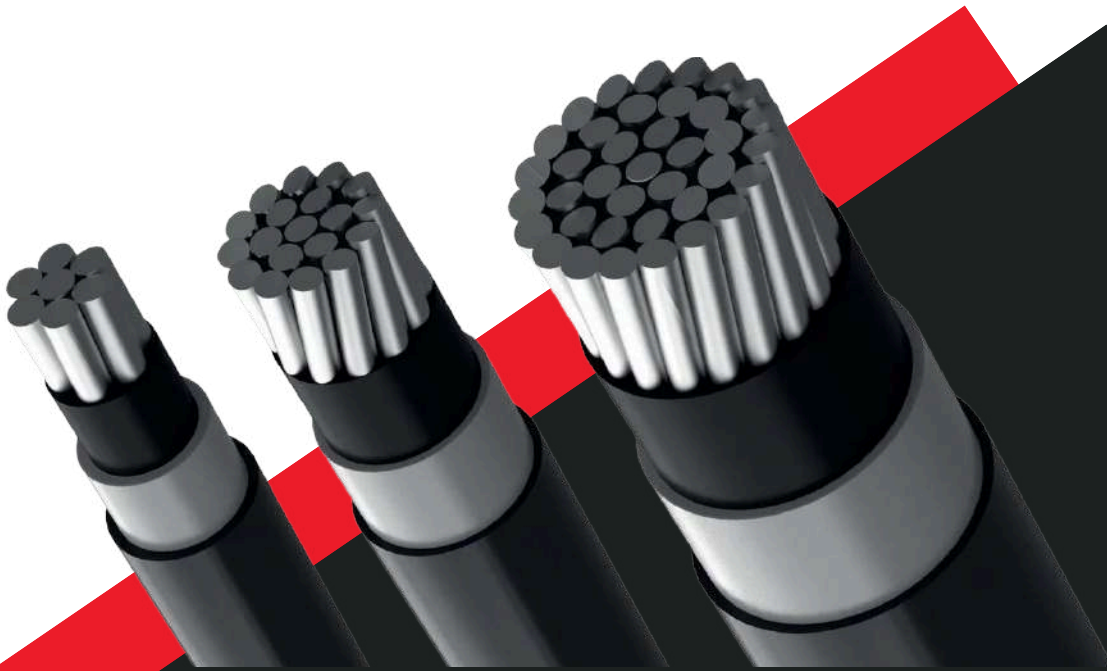




Eight Decades of Trust & Innovation

# MEDIUM VOLTAGE COVERED CONDUCTOR (MVCC)

with E-Beam Process passed





Transmission  
& Distribution



Renewable  
Energy



Power  
Generation



Exploration



Mobility



Defence



Manufacturing



Infrastructure



Harnessing

## ABOUT US

- Nicco Cables is a 80 year old brand based in India
- Nicco specializes in manufacturing wide range of Wires and Cables
- Nicco has an in-house R&D facility
- Nicco specializes in Compound manufacturing and has a dedicated team for Compounds
- Nicco is the first Company in India to install a 3 MeV Electron Beam Plant form USA for manufacturing irradiated cables
- The manufacturing plant covers an area of 450,000 sq.ft.
- National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited Testing laboratory at plant

## NICCO PRODUCES A WIDE RANGE OF CABLES

- MEDIUM VOLTAGE COVERED CONDUCTOR (MVCC)
- Solar & Windmill Cables
- Ethernet Cables (Cat-5e, Cat-6a, Cat-7)
- LT & HT Power & Control Cables (Upto 66 kv)
- Elastomeric & Silicon Cables (Upto 15 kv) for various application
- PTFE, ETFE & FEP Cables
- Flexible Trailing Cables - H07-RNF
- Ethernet Polyurethane Cables
- Rolling Stock Cables
- Ship Building Cables
- Fire Survival Cables (For Nuclear Reactor)
- TREE WIRE / SPACER Cables - 3 layer Track Resistant (upto 35kv)
- Hybrid / Composite and Underwater Cables
- Pressure Tight Cables
- Overhead transmission Conductors (AAAC, ACSR, AAC, ACAR , AL-59)
- Wire and Cable Harness - Railway Cable Harness, EV Cable Harness, Aerospace Cable Harness, Navy Cable Harness, Windmill Cable Harness

**UV RESISTANT  
& ANTI - TRACKING**  
PROPERTIES OF COVERED  
CONDUCTOR WITH  
**E - BEAM TECHNOLOGY**  
PASSED **& CPRI TYPE TESTED**



## **MEDIUM VOLTAGE COVERED CONDUCTOR (MVCC):**

### **CONDUCTOR:**

Medium Voltage Covered Conductors are developed to improve the reliability of the distribution of electricity. The concept of covered conductor has proven to be extremely functional and reliable. It consists of a conductor surrounded by a covering made of insulating material as protection against accidental contacts with other covered conductors and with grounded parts such as tree branches, etc. Medium Voltage Covered Conductors are produced in voltage rating between 6.6KV to 33KV. The applicable standards for MVCC are IEC: 61089/ IS: 398 part - II/BS EN: 50182/50397.



### **CHALLENGES FACED BY OVERHEAD CONDUCTOR:**

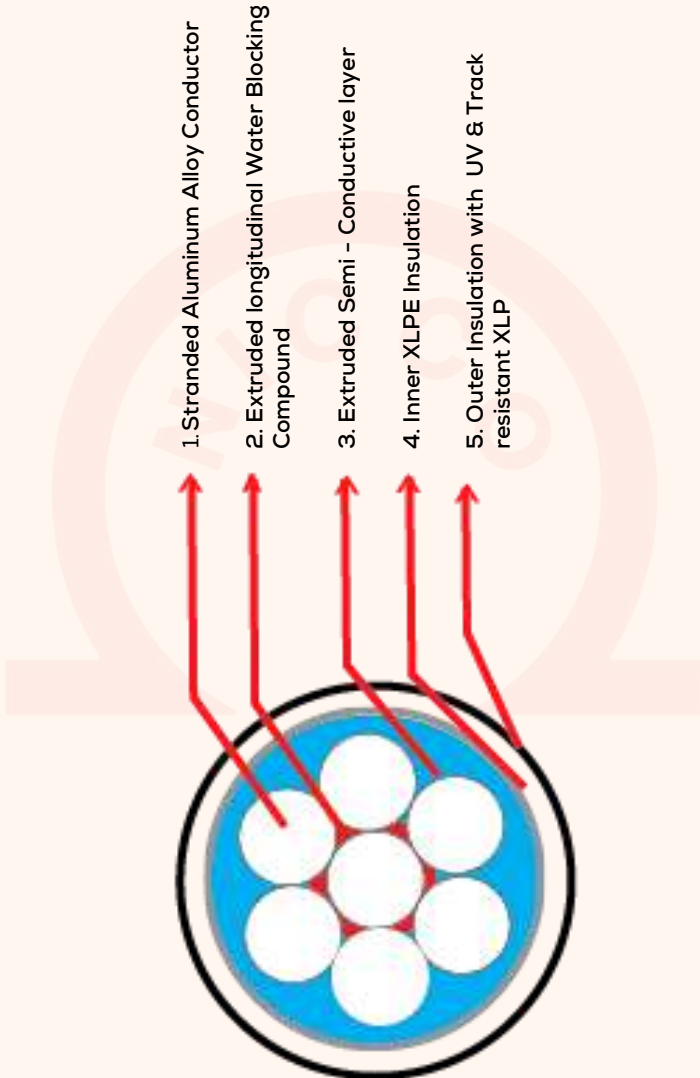
- Conductor Slashing Due to Corrosion
- Right of Way ( ROW )
- Safety ( Road / Rail / River crossing / Slums ) for congested area
- Outage due to temporary tree contact
- Electromagnetic field effect on electronic surveillance
- Frequent Break downs due to high velocity wind and Forest fire/ Bush fire
- Conductor flashing and limited capacity
- High space required for erection and operations

## CLIENTS (APPROVED AND SUPPLIED TO)

- Uttarakhand Power Corporation Limited (UPCL)
- Maharashtra State Electricity Distribution Company Limited (MSEDCL)
- Tamilnadu Generation & Distribution Corporation (TANGEDCO)
- Teleangana State Northern Power Distribution Company Limited, TGNPDCL
- Gujarat Urja Vikas Nigam (MGVCL/DGVCL/PGVCL/UGVCL/GETCO)
- Tripura State Electricity Corporation Limited (TSECL)
- Bengaluru Electricity Supply Company Limited (BESCOM)
- Manipur State Power Distribution Company Limited (MSPCL)
- Meghalaya Power Distribution Corporation Limited (MePDCL)
- Dept. of Power, Govt. of Nagaland (DoPN)
- Dept. of Power, Govt. of Sikkim
- Power & Electricity Dept., Govt. of Mizoram
- Tata Power Central Odisha Distribution Limited (TPCODL)
- Tata Power Northern Odisha Distribution Limited (TPNODL)
- Tata Power Southern Odisha Distribution Limited (TPSODL)
- Tata Power Western Odisha Distribution Limited (TPWODL)
- Chattisgarh State Power Distribution Company Limited (CSPDCL)
- South Bihar Power Distribution Company Ltd. (SBPDCL)
- North Bihar Power Distribution Company Ltd. (NBPDCCL)

## CONSTRUCTION OF MVCC:

- Conductor : Longitudinally water tight AAAC/ ACSR/ AL59 - ACS or High temperature
- Conductor Conductor Screen : Consist of Extruded Semi- Conducting layer
- Inner Insulation : Extruded XLPE
- Outer Insulation : Anti tracking UV protected XLPE/HDPE compound





## CONSTRUCTION: MEDIUM VOLTAGE COVERED CONDUCTOR(MVCC):

### Conductor

Wires used in the construction of stranded conductor are either of aluminium alloy (AAAC) or aluminium alloy steel reinforced (ACSR) or aluminium clad steel (AL 59 ACS) and are rendered longitudinally water tight by means of a unique water blocking inert compound.

### **WaterBlocking Compound**

The Stranded Conductor is longitudinally water blocked by means of a unique water blocking material incorporated during the extrusion process in the interstices of the conductor strands. Water swellable tape or powder or grease are not allowed for water blocking purpose in MVCC. The water blocking compound should be stable at max operating conductor temp of 90 c. It should be compatible and nonreactive with the conductor metal and the semicon screen. The compound will not adversely impact electrical and mechanical properties of the MVCC.

### **Conductor Screen**

A semiconductor polymer screen is kept over the conductor to minimize the stress of the conductor by smoothening its surface. This semiconducting layer is kept under the extruded insulation.

### **Insulation**

The Insulation is dual layered with the main inner layer being XLPE and the outer layer being of XLPE fused with carbon black to make it UV protected, non-tracking and erosion resistant. All the three layers on the conductor are extruded simultaneously with a triple head extruder so as to bind all the layers and conductor with one another.

### **Outer Insulation**

On the insulation a black protective layer of UV resistant XLPE/HDPE is applied with anti-tracking properties.

## **APPLICATIONS:**

Conductor ( MVCC ) is becoming as one of the best replacements of Over Head Bare Conductor (ACSR ) and Aerial Bunched cable in power transmission and distribution system in some part of the world .The uses of Covered Conductor which is similar like SAS ( Space Arial Bunch Cables ) are seen in South Korea, Japan, Iran, Myanmar and some parts of Australia. It has a very successful journey so far.

- Covered Conductor is extensively used in voltage up-gradation projects ranging between 6.6KV to 33 KV
- Covered Conductors can function smoothly with conductor temperature up to 80°C and in corrosive and highly polluted area
- The outer jackets of covered conductors being UV resistant, it can be used in high UV radiation areas
- Covered Conductors fulfill the demands in extreme cold environment with heavy snow and ice load

## WHERE MVCCs ARE USED:

- HILLY AND MOUNTAIN AREAS
- COASTAL AREAS AND RIVER CROSSING
- HIGH DENSITY RESIDENTIAL AREA
- DENSE FOREST, BUSHFIRE PRONE AREAS

## Covered Conductors: Specifications Applicable standards:

IS: 398 (Part-II), IS: 398(Part-IV), IEC: 61089, EN 50397-1:2020, BS EN 50182 Nominal Thickness

S.No	Description	Unit	Normal Thickness		
			11kV	22kV	33kV
1	AAAC/ACSR	sqmm	As per Power Demand		
2	Longitudinal Water Blocking Compound	mm	Providing with Pressure		
3	Extruded Semi-Conducting Layer	mm	0.3	0.3	0.3
4	Inner Insulation of XLPE	mm	1.2	1.32	2.43
5	Outer Insulation with Carbon Black, UV & Track Resistant XLPE	mm	1.1	1.1	1.2



**OCCUPY 40 % LESS SPACE THAN BARE LINES**

## **EXISTING CERTIFICATIONS**

ISO 9001 / 14001 / 45001

Directorate of Quality Assurance (Navy) [DQAN] Registration Certificate

Defense Research and Development Laboratory (DRDL) Registration Certificate

Integrated Headquarters of Ministry of Defence (IHQ/DEE/MOD)

Research Designs and Standards Organization (RDSO)

American Bureau of Shipping (ABS)

Indian Register of Shipping (IRS)

Underwriters Laboratories (UL)

Central Power Research Institute (CPRI)

Bureau of Indian Standards (BIS)

International Railway Industry Standard (IRIS)

National Accreditation Board for Testing and Calibration Laboratories (NABL)

Det Norske Veritas (DNV)



## **Nicco Cables Pvt. Ltd.**

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