isolating valves.





TESTING

Routine tests according to SANS 780 and SANS/IEC 60076 are made on every transformer prior to despatch:

- Measurement of winding resistance
- Measurement of voltage ratio and verification of polarity and connection symbol
- Measurement of impedance voltage and load loss
- Measurement of no - load loss and no - load current
- Induced overvoltage withstand test
- Separate - source voltage withstand test
- Measurement of paint thickness
- Test for effectiveness of sealing

Type tests to SANS 780 and SANS/IEC 60076 can be undertaken on request:

- Full impulse voltage withstand test
- Full and chopped impulse voltage withstand test
- Temperature rise test
- Tank stiffness test

Special tests to SANS 780 and SANS/IEC 60076 can also be made on request.

- Short circuit withstand test (subject to limitations of SABS high current laboratory equipment)
- Measurement of audio sound level

TECHNICAL SPECIFICATION

Range
400 - 3150kVA

Primary Voltage
Up to and Including 36kV

Tappings
Off-circuit tap switch (OCTS)

Terminations
HV outdoor open bushings
LV outdoor open bushings
Alternatively HV and LV cable boxes
Mineral oil to IEC 296 and SANS 555

Tank Construction
Sealed, welded or free breathing

Cooling
ONAN and KNAN (Ester liquids)

Tapping Range
Approximately 2.5% or 5.0%
Approximately 3.0% or 6.0%

DIMENSIONS (APPROXIMATELY ONLY)

Losses in accordance with SABS 780 Edition 4

KVA	KV	Phases	Vector	Length (mm)	Width (mm)	Height (mm)	Mass (kg)
500	11	Three	Dyn 11	1345	976	1345	1625
500	22	Three	Dyn 11	1435	1080	1395	1820
630	11	Three	Dyn 11	1810	1638	1520	2750
630	22	Three	Dyn 11	2046	1586	1560	2345
800	11	Three	Dyn 11	2015	1030	1475	2390
800	22	Three	Dyn 11	2240	1910	1550	3455
1000	11	Three	Dyn 11	1810	1638	1420	2750
1000	22	Three	Dyn 11	1925	1855	1640	3340
1250	11	Three	Dyn 11	1885	1880	1885	3675
1250	22	Three	Dyn 11	2220	1240	2345	3645
1600	11	Three	Dyn 11	2320	1760	2320	4580
1600	22	Three	Dyn 11	2400	1930	1810	5240
2500	11	Three	Dyn 11	3070	2705	3005	9785
2500	22	Three	Dyn 11	2830	1960	2670	6420
3150	11	Three	Dyn 11	2740	2215	2910	7970
3150	22	Three	Dyn 11	3060	2200	2960	8760

TECHNICAL SPECIFICATION

Mounting arrangement

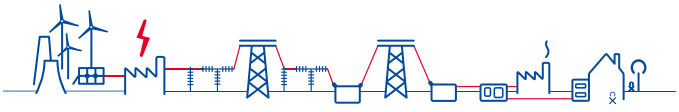
Flat under base or skid base with or without rollers

Fittings

- Lifting lugs
- Earth terminals
- Surge arrestor brackets or arcing horns (when specified)
- Rating and diagram plate
- Drain valve (when specified)
- Jacking pads
- Winding & oil temperature indicator (when specified)
- Oil level indicator
- Dehydrating breather (free breathing units are supplied when required by customer)
- Gas Actuated Relay, (free breathing units only)
- Conservator (free breathing units only)

Standards

SANS/IEC 60076 and SANS 780



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Subject to technical changes.

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