

RED METAL MINING
PROJECT ENGINEERS



ABOUT RMM Established in 2006, Red Metal Mining is a diversified project engineering house, focused on specialised design for mining and associated industries. We are the sub-Saharan agent for leading German cast resin transformer manufacturer, SGB.

Wherever electricity is generated, distributed, or required, we supply custom solutions, tailored to our client's exact requirements. We pride ourselves on delivering complete solutions; from concept to development, commissioning and support.

LOCATIONS Our head office and assembly plant is based in Johannesburg, with branches established in Botswana and Zambia.

PRODUCTS

- Cast Resin Dry-Type Transformers
- Mini Substations
- Transformer Enclosures
- Motor Control Centres
- Switch Gear Distribution
- Oil Distribution Transformers
- Containerised Substations
- Large Power Transformers
- Furnace Transformers
- Reactors
- Electrical Drives AC/DC

SERVICES We have a multifaceted engineering team, fluent in the latest Solidworks 3D design software. Their combined experience and skills translate into several service offerings, including:

- Engineering, Procurement, Construction, Management (EPCM)
- Finite Element Analysis (FEA)
- Advanced Airflow and Heat Transfer Analysis
- System Integration (Step7, WinCC, Simocode, PCS7 certified)



Output range from **50kVA** up to **2500kVA**

Normal operation at ambient temperatures of **-50°C** up to **50°C**

Customised solutions for individual requirements

- Manufactured in Germany
- Lower losses
- Highest safety standards
- Flame retardant
- Maintenance-free + eco-friendly
- Electrically safe
- No gas inclusions
- Service life of 20+ years
- 90% recyclable transformer material

UNIQUE DOUBLE-LAYER WINDING FROM SGB

- Ensures safe handling of surge voltages.
- Creates extra cooling ducts within the coil to enlarge cooling surface.

3G RATING

- Can be uprated for more extreme applications like mining and wind turbines.
- Protects core winding to extended transformer life.

C1
C2

Climate
category

E2
E3

Environmental
class

F1

Fire resistance
class



Range from **300kVA** up to **1000kVA**

Protection class
IP54

Customised solutions for individual requirements

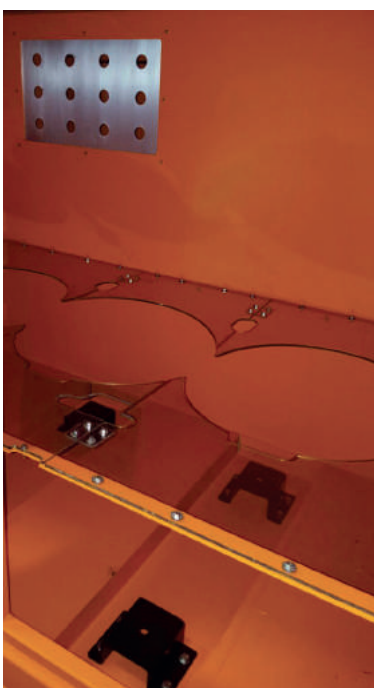
- Manufactured in South Africa
- Low maintenance
- Fire class F1 (self-extinguishing)
- Compact design
- Underground + above surface use
- Designed to house the SGB cast resin transformer
- Patent pending on complete closed-loop system design

UNIQUE COMPACT DESIGN BY RMM

- Our underground cast resin mini substation has been specifically designed to fit underground in a man winder cage.
- Whereas conventional cast resin solutions are unable to fit in this cage, due to its cooling system design.

SUPERIOR PRODUCT

The RMM designed mini substation together with the SGB cast resin transformer, provides a compact and reliable solution, with lower noise levels, a lower environmental impact, and a low fire hazard.



CUSTOM ENCLOSURES



Protection classes available

IP23, IP33, IP44, IP54

Customised transformer protection solutions

- Manufactured in South Africa
- Low cost standard housing
- AN-AF cooling:
enclosures feature air entry + outlet ports to dissipate power losses for natural OR forced air cooling.
- AFWF (air/water cooled)
- Standard color RAL 7032 or 7035, but other paint options available on request.
- Variable connection options:
on HV or LV side, top or bottom.
For cable connection from below, metal support and entry plates are provided.
- Roof coolers can be provided

MOTOR CONTROL CENTRES (MCC'S)



MCC's and automation systems

Industries

- FMCG
- Water
- Mining
- Power

Digitisation of electrical equipment is key to sustainability.

We supply a full range of services and solutions in the E,C&I sector that contribute to energy and process efficiency within the mining sector.

- Manufactured in South Africa
- Completely customised solution

CONTAINERISED MCC'S & SUBSTATIONS



Range from **800kVA** up to **3500kVA**

Protection class **IP55**

- Cost effective
- Robust
- Mobile
- Custom solution

Designed specifically to be a durable solution in the African market.

- AF (forced cooling)
- Low operating and maintenance cost
- Easily transported
- Simple lifting procedure
- Requires zero civil foundation
- Stand alone or remote control
- Built in electrical protection

ELECTRICAL DRIVES AC/DC



AEG winder GLC-3 and GC-3 motors

high kW / low revolutions

- AC high voltage motors
50MW to 15kV
- DC motors
8MW
range of torque 20Nm to 900,000Nm
- Synchronous motors
4MVA to 50MVA
at 1,500 RPM - 15kV
OR
4MVA to 25MVA
at 150RPM - 15kV
- Hoist motors
- Hydro power generation



INDUSTRY EXPERIENCE

We have combined experience in the following sectors:

Coal, Copper, Diamonds, Gold

Lead-Zinc, Platinum, Titanium

Chemical Processing, Smelting, Water Treatment

ATEX Explosion Protection

Renewable Energy

Shipping + Transportation

AREAS OF EXPERTISE

We offer the following services:

Engineering, Procurement, Construction, Management (EPCM)

Electrical + Instrumentation Engineering

Mechanical + Piping Engineering Design

Control System + Network Architecture

Structural Engineering Design

Lump Sum Turnkey Projects (LSTK)

3D Modelling

Fault Analysis

OIL COOLED TRANSFORMERS & SUBSTATIONS



Range from **50kVA** up to

2,500kVA

- Manufactured in Germany
- Special cooling/insulation material can be used to reduce fire and environmental risk
- Arc suppression coils
- Earthing transformers
- Neutral grounding transformers
- Pole mounted transformers
- Transformers for heating of track-switches
- Transformers for special rectifier operations

POWER TRANSFORMERS



Range from **5MVA** up to

140MVA

- Manufactured in Germany
- Cooling
ONAN/ONAF/OFWF/OFAF
- Furnace transformers
- Reactors

Lower no-load losses + lower noise:
Up to the minute core-laying technology (step lap) combined with high quality, low loss sheet steel (with low magnetism) guarantees lower no-load losses and lower noise emissions.

Short-circuit losses:
Lower load losses can be achieved in relation to additional losses, due to the optimisation of conductor cross sections.

FURNACE TRANSFORMERS



Range up to

120MVA

- Manufactured in Germany
- Current up to
70,000 amps
- Cooling
OFAF/OFWF
- Frequency
50Hz/60Hz
- Standard compliant
IEC, ANSI, VDE, DIN, BS

REACTORS



Single-phase up to

30MVar

Three-phase up to

50MVar

Reactors provide the required balance by stabilising fluctuations and reducing overvoltages in high-voltage grids, thus ensuring highly reliable operation

- Manufactured in Germany
- Customised solution
- Single-phase and three-phase
compensation reactors
- Single-phase and three-phase
current limiting reactors

Design options:

- **iron core with air gaps** to avoid saturation of the ferrite core
- **without iron core** for high frequencies

ASSEMBLY PLANT

Based in Chloorkop

- **3000m²**
- Complete with two **14.5 t overhead cranes**
- **FAT testing** of mini substations
- Dispatch



SPECIALISED PACKING

Ensuring maximum safety of products during transportation and delivery

- Heavy duty **crate packaging**
- **Shrink-wrapping**







RMM
ON SITE





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