VEXILA™
ELECTRICAL TECHNOLOGY

PRODUCT CATALOGUE

VEXILA (Pty) Ltd designs, manufactures and supplies a wide range of Composite Insulators, Composite Cut-outs and a variety of Line Hardware Products for Electrical Rail, Transmission and Distribution Overhead Power Line Infrastructure.

Differentiating itself through innovative, quality products, the company has been in existence for more than 45 years, relying on a technologically skilled team. Originally founded as Hardware Assemblies, the acquisition by the German-Swiss PFISTERER Group in 2003 further propelled the research and development at the factory, resulting in an expansion of the comprehensive product range.

Recognising its strategic importance, the South African Thesele Group acquired the business in 2018, strategically rebranding it as Vexila to position it for continued development and growth from its position as one of the largest manufacturers in the rail, transmission and distribution industry in Africa.

Whether producing its own products or those for its renowned international customers, Vexila prides itself on operating an innovative, vertically integrated manufacturing facility, equipped with efficient in-house processes and technologically driven equipment.

Key manufacturing facilities, situated in Pietermaritzburg, the capital city of Kwazulu-Natal, South Africa, include:

- Silicone rubber injection moulding;
- Gravity cast aluminium and ductile iron foundries;
- Helical wireform production plant;
- Fibreglass reinforced polymer core pultrusion plant; and
- State of the art tool and die development and manufacturing facility.

The comprehensive in-house expertise and technologies have ensured that Vexila is the market leader in the field of overhead electrical infrastructure products on the African Continent. The first 100% African company to locally manufacture and supply 400 kV Composite Insulators to African Electrical Utilities including Eskom, as well as successfully exporting its products to Europe and the USA.

The company prides itself on being one of a few international companies able to offer complete string assembly solutions, including hardware components and composite insulators, tested and qualified up to 400 kV system voltage levels.

In keeping with its ongoing drive for innovation, the company is in the final stages of developing another African first: 765 kV composite insulators which are on schedule for final testing to ensure global market readiness in 2020.

Vexila is an ISO 9001:2015 certified company having gained its initial certification through the German Accreditation Company DQS in 2001. This certification underpins a full complement of engineering personnel and capabilities to design, plan, manufacture, manage and execute complex Overhead Line (OHL) and Overhead Traction Equipment (OHTE) supply projects, providing total solutions to the highest international quality standards.

IN-HOUSE TECHNOLOGIES

Spheroidal Graphite (SG) Casting

The SG Foundry serves a crucial input into the manufacture of Vexila's primary products such as post insulators, longrod insulators and cut-outs. This foundry provides end-fittings into the Moulding department, thus creating vertical integration to the manufacture process.

The following equipment and machinery are included at the SG Foundry:

- Induction melting furnaces,
- Cold box mould forming machine ("FVE"),
- Sand reclamation plant,
- Casting carousels,
- Shot blasting machinery,
- Fettling station.

Aluminium Gravity Casting

The Production facility includes a state-of-the-art aluminium gravity casting section. This facility caters for a wide-ranging aluminium product portfolio including substation clamps, vibration dampers, spacer dampers, corona rings, pistol grips, and others.

The equipment and machinery include the following:

- Induction melting and holding furnaces,
- Resistive furnace,
- Various holding furnaces,
- Horizontal casting machines.

IN-HOUSE TECHNOLOGIES

Silicone Rubber Injection Moulding

The Moulding Plant contains a total of fifteen (15) rubber injection moulding machines. These machines are all catered for high-volume production and to the crucial formation of the Vexila composite insulator products. The Moulding Plant is divided into dedicated areas that service specific ranges of HV and MV composite insulators as well as fuse cut-out products.

Fiberglass Reinforced Polymer (FRP) Rod Plant

The FRP rods are a crucial part in the manufacturing of primary products including composite insulators and cut-outs.

This section has the capabilities of:

- Producing 3mm-63.5mm diameter FRP cores
- FRP cores in both Epoxy and polyester variations

Rubber Blending Plant

The in-house rubber blending plant combines the raw materials, including silicone, filler materials and other crucial elements to produce the composite rubber for manufacture. This plant consists of blending machinery, decanting systems and extrusion machinery in compounding of silicone rubber variants.

Toolroom

The Vexila Toolroom is responsible for moulds, dies, jigs and fixtures that are used within the production processes. It features the following sophisticated machinery:

- Computer numerical control (CNC) machining centres
- CNC turning lathes
- Electrical Discharge Machining(EDM) centres, spark and wire eroders
- Various manual machining equipment for material preparation
- Heat treatment furnaces
- Various treatment of surface grinders

IN-HOUSE TECHNOLOGIES

Wireform Plant

The Wireform Plant provides aluminium and steel formed products to service the electrical distribution hardware market. The uses and applications of wireform includes dead-ends, ties, armour rods and other equipment in operation:

• Helical wire-formers,

• Cleaning tank,

• Gluing machine,

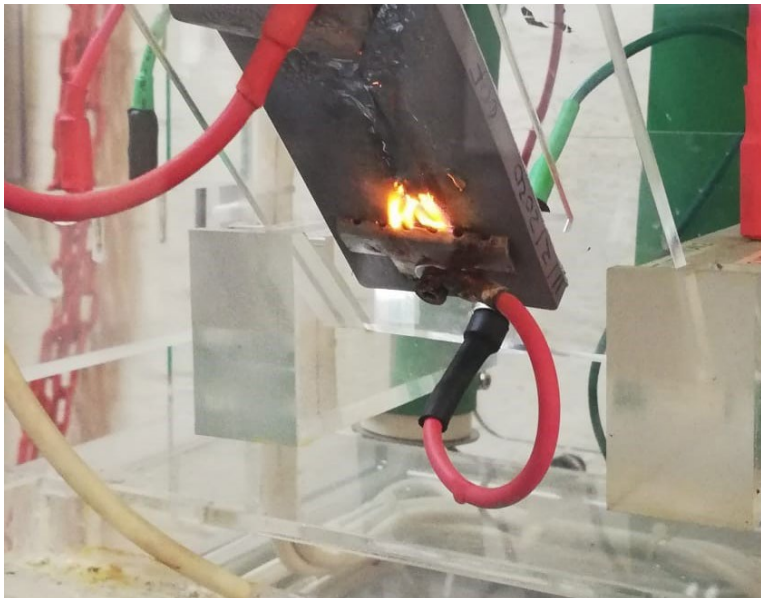
• Gritting machine,

• Cabling machine,

• Bending machine.

IN-HOUSE TESTING FACILITIES

There are 4 laboratories available for incoming, in-process and finished goods inspection of raw material, semi-finished and finished products:



• Mechanical laboratory

• Electrical laboratory

• Metallurgical laboratory

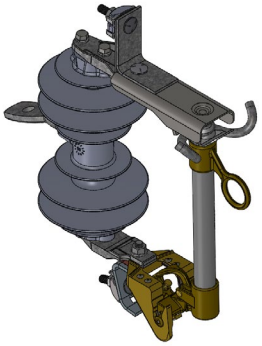
• Polymer laboratory

The following is a summary of the testing offered at each laboratory:

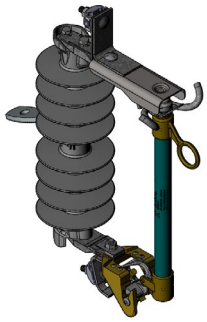
MECHANICAL LABORATORY TESTING	ELECTRICAL LABORATORY TESTING	METALLURGICAL LABORATORY TESTING	POLYMER LABORATORY TESTING
• Tensile strength*	• Inclined plane	• Metallurgical microscopy	• Thermal kinetics (differential scanning calorimeter)
• Cantilever strength	• Rotating wheel dip (dialectric) and salt spray	• AFS determination	• Water absorption
• Oscillation response	• Resistance Verification	• LOI	• Rheology Cure
• Hardness		• Mechanical Tensile	• Dye penetration
• Energy absorption hysteresis		• Spark-Emission Spectrometer	• Tensile strength and hardness (rubber)
			• Specific gravity
			• Viscometer

* Tensile test is also completed as part of factory routine test on each product with various additional in-process machines stationed as part of the moulding process.

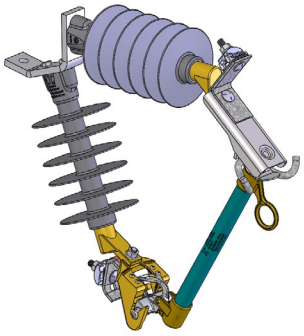
FUSE CUTOUTS



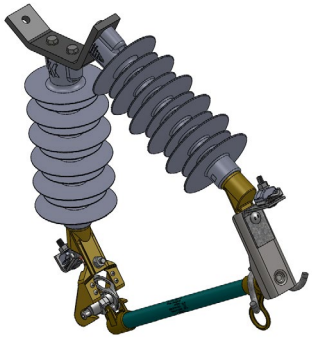
11kV Drop Out Expulsion Fuse
Cutout - 380 mm creepage



22kV Drop Out Expulsion Fuse
Cutout - 480mm creepage

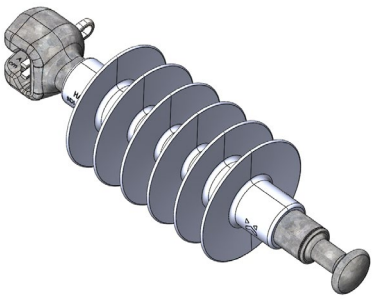


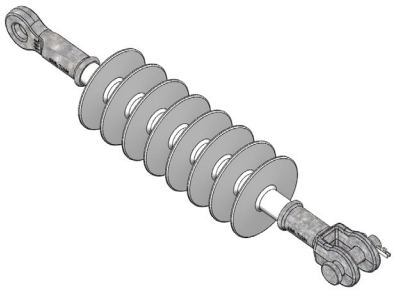
22kV Drop Out Expulsion Fuse
Cutout - 750mm creepage

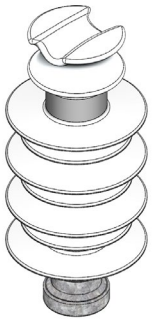


33kV Drop Out Expulsion Fuse
Cutout - 1130 mm creepage

DISTRIBUTION COMPOSITE INSULATORS

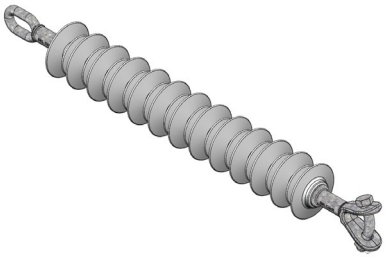
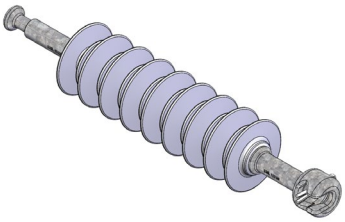
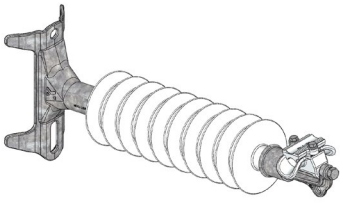






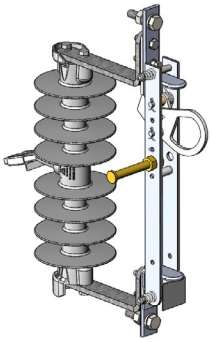
11-33kV Distribution Composite Insulators

DISTRIBUTION COMPOSITE INSULATORS

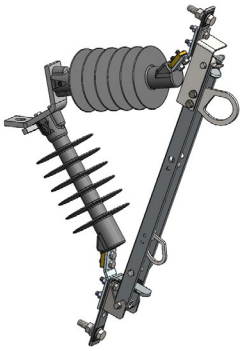




33-66kV Distribution Composite Insulators

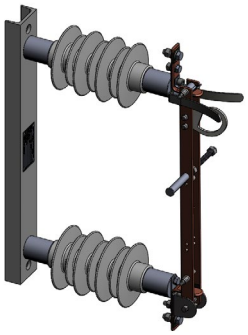
SINGLE-PHASE DISCONNECTORS



11kV, Single Phase Disconnector
(Non - Removable Type)



22kV, Single Phase Disconnector
(Removable Type)

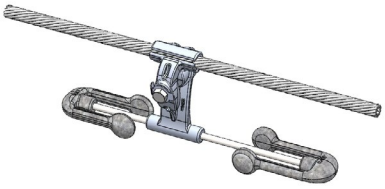


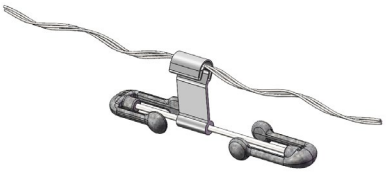
22 kV Single Phase Disconnector
(Non - Removable Type)

ALUMINIUM CAST PRODUCTS

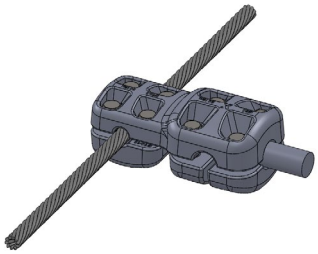

Spacer Dampers (bottled clamps and helical-wire attached)

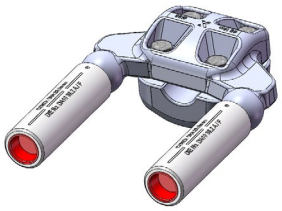
ALUMINIUM CAST PRODUCTS





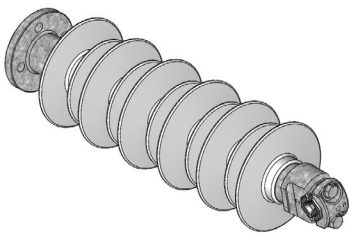
Vibration Dampers (bottled clamps and helical-wire attached)

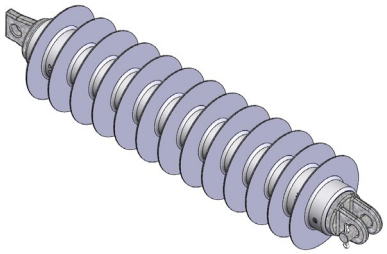




Substation Clamps (for stranded conductor)

RAILWAY INSULATORS

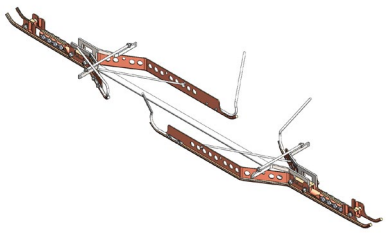




1.5kV - 50kV Railway Insulators

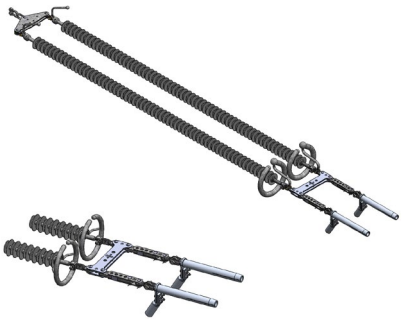
SECTION INSULATORS

25kV AC Neutral Section Insulator



25kV AC Section Insulator

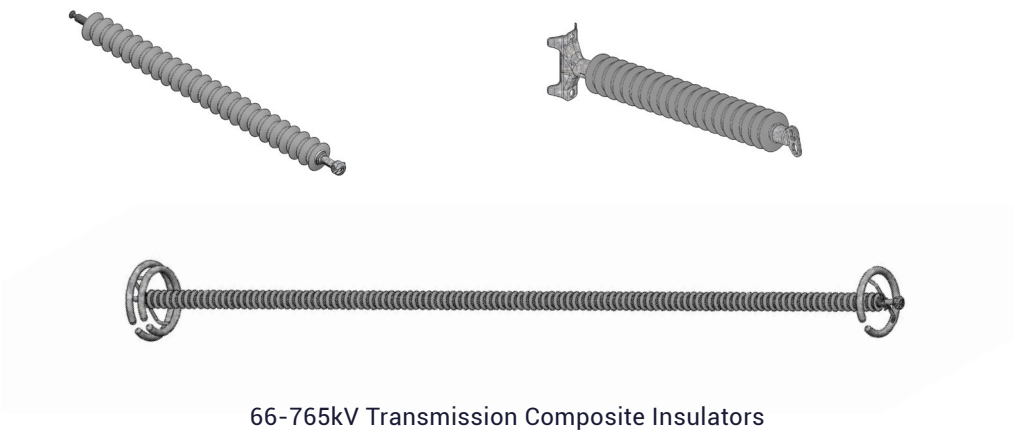
STRING LINE HARDWARE



Typical Tension Line Hardware String

Typical V-suspension Line Hardware String

TRANSMISSION COMPOSITE INSULATORS



66-765kV Transmission Composite Insulators

* All pictures shown are for illustration purposes only. Product may vary due to product enhancement.

PRODUCT CATALOGUE

VEXILA™
ELECTRICAL TECHNOLOGY

TAILORED POWER SOLUTIONS

Vexila's electrical technology solutions are designed for all types of power, including solar, hydroelectric and wind. You can rely on us to provide whatever you need when it comes to electrical technology for overhead lines, ultra-high voltage transmission, overhead electrical conductors, power transformers, cables, switchgear and control gear.

It's the combination of accessible, intelligent solutions, decades of experience, skilled professionals and a sense of purpose that sets Vexila apart.

T +27 33 397 5400
F +27 33 387 6377
E info@vexila.com

9 Willowton Road
Pietermaritzburg 3201
South Africa

vexila.com