We do more than we say

Empowering businesses through technology

Who We Are

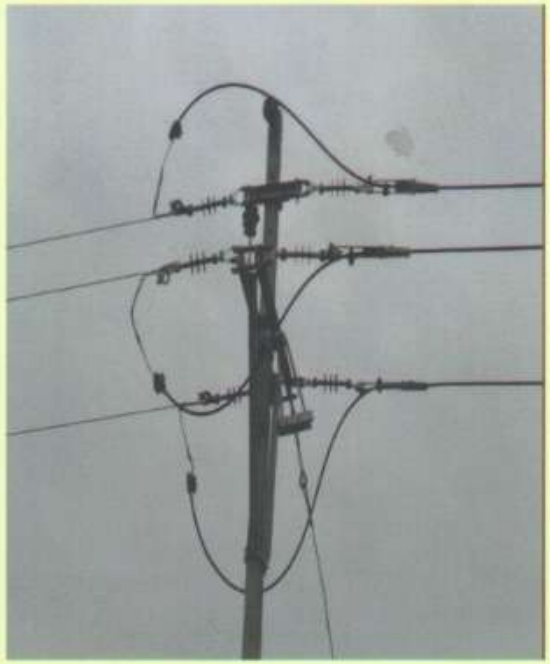
About Us

Nagul Power Developers founded 2010, is one of the best established company in south India in the sundry fields of Electrical and Civil Engineering. We offer value added products and services in Power Distribution works and civil constructions.

COVERED CONDUCTOR

INNOVATIVE CABLES

It always seems impossible until it's done . If you can dream it , we can do it for you .



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BARE CONDUCTOR CHALLENGES FACED BY UTILITIES

- ❖Outages due to temporary tree contact
- ❖ Conductor slashing due to corrosion
- ❖ Reduced Right of Way (ROW)
- ❖Electromagnetic field effect on electronic Surveillance
- ❖ Safety (Road /Rail/River crossings/ Slums/ Congested residential areas etc.)

Why Water tight Conductor

If water seeps into a non water tight Covered Conductor through an open end or by any means, water that Entered into the CC will travel to the sag point and will remain there.

As water will not evaporate out due to the covering, it will Eventually corrode the conductor and cause an early conductor break.

Longitudinally Water Tight conductor will not allow water to penetrate inside the conductor.

ANTI TRACKING PROPERTIES

Anti – Tracking Cable jacketing has been specially designed to meet the outdoor conditions & performance of medium voltage power cables. The material has an excellent resistance arc, corrosion inhibitor, fungicide activity, oil resistance, weather conditions like humidity, pollution,, presence of salt in atmosphere etc.

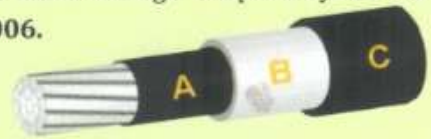
APPLICABLE STANDARDS

SSEN 50397-1, BS EN 50182, IS 398-2, IS 398-4, IEC 61089

Solution is

Medium Voltage Covered Conductor

Construction of Covered Conductor: Covered conductor consist of a conductor insulated by a covering made of insulating materials as protection against accidental contacts with other covered conductors and with grounded parts such as tree branches, etc. In comparison with insulated conductors, this covering reduced thickness, but is sufficient to withstand the phase to earth voltage temporarily. **SS EN 50397-1:2006.**



BASIC FETURES

A. Conductor : Longitudinally water tight ACSR/ AAAC/AL-7/AL-59 or high temperature conductor

B. Conductor Screen: Water swellable semi-conducting tape (if required) and extruded semi-conducting compound

C. Inner Insulation: XLPE

D. Outer Insulation: UV protected and anti tracking black coloured XLPE / HDPE

XLPE/ HDPE Insulations

✓XLPE, Cross-linked polyethylene as opposed to PVC has improved electrical properties.

✓This means that there is no branching, thus its structure is more closely packed.

✓These properties include higher resistance to distortion at elevated temperatures.

✓This results in it having higher density and chemical resistance.

✓ XLPE can be implemented safely with a conductor temperature of 90 °C, hence increasing the useful current rating.

✓It is opaque and harder so can withstand higher temperatures.

✓ HDPE, High Density Polyethylene is prepared the catalytic process from ethylene.

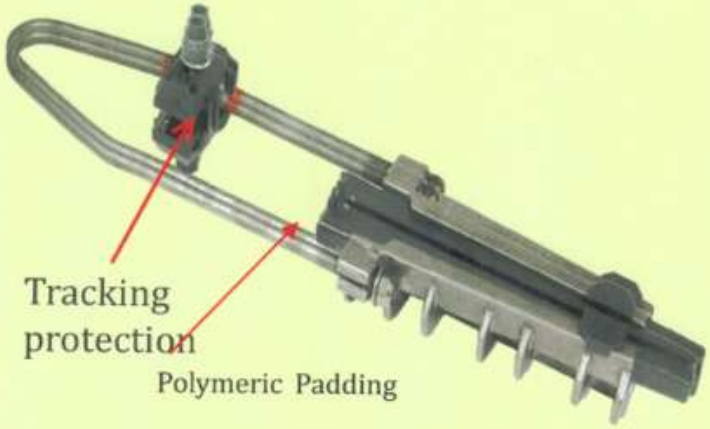
✓ The XLPE is currently being used widely for the production of electrical conductors because of its lower cost and agreeable electrical properties

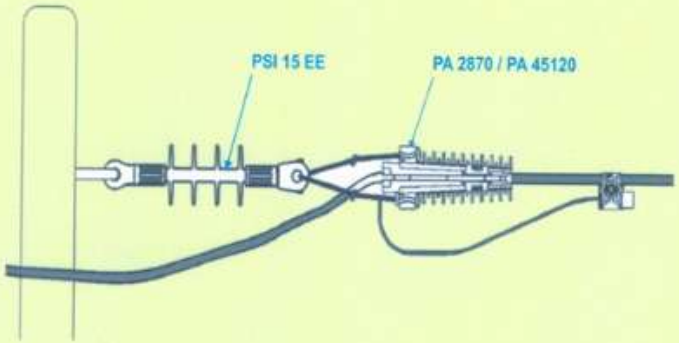
Wedge Type Anchoring clamp

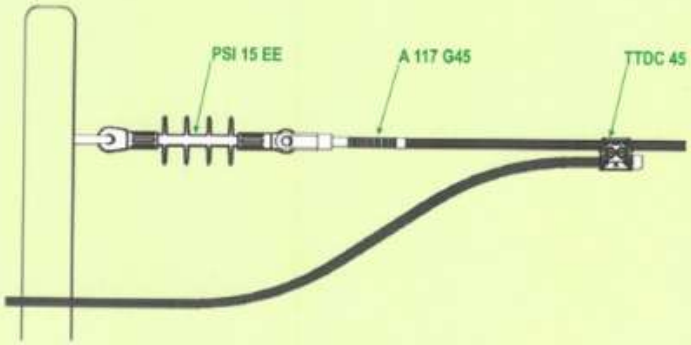
✓Ready to use clamp for easy installation without opening components

✓Thermoplastic wedges ensuring the right tightening of the cable without damaging the outside sheath

✓These clamps are automatically fitted with a tracking protection kit







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Applications of Covered Conductor

A.Ideal and safer solution for installations over RIVER / LAKE / RAILWAY / ROAD CROSSINGS and in polluted areas.

B.Can be used as Jumpers from LV/MV distribution lines to transformer .

C.Safety and Health for the Human beings as it has reduced electromagnetic fields (due to less space between conductors). Field reductions can be as much as 30 per cent.

D. In Costal areas or polluted areas, conductor corrosion is prevented because of covering. Therefore no adverse increase in power loss over a period of time.

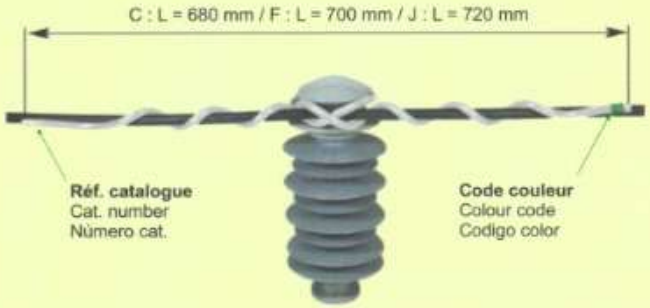
Pre Insulated Junction Sleeves for MVCC

Pre insulated aluminum alloy junction sleeves for AAAC, AAC or ACSR covered conductors ensures Connection water-tightness assured by a soft joint.

Piercing Connectors for MVCC

Waterproof connector equipped with galvanized bolts and double shearhead technology. Piercing is simultaneous on main and tap and reconstitute cable covering

Suspension clamp/tie



Leakage Current on surface of the Covered Conductors:

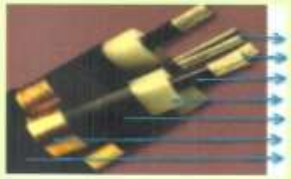
Voltages	Leakage current on surface of MVCC in mAmps	Maximum permitted Leakage current as per EN 50397 in mAmps	Maximum a human being can withstand without affecting heart in mAmps
11 KV	0.12	1.0	10.0
33KV	0.59		
66KV	0.80		

MVCC TECHNICAL PARTICULARS

S.No	Conductor Name	Conductor Cross Section in Sq mm	Max Operating Temp in °C	Current Rating in Amps at 40°C Ambient temp.
1	Weasel Conductor	35	80	142
	Rabbit Conductor	50	80	206
	Raccoon Conductor	80	80	245
	Dog Conductor	100	80	320
	Coyate Conductor	120	80	345

Advantages of Covered Conductor Over AB Cables

Sl.No	Details	Aerial Bunched Cable	Covered conductor (MVCC) as per EN 50397-1	Remarks
1	Applicable standard	No separate standard but generally as per IS : 7098-2	As per EN 50397-1 / 2006	EN 50397-1 is the European standard for medium voltage covered conductors above 1 kV to 33kV which is followed by European union nations (CENELEC members). Aerial bunched cables are manufactured generally as per IS: 7098 Part 2.
2	Cable design aspects	Aerial bunched cables consists of phase conductors which are fully insulated and sheathed. It consists of semi-conducting conducor screen, XLPE insulation, semi-conducting insulation screen, metalic screen of copper tape and PVC or Polyethylene outer sheath.	MVCC has simple construction with insulation comprising of semi-conducting conductor screen, XLPE inner insulation and UV resistant, track resistant and weather resistant outer insulation.	Aerial bunched cables are heavy and bunched together around a messenger conductor. MVCC is to be installed with phase to phase separation.
3	Messenger Conductor	Aerial bunched cables consists of AAAC or Galvanized Steel messenger conductor around which the phase conductors are twisted. Messenger conductor carries the weight of entire AB cable.	MVCC do not require separate messenger conductor. Each phase conductor is self supporting - either Aluminium alloy or ACSR.	This enables MVCC to be installed on much higher span lengths whereas ABC requires supporting poles at much closer spans. This increases installation cost of ABC.
4	Cable weight and diameter	Aerial bunched cables are heavy as they consists of more insulating layers and insulation thickness is more. Additionally each core has a metallic layer and an outer sheath. They have much higher overall diameter compared to MVCC.	MVCC are light in weight and has much less diameter.	MVCC can be installed similar to bare conductors with higher span lengths.
5	Advantages	Aerial bunched cables are prefered where human safety is a major concern and spacing between conductor is not available. They are used for comparatively smaller distances.	MVCC is prefered in following areas - 1) In costal areas where bare conductors are prone to corrosion. 2) In populated areas where direct contact of people with live line is not expected. 3) In forest areas and places where safety for birds and animals iare a concern. 4) In places where power interuption due to trees touching bare lines is an issue. 5) For long distance electricity distribution and for river crossings, road/rail crossings etc.	MVCC is a viable solution for reduced right of way where ABC could be a costly option. In ecologically fragile areas like sancturies, reserved forest etc, ABC may not be permitted due to the increased human interference it requires for installation, maintenance etc.
6	Accessories	Aerial bunched cables require special clamps for stringing. They need special terminations and joints similar to underground cables. Branching of line is difficult and installation is expensive.	MVCC utilizes most of the accessories for bare overhead lines. Only few special accessories for anchoring and tieing on insulators are required. Jointing and taping is easy using jointing sleeves and insulation piercing connectors.	Installation of MVCC is easy and economical compared to ABC.
7	Maintenance	Since aerial bunched cables have outer sheath over each phase, fault location is difficult and requires special equipments to pin point faults.	MVCC being installed with spacing, fault location is easy and do not require any special equipments. Even part of one phase conductor can be replaced which is not possible in ABC.	MVCC requires very less maintenance and this adds to its lower life time ownership cost.



Messenger Conductor
Aluminium phase conductor
Semi-conducting conductor screen
XLPE insulation Semi-conducting insulation screen
Copper tape
PVC outer sheath

1. *Longitudinally water tight conductor*
2. *Extruded semi-conducting screen*
3. *XLPE insulation*
4. *HDPE / XLPE having UV production and anfi-tracking properties*

Sources of Interruption in India's distribution utilities, which can be addressed by Covered






OUR INSTALLATIONS







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