ABERDARE

A MEMBER OF HENGTONG GROUP

ENLIGHTENING THE FUTURE

POWER CABLE SOLUTIONS FOR UTILITY SCALE
RENEWABLE ENERGY PROJECTS

Product Range

Wide but Specialised

The Aberdare Group's product range and services are wide but specialised. Tried and tested and carrying South African Bureau of Standards (SABS) marks and complying with International Standards, we stand by our products.

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Medium Voltage XLPE Cables (6.6 kV to 33 kV)
- Individually Screened
- Copper or Aluminium Conductors up to 300 mm² (3 core) & 1000 mm² (Single Core)

Paper Insulated Cables (6.6 kV to 33 kV)
- Screened or belted
- Fully impregnated, general purpose, heavy duty or drained
- Copper or Aluminium conductors up to 400 mm² (3 core) & 1000 mm² (single core)

High Voltage XLPE Insulated Cables (44 kV to 132 kV)
- Corrugated seamless Aluminium (CSA Sheath)
- Copper or aluminium conductors up to 1000 mm² (single core)

Elastomeric Cables (300/500 V to 19/33 kV)
- Flexible Cable (Types HO5 RN-F,HO7 RN-F)
- General Welding Cable
- Mining Trailing Cable (Up to 33 kV)

Overhead Aluminium Conductors
- AAC (All Aluminium Conductors)
- AAAC (All Aluminium Alloy Conductors)
- ACSR (Aluminium Conductor Steel Reinforced)
- Hard Drawn Copper

General Wire Insulated & Bare Copper Wire (300/500 V & 600/1000 V)
- Surfix Cable
- Flat Twin and Earth Cable
- Cabtyre Cable
- Submersible Pump Cable
- Audio cord (Ripcord)
- Welding cable
- Panel Flex Cable
- Illumination Cable
- PVC Nitrile Panel Cable
- Nitrile Trailing Cable
- Bare Copper
- Single Core PVC 1kV Cable
- Single Core XLPE PVC 3.3 kV Cable

Low Voltage Armoured Cables (600/1000 V & 1.9/3.3 kV)
- Bells and Mains Cable
- Multicore Cable
- Single Core Cable

Electrodac Cables (600/1000 V)
- Aerial Bundle Conductor (ABC) (LV & MV)
- Airdac SNE Cable
- Airdac CNE Cable
- SaferDac CNE and SNE Cables

Intermediate Voltage Cables (1.9/3.3 kV)
- Armadac Cable
- Farmadac Cable

Specialised Cables
- Solar PV Cable (1.5/1.5 kV)

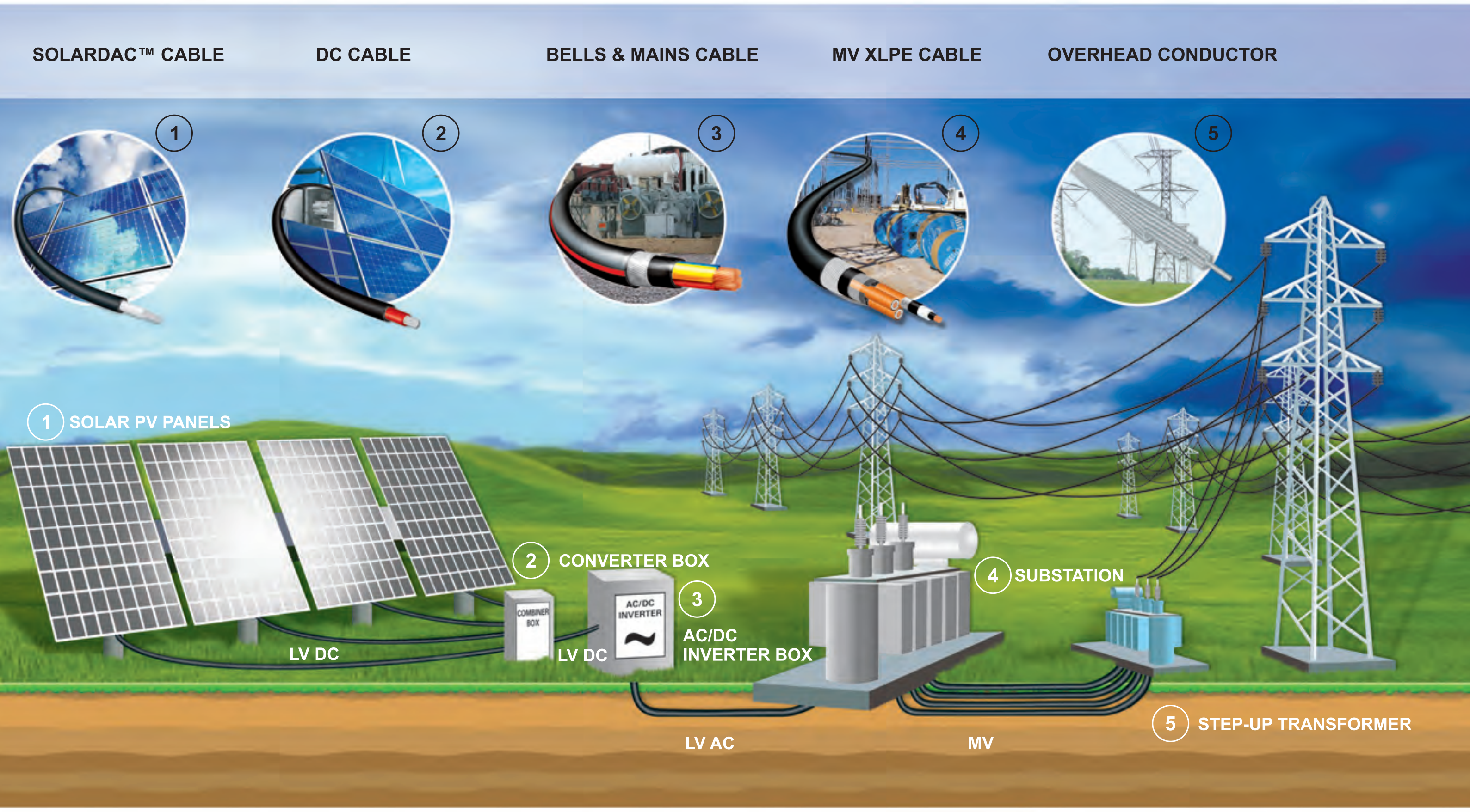
Theft Prevention Technology
- Unique Cable and Conductor Marking

POWER CABLE SOLUTIONS FOR UTILITY SCALE

RENEWABLE ENERGY PROJECTS

Aberdare Cables manufactures a range of cables which are specifically suited to renewable energy power plants and battery energy storage facilities. We also develop specialised cables to our customer's requirements. We offer the following cables for Solar and Wind farms as well as Battery energy storage systems.

CABLES FOR SOLAR POWER PLANT



ENLIGHTENING THE FUTURE

SOLAR PHOTOVOLTAIC

PANEL DC CONNECTION CABLES

(PANEL ARRAY TO COMBINER BOXES)

SOLARDAC™ CABLES : Solar PV single core cables (1.5/1.5 kV DC)

Cable Description

Single core, Class 5 flexible tinned copper conductors, cross-linked EVA insulation, cross-linked EVA sheathed, UV stable Halogen free, Flame retardant, to IEC 62930 or to BS EN 50618.

Application Information

Flexible cables for moveable and fixed installations. These cables are suitable for interconnections of solar photovoltaic panels and connections to combiner boxes and AC/DC inverters and are suitable for both indoor and outdoor use. The SOLARDAC™ range of low voltage DC cables are designed specifically for connection of PV panels and DC applications in compliance with the South African National Standard / IEC 62930 as specified in SANS 10142-1-2.

Intended for use in PV installations in accordance with SANS 10142-1-2. They are intended for permanent use indoor and outdoor. These cables are suitable for free moveable, free hanging and fixed installation. It is also permitted to install the cables in conduit or trunking systems. They are not intended for direct burial.

The DC voltage rating of the cables is 1,5 kV, both between conductors as well as between conductors and earth. The maximum permitted operating DC voltage of the systems, in which the cables specified in IEC 62930 are applied, shall not exceed 1.8 kV.

The AC voltage rating of the cables is 1/1 kV (U_0/U). The rated voltage in and AC system is expressed by the combination of two values U_0 and U specified in (kilo) Volts, where:

- U_0 is the RMS value between any insulated conductor and earth;
- U is the RMS value between any two phases.

The cables are designed to operate at a normal continuous maximum operating temperature of 90 ˚C. The permissible period of use at a maximum conductor temperature of 120 ˚C is limited to 20 000 hours. The expected period of use under normal usage conditions as specified in IEC 62930 is at least 25 years.

Properties:

Cable Sizes	:	1,5 mm² to 16 mm² (larger sizes available on request)
Number of cores	:	1 core
Specification	:	IEC 62930 or BS EN 50618
Temperature Range	:	-40°C to 90°C (maximum continuous conductor operating temperature)
Voltage Rating	:	1.5/1.5 kV DC
Test Voltage	:	15 kV DC (or 6,5 kV AC) for 5 min
Minimum bending radius	:	5 x OD (fixed installation)
Minimum temperature for installation and handling	:	- 25 ˚C
Flame propagation	:	SANS/IEC 60332-1-2
Weathering/UV resistant	:	SANS/IEC 62930 Annex E
Sheath identification	:	black or red.
Packaging	:	100 m coils 300m or 500m drums. Other lengths are available on request.

DC CABLES

FOR UNDERGROUND INSTALLATIONS

(COMBINER BOXES TO INVERTERS)

DCDAC™ CABLES : Single core or two core cables (1.5/1.5 kV DC)

Cable Description

Single core, Class 2 stranded Aluminium conductors, XLPE insulated, MDPE sheathed, UV stable, Halogen free DC cable

Application Information

Unarmoured MDPE sheathed cables for abrasion and impact resistance. These DC cables are suitable for interconnections between solar combiner boxes and inverters and are suitable for both indoor and outdoor use. The DCDAC™ range of low voltage DC cables are designed and tested for long term resistance to DC for applications in compliance with the South African National Standard SANS 10142-1-2.

Intended for use in PV installations in accordance with SANS 10142-1-2. They are intended for permanent use indoor and outdoor and suitable for direct burial. These cables are halogen free and non-flame retardant.

The DC voltage rating of the cables is 1.5 kV, both between conductors as well as between conductors and earth. The maximum permitted operating DC voltage of the systems, in which the cables specified in SANS 10142-1-2 are applied, shall not exceed 1,8 kV.

The AC voltage rating of the cables is 1.9/3.3 kV (U_0/U). The rated voltage in and AC system is expressed by the combination of two values U_0 and U specified in (kilo) Volts, where:

- U_0 is the RMS value between any insulated conductor and earth;
- U is the RMS value between any two phases.

The expected period of use under normal usage conditions is at least 25 years.

Properties:

Cable Sizes	:	25 mm² to 1000 mm²
Number of cores	:	1 core
Specification	:	CS DX 01-112022 (Based on SANS 1507-4, IEC 62930, BS EN 50618)
Temperature Range	:	-15°C to 90°C (maximum continuous conductor operating temperature)
Voltage Rating	:	1.5/1.5 kV DC
Test Voltage	:	15 kV DC (or 6,5 kV AC) for 5 min
Minimum bending radius	:	10 x OD (fixed installation)
Minimum temperature for installation and handling	:	3 ˚C
Flame propagation	:	Not applicable (intended for direct burial)
Weathering/UV resistant	:	UL 1581
Sheath identification	:	black or red.
Packaging	:	Wooden drums (300m or 500m). Other lengths are available on request.

LOW & MEDIUM VOLTAGE
UNDERGROUND AC CABLES

LOW VOLTAGE : Single 3 or 4 core armoured or unarmoured (0.6/1 kV)

Cable Description
Single core and multicore core, Class 2 Copper or Aluminium conductors, XLPE insulation, PVC bedding, AWA or SWA or ECC armoured and PVC sheathed, Flame retardant, to SANS 1507-4.

Application Information
Cables for fixed installations direct buried, in air or in ducts. These cables are suitable for low voltage AC power and control applications.

Properties:

Cable Sizes	:	1,5 mm² to 1000 mm² (1 core)
	:	1.5 to 400 mm^2 (3 or 4 core)
	:	1.5 to 6 mm^2 (multicore)
Number of cores	:	1, 2, 3, 4 core Power and up to 37 core Control cable
Specification	:	SANS 1507-4
Temperature Range	:	-15°C to 90°C (maximum continuous conductor operating temperature)
Voltage Rating	:	0.6/1 kV AC
Test Voltage	:	3 kV AC for 5 min (up to 16 mm^2)
	:	4.5 kV AC for 5 min (from 25 mm^2)
Minimum bending radius	:	10 x OD (fixed installation)
Minimum temperature for installation and handling	:	3 ˚C
Flame propagation	:	SANS/IEC 60332-3-24
Weathering/UV resistant	:	UL 1581
Sheath identification	:	Black with Red stripe.
Packaging	:	500m drums. Other lengths are available on request.

LOW & MEDIUM VOLTAGE
UNDERGROUND AC CABLES

MEDIUM VOLTAGE : Single & three core cables (6.35/11 kV, 12.7/22kV and 19/33kV)

Cable Description
Single and three core, Class 2 stranded Aluminium or Copper conductors, cross-linked XLPE insulation, copper tape screened, MDPE or PVC sheathed, longitudinally water blocked to SANS 1339.

Application Information
Fully water blocked cables for improved reliability and longer life with high level of abrasion and impact resistant from the MPDE outer sheath. These cables are suitable for medium voltage power applications direct buried or installed in air for connection to transmission substations or bare overhead lines.

Properties:

Cable Sizes	:	25 mm² to 1000 mm² Aluminium and Copper
Number of cores	:	1 and 3 core
Specification	:	SANS 1339 (equivalent to IEC 60502-2)
Temperature Range	:	-15°C to 90°C (maximum continuous conductor operating temperature)
Voltage Rating	:	6.35/11 kV, 12.7/22kV or 19/33kV
Test Voltage	:	22, 44 and 66 kV AC respectively for 11, 22, 33kV for 5 min
Minimum bending radius	:	20 x OD (fixed installation)
Minimum temperature for installation and handling	:	3 °C
Flame propagation	:	SANS/IEC 60332-3-24 (PVC only)
Weathering/UV resistant	:	UL 1581
Sheath identification	:	Black with Red stripe (PVC), Black (MDPE)
Packaging	:	Wooden drums (300 or 500m lengths)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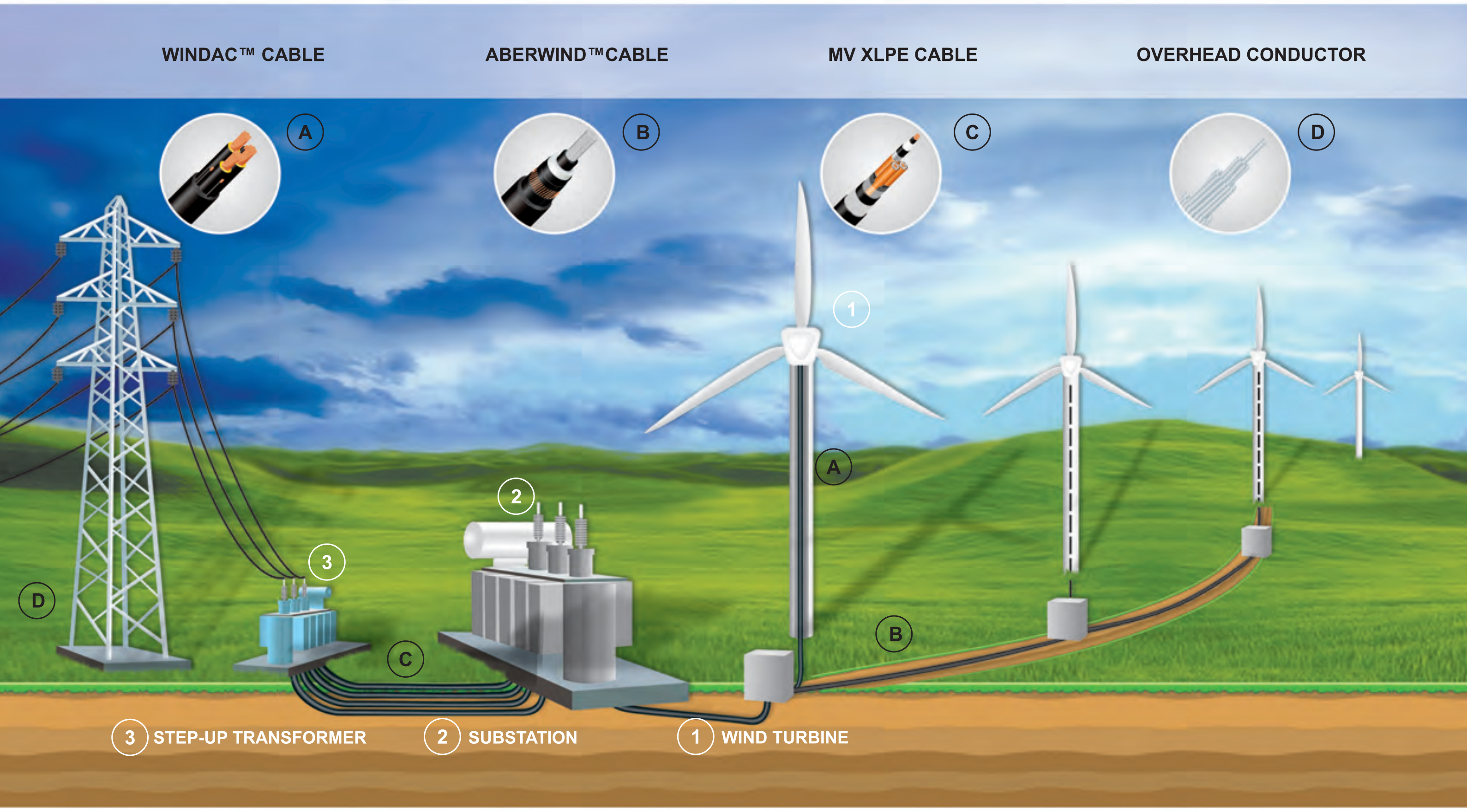
POWER CABLE SOLUTIONS FOR UTILITY SCALE

RENEWABLE ENERGY PROJECTS

Aberdare Cables manufactures a range of cables which are specifically suited to renewable energy power plants and battery energy storage facilities. We also develop specialised cables to our customer's requirements. We offer the following cables for Solar and Wind farms as well as Battery energy storage systems.

The following cable applications are catered for:

CABLES FOR WIND FARMS



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ABERWIND® AC MV

SINGLE CORE CABLES FOR WIND TOWER INTERCONNECTORS

MEDIUM VOLTAGE : Single core cables (12.7/22kV and 19/33kV)

Cable Description

Single core, Class 2 stranded Aluminium conductors, cross-linked XLPE insulation, copper wire screened, HDPE sheathed, graphite coated, longitudinally water blocked to SANS 1339.

Application Information

Aluminium conductors for cost effective solution, fully water blocked cables for improved reliability and longer life with high abrasion and impact resistant HPDE outer sheath. Graphite coated for sheath integrity confirmation pre and post laying. These cables are suitable for collectors interconnecting wind turbines and substations in wind farms. Cables as manufactured in sets to the specific length requirements dictated by the lay-out.

Properties:

Cable Sizes	:	25 mm² to 1000 mm² Aluminium or Copper
Number of cores	:	1 core
Specification	:	SANS 1339 (equivalent to IEC 60502-2)
Temperature Range	:	-15°C to 90°C (maximum continuous conductor operating temperature)
Voltage Rating	:	12.7/22kV or 19/33kV
Test Voltage	:	44 and 66 kV AC respectively for 22, 33kV for 5 min
	:	10 kV DC for 1 min (Outer sheath)
Minimum bending radius	:	20 x OD (fixed installation)
Minimum temperature for installation and handling	:	3 ˚C
Flame propagation	:	Not Applicable (Direct buried)
Weathering/UV resistant	:	SANS/IEC 62930 Annex E
Sheath identification	:	Black.
Packaging	:	Wooden drums (custom lengths in sets of three)

WINDAC TORSION RESISTANT

MV WIND TOWER CABLES

(IN DEVELOPMENT)

MEDIUM VOLTAGE : Specialised Elastomeric cables
(12.7/22kV or 19/33kV) designed to OEM standards to withstand torsional forces during operation in wind turbines.

POWER CABLE SOLUTIONS FOR UTILITY SCALE

RENEWABLE ENERGY PROJECTS

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The following cable applications are catered for:

CABLES FOR UTILITY BATTERY ENERGY STORAGE SYSTEMS

BATDAC® DC CABLE

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BATDAC® DC

SINGLE CORE HALOGEN FREE FLEXIBLE ELASTOMERIC CABLES

(BATTERY BANK CONNECTION TO INVERTERS)

LOW VOLTAGE DC : Single Core Cables (1.5/1.5 kV DC)

Cable Description

Single core, Class 5 flexible tinned copper conductors, EPM insulated, EVA sheathed Halogen free elastomeric cable to CS DR 01-102020

Application Information

Tinned copper flexible conductor for low resistance connections and flexibility. Halogen free EPM insulation and EVA sheathed cable which removes the risk of acid gas emission during fire, which can cause extensive corrosion related damage to plant. Cables are designed to fit OEM specific battery connections and are suitable for connection of battery banks to inverters in surface mounted applications.

Properties:

Cable Sizes	:	25 mm² to 240 mm² Tinned Copper
Number of cores	:	1 core
Specification	:	CS DR 01-102020 (based on RS EE SP 015)
Temperature Range	:	-15°C to 90°C (maximum continuous conductor operating temperature)
Voltage Rating	:	1.5/1.5 kV
Test Voltage	:	6.5 kV for 5 min
Minimum bending radius	:	6 x OD (fixed installation)
Minimum temperature for installation and handling	:	3 °C
Flame propagation	:	SANS/IEC 60332-1
Weathering/UV resistant	:	SANS /IEC 62930 Annex E
Sheath identification	:	Black, Red, Blue.
Packaging	:	Wooden drums (300m and 500m)

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HTGD HENGTONG

Safehouse
The power to protect

ISO 9001 SABS

POSSIBLE SPECIFICATION CHANGES:

Aberdare reserves the right to change product specifications from time to time to effect improvements and/or enhancements and accepts no liability arising from any differences between the published parameters of this brochure and the finished product, unless by prior written agreement.