ELECTROUSTIC
DISTRIBUTION OF CONNECTIVITY SOLUTIONS

LAPP GROUP

Cable and Solutions for Renewable Energy Applications

Solar Energy – Enhance the power of the sun

Using the power of the sun to generate electricity has become increasingly popular and in some countries a necessity. Photovoltaic systems are being installed all over the world; therefore the components used must able to withstand extreme temperature ranges and UV exposure. The growth in the UK market has been remarkable, however, there is confusion in the industry as some installations are being fitted with unsuitable products like Rubber insulated cables (e.g. **HO7RN-F**). While these cables may perform their function for a short time, exposure to severe temperature variations in solar applications will cause the cable to become brittle, and in some cases even lead to arcing, generating temperatures in excess of 2500°C.

Lapp Group uses only high quality insulation and outer sheath compounds for our **ÖLFLEX® SOLAR** cables to ensure that products will survive the harshest of conditions. **ÖLFLEX® SOLAR** cables are tested and certified to national and international approvals not only by our own laboratory but also by independent testing institutes. The many benefits of our components make them popular with installers, as not only are they UV resistant, but also resistant to extreme weather and temperature conditions.

ÖLFLEX® SOLAR XLS

ÖLFLEX® SOLAR XLS is an electron beamed cross-linked halogen free range of cables which offers weather, abrasion and UV resistance for permanent outdoor use. They are ideally suited for the connection of the solar modules to the AC/DC inverter.

Cable Make-Up

Cores of fine wire strands of tinned copper with an electron beam cross-linked copolymer insulation. Cores colour coded – Black, red or blue. Outer sheath of black electron beam cross-linked copolymer.

TECHNICAL DATA

Temperature range flexing:	-40°C up to +100°C max.
Min. bending radius fixed:	4 x cable diameter
Working Voltage:	AC: 600/1000V
	DC: 900/1500V
Flame Retardant:	acc. to IEC 60332-1-2
Halogen-free:	acc. to EN 50267-2-1/-2, EN60684-2
Ozone Resistant:	acc. to EN 50396
Weather/UV Resistant:	acc. to HD 605/A1

ÖLFLEX® SOLAR XLS-T

ÖLFLEX® SOLAR XLS-T is a twin "shotgun" version of the standard **ÖLFLEX® SOLAR XLS** to allow ease of installation.

ÖLFLEX® SOLAR XLR - TF

ÖLFLEX® SOLAR XLR-TF is a TUV approved electron beamed cross-linked halogen free range of cables which have reduced outer diameters for installations of confined space. They are weather, abrasion and UV resistance for permanent outdoor use. They are ideally suited for the connection of the solar modules and as a connection to the AC/DC inverter. Available in either red, blue or black core insulation with a black outer sheath.

TECHNICAL DATA

Temperature range flexing:	-40°C up to +120°C max.
Min. bending radius fixed:	4 x cable diameter
Working Voltage:	AC: 600/1000V
	DC: 900/1500V
Flame Retardant:	acc. to IEC 60332-1-2
Halogen-free:	acc. to EN 50267-2-1/-2, EN60684-2
Ozone Resistant:	acc. to EN 50396
Weather/UV Resistant:	acc. to HD 605/A1
Approvals:	TUV Type approved (2PfG 1169/08.07)

ÖLFLEX® SOLAR V4A

A robust solar cable with a high grade steel wire braid to protect against mechanical damage and also protects against rodents and even termites. The armour is a High grade (V4A) steel braiding.

TECHNICAL DATA

Temperature range flexing:	-40°C up to +100°C max.
Min. bending radius fixed:	5 x cable diameter
Working Voltage:	AC: 600/1000V
	DC: 900/1500V
Flame Retardant:	acc. to IEC 60332-1-2
Halogen-free:	acc. to EN 50267-2-1/-2, EN 60684-2
Weather/UV Resistant:	acc. to HD 605/A1

NYY/NAYY

Lapp NYY (copper conductors) and NAYY (aluminium conductors) cables are VDE approved, black PVC jacketed, power and control cables, available in single core or multi-core versions. These power cables are designed for energy supply in cable ducts, power stations, distribution boards, industrial applications and subscriber networks. The larger conductor cross sections are used to transmit high power loads between the individual panels and as a connection to the DC/AC inverter of large photovoltaic plants. NYY and NAYY cables can be installed in open air, underground, in water as well as indoors.

TECHNICAL DATA

Temperature range fixed:	-40°C up to +70°C max.
NYY	-30°C up to +70°C max.
NAYY	12 x cable diameter
Min. bending radius fixed:	AC: 600/1000V
Working Voltage:	DC: 900/1500V

WIND ENERGY

It is now a well-known fact that fossil fuel supplies will run out and that the future lies in renewable, environmentally-friendly energy. As a result, wind energy has developed into a significant market. In the field of wind energy production we are constantly developing our products as well as creating brand new ones. A current example of this is the **ÖLFLEX® TORSION FRNC** for highly flexible applications.

The **ÖLFLEX® TORSION FRNC** is a genuine all-rounder – it is cold-, torsion- and oil-resistant and certified for use in North America. It is particularly suited for highly flexible applications like the "drip loop," which connects the static tower to the rotating nacelle of the wind turbine. These cables are used to connect generators, control units and moving machine components, which are subject to continuos torsional flexing.

The key highlights of the new **ÖLFLEX® TORSION FRNC**:

- Torsion-resistant up to +/- 150 degrees per metre.
- Temperature range from -40°C to +90°C.
- Halogen-free and highly flame-resistant (IEC 60332-3-24 compliant).
- UL/CSA approved.
- Screened version protects against electromagnetic interference
- Complies with the strict OIL RES II oil resistance test.
- Suitable for use in voltage classes up to 0.6/1 kV.

H07BN4-F

Highly flexible and torsion-resistant single core cable, specially designed for use in windmill towers. The **H07BN4-F** cable is torsion resistant up to ±150°/m and resistant to a variety of transmission oils. Available in core sizes from 95mm² up to 400mm².

UNITRONIC® BUS CAN

UNITRONIC® BUS CAN is a data cable for CAN (Controller Area Network) field-bus system according to ISO 11898 as well as for high performance data networks with 120Ω nominal impedance. **UNITRONIC® BUS CAN** is ideal for use internally in wind turbines on the slip rings where no torsion resistance is required.

OLFLEX® CONTROL TM/TM CY

A control cable that has multiple approvals for a range of applications in products being exported to USA and Canada. The **OLFLEX® CONTROL TM** cable has WTTC (USA Wind Turbine Tray Cable) approval allowing for open wiring on tray and exposed runs therefore saving costs on the cable management. A screened version with a foil and braid is available for use in high electromagnetic interference areas.

A strong connection is the best protection against vibration

Vibrations occur during the operation of a wind turbine which should not be underestimated and, depending on age and wear of the turbine, can grow in intensity and cause stress on the individual components of the turbine. The cable connection is a factor which is often neglected. Vibrations can subject a cable to considerable stress and faults can then occur to the cable and therefore the installation. These faults can be avoided by using optimised products from the Lapp range. Our **SKINTOP®** gland range have a patented vibration protection, optimal strain relief and are IP68 rated.

SKINTOP® ST-M

Manufactured from tough nylon materials the Lapp range of **SKINTOP®** glands offer many advantages over conventional stuffing glands. They are used in substantial volumes on panels, switches, and control equipment and within the wind turbine and photovoltaic industries. The glands feature a unique patented anti-vibration lock and due to their high IP rating (IP68 & IP69K) can be used in a variety of dry or wet industrial environments. Available in thread sizes from 12mm up to 63mm covering outer diameters from 1mm to 45mm.

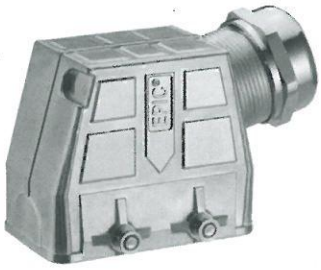
SKINTOP® COLD

The **SKINTOP® COLD** is a nickel-plated brass cable gland with a metric connecting thread which combines high quality with regard to consistency and reliability. It is especially designed for use in areas with a high demand on special mechanical stability and cold resistance. The **SKINTOP® COLD** will work in extreme negative temperatures down to -70°C as well as up to +100°C.

SKINTOP® MS-M BRUSH

SKINTOP® MS-M BRUSH is a nickel-plated brass cable gland especially designed for copper-screened cables, used to achieve a low resistance screen contact, strain relief and high protection class. The **SKINTOP® MS-M BRUSH** makes contact with the screen much faster than any other system. Thread sizes are available from 25mm up to 110mm.

EPIC® ULTRA



The new rectangular connector housing is absolutely scratch, impact and corrosion-resistant, making it ideal for use in harsh conditions, e.g. on offshore wind turbines and biogas power plants. When combined with the **SKINTOP® MS-M Brush** cable gland, the connector is absolutely EMC-resistant, as the nickel-coated housing forms an all-over metallic shell that functions like a Faraday cage. This is especially important for the transmission of sensitive BUS signals. Another special featured is that, when connected, the housing provides a safe, 360°, metallic conductive connection, and can also be connected to standard housing units if required. If users require safer and better-protected connections, they don't need to buy everything new, instead they can upgrade to the new housing units. The **EPIC® Ultra** housings are available in a range of hoods, panel mount and surface mount bases and suit all the existing **EPIC®** inserts.

Preassembled Cable Harnesses for Wind Turbines

The Lapp Harnessing and Solutions Service allow our customers to utilise the wide range of products Lapp manufacture. This service enables Lapp to become the sole supplier for all your cabling, gland and connector needs therefore reducing costs from your project. Please contact us for further information.

For more information on all our products suitable for the renewable energy markets, please visit our website www.lappgroup.co.uk

Or contact your nearest sales office

London: +44 (0)20 8758 7800 **Glasgow: +44 (0)141 950 1061** **Dublin: +353 (0)1 623 7077**

email: sales@lapplimited.com