

Energising the World



# Shashwat Cables (P) Ltd.

AN ISO 9001: 2008 CERTIFIED COMPANY



## about us



Rajiv K. Maheshwari



Yashwant Maheshwari



Shubham Maheshwari



Mudita Maheshwari

Shashwat Cables (P) Ltd. was established in 2005 having manufacturing unit at Dehradun (Uttarakhand) and started commercial production of Aerial Bunched Cables and Conductors in 2006.

The Chairman cum Managing Director of the company, Shri Rajiv K. Maheshwari has been in the field of Trading and Manufacturing since 1970, running the largest Ancillary Unit to ITI Ltd. Allahabad for manufacturing Thermoplastic Injection Moulded Components & Chlorinated Paraffin Wax Manufacturing Unit. Representing various Birla Concerns as Distributor, C&F Agent dealing in Cement, Cables, Aluminium, Chemicals & Fertilizer.

Shri Yashwant Maheshwari (PGDBM), joined the group in 1996, Shri Shubham Maheshwari (MBA from UK), joined the group in 1999 & Smt. Mudita Maheshwari B.E (Hons.), joined the group in 2006 & are trying to take the group to newer heights.

The company's reputation, manufacturing capabilities, quality and reliability enabled it to get large orders since the beginning from various clients including various State Power Distribution Corporations & their Turnkey Contractors.

In a short span of time, we have received ISI Certification for all our products along with ISO 9001 : 2008.

We are leading vendor to India's Navratna PSU Power Grid Corporation of India Ltd.

The company is equipped with modern Plant & Machinery. The Test Laboratory has latest equipments to conduct all required test to judge the quality of the products.

The company draws strength from its highly experienced staff, design & project management resources and stringent Quality Assurance procedures to deliver total commitment to quality, reliability, safety and customer satisfaction.

SCPL is humbly proud of its efforts and success and believes success is not a destination but a journey. It will strive further to achieve even higher pinnacles of success and continue to offer better service and satisfaction to its customers and end users.

SCPL prides on its ability to offer products to each customer specific needs quickly, efficiently and with an assurance of product quality.

# OUR products

L.T. Aerial  
Bunched Cables/  
Bundled Conductor  
up to 120 sq mm.

ACSR  
Conductors

All Aluminium  
Alloy Conductor  
(AAAC)

All Aluminium  
Conductor  
(AAC)



# aerial bunched cables

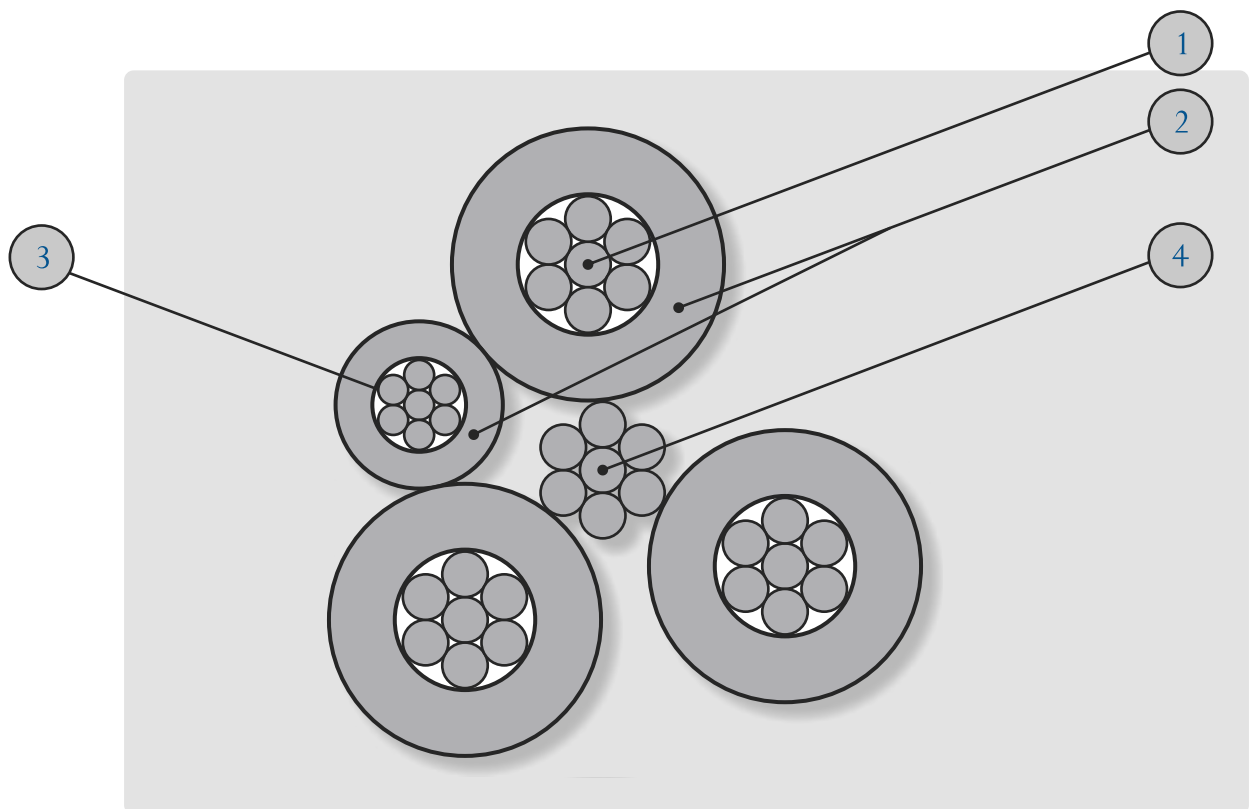
With the growing need for long term economy, safety and reliability overhead Conductors are now being replaced by Aerial Bunched Cables both in L.T. & H.T. distribution network with limited space for clearance. Aerial Bunched Cables are basically a compromise between Power Cables and Overhead Conductors.

The basic construction is as follows :

- 3 Power Cores consisting of stranded compacted Aluminium conductors, insulated with XLPE.
- One Street lighting Aluminium conductor with XLPE insulation (optional)
- One messenger Al-Alloy Conductor (Bare or Insulated)

The purpose of messenger conductor is :

- It acts as load bearing conductor.
- It acts as earth or neutral conductor.



- |                                   |                   |
|-----------------------------------|-------------------|
| ① Aluminium Conductor             | ② XLPE Insulation |
| ③ Aluminium (lightning) Conductor | ④ Messenger       |

# its advantages

- Cores being insulated the chances of power thefts are eliminated.
- Safest system because phase conductors are insulated, no risk of danger of accidental touching live conductor.
- These are cheaper than power cables.
- Cores being insulated, the chances of faults due to falling of trees or birds are eliminated.
- These can be laid in places where, due to lack of space, power cables cannot be laid.
- Insulation also helps in preventing corrosion of the conductor.
- Life of Transformers increased as the supply interruptions are minimized.
- The total cost of system is reduced due to the reduction in pole heights, elimination of insulators and associated hardware.

**These cables are getting widespread acceptance specifically in developing countries due to said advantages.**



# its applications

Aerial Bunched Cables are specially suitable for the following type of installation conditions:

- Where space is limited like those in densely populated area, dense forests.
- Where existing Over Head Distribution feeder capacity have to be upgraded without raising the system voltage with limited budget.
- Temporary installations or for those regions where building plans have not been fully approved.



# size and requirement of

## phase, street lighting and messenger conductor

Phase Conductor (Aluminium)			Street Lighting Conductor (Aluminium)			Messenger Conductor (Aluminium Alloy)		
Nominal Area	Maximum Conductor D.C. Resistance at 20°C	Nominal Thickness of Insulation XLPE/PE	Nominal Area	Maximum Conductor D.C. Resistance at 20°C	Nominal Thickness of Insulation XLPE/PE	Nominal Area	Maximum Conductor D.C. Resistance at 20°C	Minimum Breaking Load
Sq mm	Ohm/km	mm	Sq mm	Ohm/km	mm	Sq mm	Ohm/km	KN
16	1.91	1.2	16	1.91	1.2	25	1.38	7
25	1.2	1.2	16	1.91	1.2	25	1.38	7
35	0.868	1.2	16	1.91	1.2	25	1.38	7
50	0.641	1.5	16	1.91	1.2	35	0.986	9.8
70	0.443	1.5	16	1.91	1.2	50	0.689	14.0
95	0.320	1.5	16	1.91	1.2	70	0.492	19.7
120	0.253	1.5	16	1.91	1.2	95	0.357	26.5

# L.T. aerial bunched cables

## composition and designation as per IS:14255-1995

Size	Complete Bunched Cables		Size	Complete Bunched Cables	
	Approx. Overall Dia in mm	Approx. Total Mass in Kg/km		Approx. Overall Dia in mm	Approx. Total Mass in Kg/km
3x16+25	19	250	3x50+16+35	28	640
3x16+16+25	19	310	3x70+50	32	840
3x25+25	22	330	3x70+16+35	32	910
3x25+16+25	22	390	3x95+70	35	1140
3x35+25	24	430	3x95+16+70	35	1205
3x35+16+25	24	490	3x120+95	38	1420
3x50+35	28	580	3x120+16+95	38	1485

# ACSR, AAAC & AAC

Looking to the need greater strength to weight ratio ACSR is first choice of designers and therefore the use of ACSR has gone up consistently. Experiments have proved that stranding of high purity Aluminium conducting portion around a steel core produce better results.

The Aluminium Conductor Steel Reinforced (ACSR) is a Conductor, combining light weight high current capacity of aluminium with high strength of a galvanized steel core wire. The aluminium members are stranded around the galvanized steel core, the core may be solid or stranded and the aluminium may be arranged in one or more layers depending on the size and strength of conductor required.

## ACSR Conductor Advantage

- High Conductivity
- High Strength / Weight Ratio
- Lightness
- Resistance to Atmospheric Attack and very low Maintenance
- Better behavior in contact with other materials
- Economy and Long life

## AAC Advantage

- High Conductivity
- Very high degree of corrosion Resistance
- Excellent conductor of heat & Electricity

## Physical Properties of AAAC

Melting Temperature	652 <sup>0</sup> C
Density	2.7 kg/mm <sup>2</sup>
Coefficient of linear Expansion	23X10 <sup>-6</sup>
Brittle Hardness	80 BHN
Elongation (percent in 200 mm)	4.5 to 5.5%
Electrical Conductivity at 200 <sup>0</sup> C	52.2
Typical Electrical Resistivity at 20 <sup>0</sup> C	53.5
Standard	0.0325
Typical	0.0320
Ultimate Tensile	30 kg/ mm <sup>2</sup>
Modulus of Elasticity in kg/ mm <sup>2</sup>	
Initial	5200 to 5600
Final	6250 to 6450

The use of AAAC is increasing fast for transmission and distribution purpose and is now gradually replacing AAC/ACSR due to its various advantages over traditional AAC/ACSR Conductors.

The main features of AAAC are reduced line losses, increased span, homogeneous character and its anti corrosion properties.

AAAC is a new concept for energy conservation.

## AAAC Advantage

- AAAC exhibits excellent corrosion resistance especially in sea coast areas and in polluted industrial areas due to absence of steel core.
- Since AAAC is homogeneous (with strands of Aluminium Alloy) with no steel component the resistance of AAAC is lower as compared to ACSR.
- AAAC can carry at least 15-20% extra current as compared to ACSR of equal size.
- Experience in foreign countries shows that All Aluminium Alloy Conductor are in service for over 60 years, which is about double the life of ACSR Conductors.
- The surface hardness of AAAC of 80 BHN as compared to 35 BHN of ACSR. This reduce the damage to surface during handling and therefore leading to lesser corona losses and radio interference at EHV.
- AAAC are suitable up to 90<sup>0</sup> C against ACSR conductors which are suitable up to 75<sup>0</sup> C.
- Since AAAC has higher strength to weight ratio, span can be increased from 2 to 15% as in case of ACSR resulting in overall reduction of cost in towers supports and other accessories in transmission line system.

# basic data assumed for calculation

## SAG TENSION

Conductor Type	Construction (AL + SL)/AAA Wire Nos. / Nos.	Mod. of Elasticity Kg/Sq. Cm	Co-Effi. of liner exption per °C
AAC & ACSR	3	B) 0.6500X10 <sup>6</sup>	23.0X10 <sup>-6</sup>
	7	A) 0.6000X10 <sup>6</sup>	23.0X10 <sup>-6</sup>
	7	B) 0.6324X10 <sup>6</sup>	23.0X10 <sup>-6</sup>

(A) AAAC to IS 398 (Part 4 1979) (Second Revision) & ACSR

(B) AAAC to IS 398 (Part 4 1974) (Third Revision)

### Current Carrying Capacity

• Solar Absorption Constant A = 0.5

• Wind Velocity V = 2200 M / Hr.

• Emissivity Constant E = 0.5

• Ambient Temperature Ta = 40 X C

• Solar Irradiation S = 985 Watts /Sq. m.

• Height MSL

## ACSR CONDUCTOR

**Table 1 : Construction for Aluminium Conductor Steel Reinforced as per IS:398 (Part-II) 1996**

No. of Wires in Conductor	Construction	Lay Ratio for each Layer	
		6 Wire (ST)	6 Wire (AL)
7	1 + 6	-	10 to 14
13	1 + 6 + 12	13 to 28	10 to 14

**Table 2 :Basic data for Aluminium Conductors Steel Reinforced as per IS:398 (Part-II) 1996**

Code Word	Aluminium Area		Total Sectional Area	Stranding & Wire Diameter				Overall Dia. approx	Weight			Resistance at 20 <sup>0</sup> C (MAX)	Ultimate Breaking Load
	Nominal	Sectional		Al		Steel			Net	Al	Steel		
	Sq mm	Sq mm	Sq mm	No.	Dia. (mm)	No.	Dia. (mm)	(mm)	kg/km	kg/km	kg/km	Ohms/km	KN
MOLE	10	10.60	12.37	6	1.5	1	1.5	4.5	43	29	14	2.78	3.97
ROSE	18	18.10	21.12	6	1.96	1	1.96	5.88	73	49.5	23.5	1.618	6.74
SQUIRREL	20	20.98	24.48	6	2.11	1	2.11	6.33	85	58	27	1.394	7.61
WEASEL	30	31.61	36.88	6	2.59	1	2.59	7.77	128	87	41	0.9289	11.12
RABBIT	50	52.88	61.7	6	3.35	1	3.53	10.05	214	145	69	0.5524	18.25
RACCOON	80	78.83	91.97	6	4.09	1	4.09	12.27	318	215	103	0.3712	26.91
DOG	100	105.0	118.5	6	4.72	7	1.57	14.15	394	288.3	105.7	0.2792	32.41

## AAA CONDUCTOR

**Table 3 : Construction for All Aluminium Alloy Conductor as per IS:398(Part IV)**

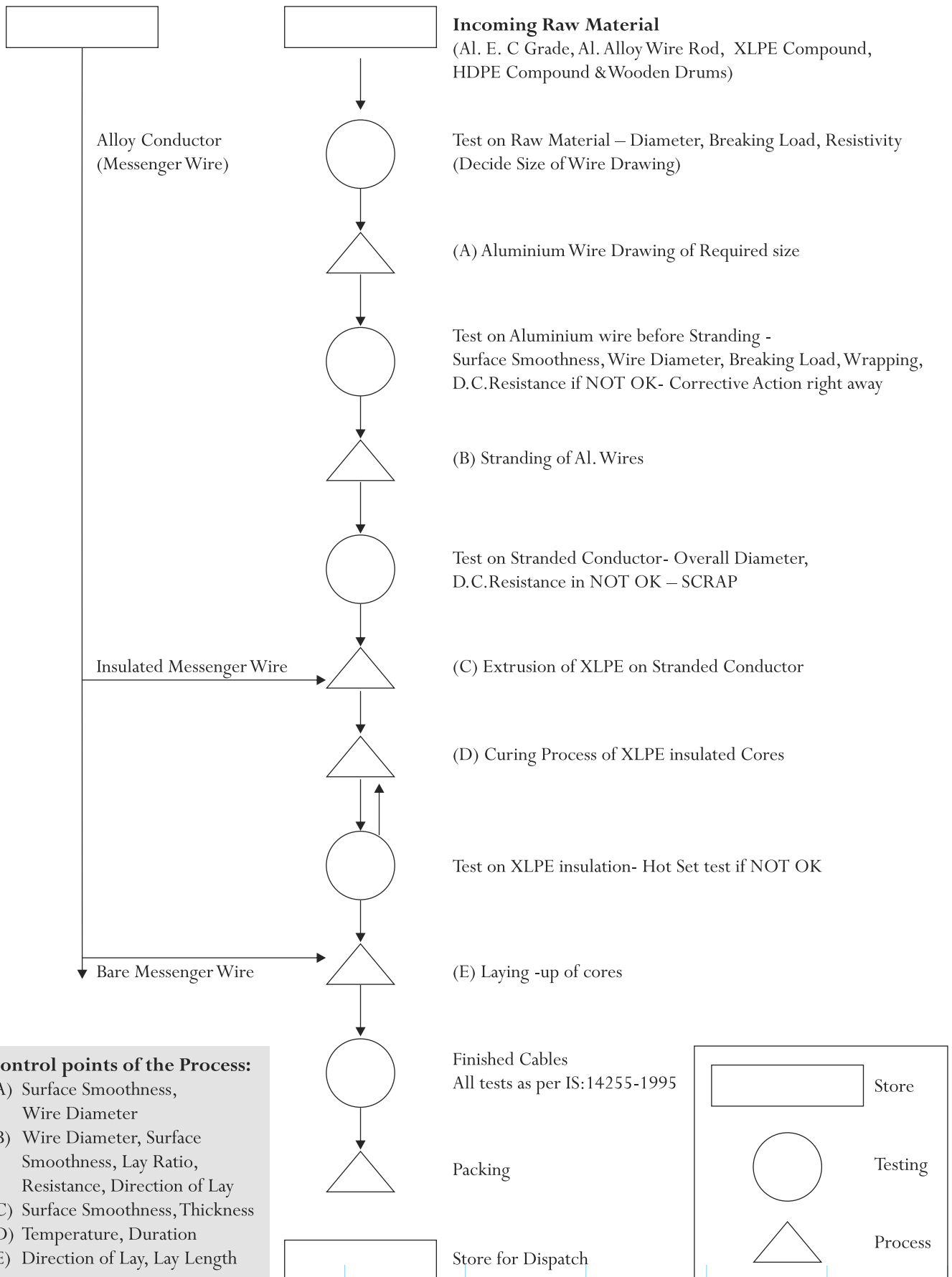
No. of Wire in Conductor	Construction	Lay Ratio Measurement	
		3 Wire	6 Wire
3	3	10 to 14	-
7	1 + 6	-	10 to 14

**Table 4 : Basic Data for AAAC Conductor As per IS: 398 (Part IV /1996)**

Eqvt ACSR Code Word	Actual Area	Stranding & Wire Diameter Conductor		Overall Dia. approx	Mass (approx)	Resistance at 20°C (MAX)	Ultimate Breaking Load
		No.	Dia.(mm)				
	Sq mm			(mm)	kg/km	Ohm/km	KN
MOLE	15	3	2.5	5.39	40.15	2.304	4.33
SQUIRREL	22	7	2	6.00	60.16	1.541	6.45
WEASEL	34	7	2.5	7.5	94	0.99	10.11
RABBIT	55	7	3.15	9.45	149.2	0.621	16.03
RACCOON	80	7	3.81	11.43	218.26	0.425	23.41
DOG	100	7	4.26	12.78	272.86	0.339	29.26

# Process Flowchart

for manufacturing LT Aerial Bunched Cable as per IS:14255-1995



# our prestigious clients

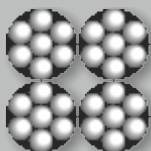
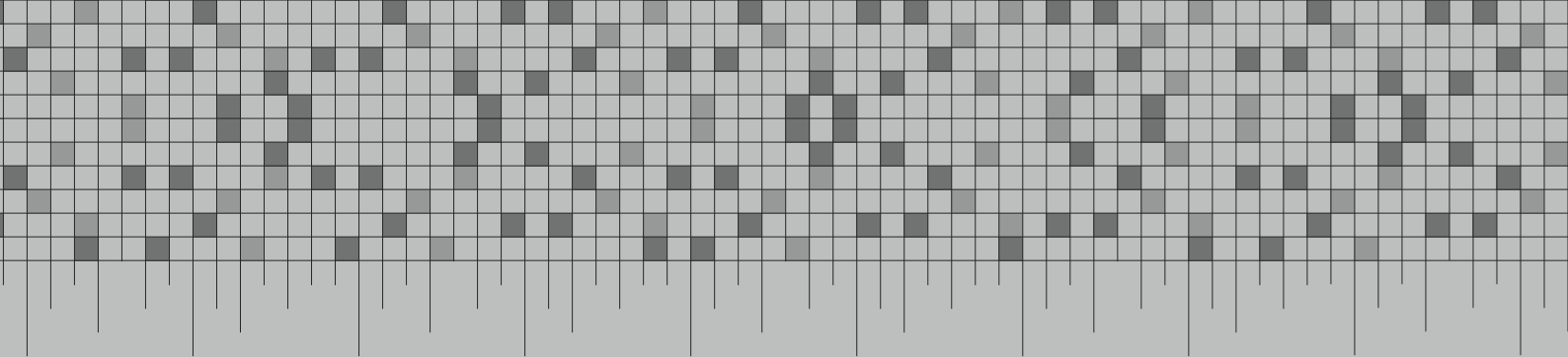
## **Power Distribution Corporations**

- Power Grid Corporation of India Ltd.
- NTPC Electric Supply Company Limited
- NHPC Limited
- Uttarakhand Power Corporation Ltd.
- Jaipur Vidyut Vitran Nigam Ltd.
- Ajmer Vidyut Vitran Nigam Ltd.
- Uttar Haryana Bijli Vitran Nigam Ltd.
- Paschimanchal Vidyut Vitran Nigam Ltd.
- Madhya Pradesh Madhya Kshetra Vidyut Vitran Company Ltd.
- Madhya Pradesh Paschim Kshetra Vidyut Vitran Company Ltd.
- Madhya Pradesh Purva Kshetra Vidyut Vitran Company Ltd.
- Madhya Gujrat Viz Co. Ltd.
- Punjab State Electricity Board
- Purvanchal Vidyut Vitran Nigam Ltd.
- Madhyanchal Vidyut Vitran Nigam Ltd.
- Bihar State Electricity Board
- Dakshinanchal Vidyut Vitran Nigam Ltd.
- Paschim Gujarat Vij Co. Ltd.
- Dakshin Gujarat Vij Co. Ltd.
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## **Turnkey Contractors**

- ABB Ltd.
- L&T Construction, Chennai
- Godrej & Boyce Mfg. Co. Ltd., Mumbai
- Tata Projects Ltd., Delhi
- Larsen & Toubro Limited (ECC Division)
- Jyoti Structures Ltd.
- Genus Power Infrastructure Ltd.
- KEC International Ltd.
- Icomm Tele Ltd.
- IL & FS Engineering & Construction Ltd.
- Shyama Power India Limited
- A2Z Maintenance & Engineering Services Ltd.
- Sintex Industries Ltd.
- Saggi Electric Company

committed to provide  
Quality - Service - Products



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