

Tomorrow's Progress Today

April' 2015



Apar's Cable Division (Uniflex Cables) – An overview









"Tomorrow's Progress Today"

Providing Key Building Blocks to the Power Industry







CONDUCTORS



POWERLINE - Aluminium and Alloy Conductors

POWEROIL - Transformer Oils and Speciality Oils

UNICAB - Power and Telecom Cables

APAR, a Technology driven Customer focused Company, acknowledged for its Reliability, Adaptability and Innovation

Apar – Business Segments







sales Rs 4500 Cr

Speciality oils

Conductors

Cables

Products

- Pioneer in manufacturing Transformer oils in India since 1969.
- Largest Indian player in the Power Transformer segment, especially in EHV segment (220 KV to 765KV).
- Successful manufacturing & distribution tie-ups in South Africa, Australia & Turkey.
- Exports of Transformer Oils and White Oils to over 65 countries.
- Key OEM approvals of all major global transformer OEM's.
- License agreement with ENI to manufacture world famous AGIP lubricants, positioned at the upper end of the market.

- One of the largest manufacturer of conductors in India, amongst top few largest in the world by volume.
- Export to over 65 countries, Registered export house by Ministry of Commerce.
- Vertically integrated producer, full product range of ACSR and AAAC upto 1200 KV.
- Newly introduced High Temperature conductors, will be a paradigm shift in the market in a few years.
- Key approvals from several global Utilities and EPC contractors – allows larger market participation.

- Widest range of Medium & Low Voltage cable, Elastomeric cables, Fiber Optic cables and Specialty cables
- Growing at CAGR > 25%
- Export to over 2 5 countries, Registered export house by Ministry of Commerce.
- Manufactures specialty cables with Integrated Fiber Optics, Heavy & Low Tow cables, Torpedo cables etc
- Set up Electron Beam Irradiation facility (1.5 MeV and 3.0 MeV)
- Key approvals from several Utilities, Consultants and EPC contractors – allows larger market participation.

Plant Locations

Rabale, Silvassa Total Capacity 442,000 KL Silvassa, Athola and at Umbergaon . Total Capacity 150,000 MTPA

Umbergaon & Khatalwad 6000 MT Aluminum and 6000 MT Copper

We are a **Technology** driven **Customer Focused** company characterized by **Reliability**, **Adaptability**, **Innovation** & **Leadership** in our product categories.

About the Cable Division

















- Experience in Cable manufacture since 1981 serving a broad customer base in India and Overseas.
- A vast manufacturing infrastructure of 200,000 SqM. (Built Up Area over 60000 sq Meter) manufacturing several special varieties of cables.
- The cable division enjoys a very high reputation for its quality with its customers in its entire product range.

Cable Manufacturing Plants











The plants are ideally located 150 Km from Mumbai.

Cables Segment

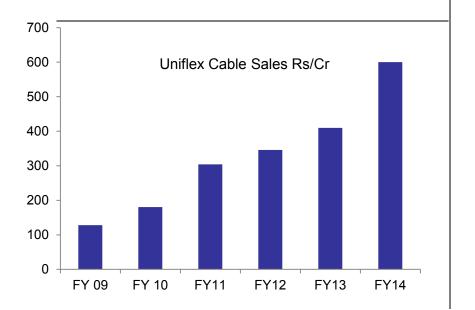






Product Range

- Power Cables LT & HT upto 33 kV
- Elastomeric / Flexible cables
- Fiber optic cables
- Specialty / Hybrid cables
- Electron Beam Irradiated Cables



New Cable Product Developments

- Special Cables for Indian Navy.
- Concentric Anti-Theft Cable
- Covered Conductors
- Fire Survival Cables & Wires
- 33 KV Elastomer Cables for Windmill and for Export
- 40 year Cable life & radiation resistant products for nuclear power plants









Vision, Mission & Quality Policy



Our VISION

 We at Apar are a Technology driven Customer focused group of professionals firmly believing in our Company's vision:

"Tomorrow's Progress Today"

Our MISSION

 To build a strong brand through business ethics, Technological expertise, long terms relationship with our esteemed customers and maintain superior quality product for customers satisfaction.

Our QUALITY POLICY

We are dedicated to manufacture best quality products at affordable prices to our customers' entire satisfaction in Power, Control, Telecommunication sectors through Employee Motivation, continual improvement and Product Innovation.

Quality Control



- The Technical Dept is manned by several engineers having rich experience. Senior and middle level engineer managers are responsible to ensure technical compliance and quality.
- A centralized laboratory supports :
 - Incoming Raw Material Testing,
 - > In-Process Testing
 - > Finished goods Testing
 - > Internal & External Inspection.
- Cables are periodically Type Tested in-house & at Independent laboratories for design compliance.
- In-house manufacture of PVC and Elastomeric compounds give a competitive edge to ensure product quality.
- The company lays emphasis on investing in latest test and measuring equipments and training its personnel.

ISO Certificate







CERTIFICATE

The management system of:

APAR INDUSTRIES LIMITED (UNIT:UNIFLEX CABLES) Plot No.153, 158-163, G.I.D.C, Umbergaon Dist., Valsad Gujarat - 396 171, India

Including the implementation meets the requirements of the standard:

ISO 9001:2008

Exclusions: 7.5.2 (Validation of processes for product and service provision)

Design, development, manufacturing and supply of optical fiber, PIJF and other communication cables, Elastomeric and specialty Cables, LV & HV XLPE Power Cables & Asrial Bunched Cables, PVC power cables, PVC & XLPE control cables. Signaling cables, Quad Cables. The manufacturing of Aluminium / Copper cable conductors, Aluminium/Al. Alloy conductors with or without seed core (ACSR, AACSR, ACSR/AW, ACSS, TACSR, AL57, AAAC, AAC, GSW) and aluminium alloy pre Armoured rods for power transmission and distribution as per

The file that forms the basis of this certificate:

Certificate expiry date : June 1, 2015 Certified for the first time: June 1, 1996 Certificate effective date : December 1, 2012

K.G. Garg Chairman & Chief Executive NVT QUALITY CERTIFICATION PVT. LTD. CAPI FRIP Near ITPI Whitefield, Bangalore - 560 066

ACCREDITED BY NATIONAL ACCREDITATION BOARD FOR CERTIFICATION BODIES





NAMES IN A RESIDENT OF INTERNATIONAL ACCREDITATION FORUM (MF) AND PACIFIC ACCREDITATION COOPERATION (PAL) FOR

Certificate of Registration This is to certify that

Environmental Management System

APAR INDUSTRIES LTD (UNIT: UNIFLEX CABLES)

Plot No. 153, 180,158-163, G.L.D.C. Umbergs District-Valued, Gujaret - 196 171, INDIA.



This certificate is valid concerning all activities related to:

Design, Development, Hanufacturing and Supply of LV and HV XLPE Power Cables & Aerial Bunched Cables, PVC Power Cables, PVC & XLPE Control Cables, Screened Instrumentation Cables, Signalling Cables, Quad Cables, Aluminium/Copper Cable Conductors, Aluminium/AI Alloy Conductors with or without Steel Core (ACSR, AACSR, ACSR/AW, ACSS, TACSR, AL57, AAAC, AAC, GSW) and Aluminium Alloy pre Armoured Rods for Power Transmission and Distribution, Optical Fibre, PEIF and other Communication Cables, Elastémeric and Speciality Cables, Fluoropolymer Insulated Catries, Wind Mill Cables, Solar Cables, Mining Cables as per Customer Requirements.

ANZSIC Code: C 2852

May 14, 3017

May 13, 2016

Certificate No.







TRANSPACIFIC CERTIFICATIONS LIMITED

6 Phiggs Close, DEAKIN, ACT 2008, AUSTRALIA

www.jac.orc.com.aucogene Like of followed all conditions put not for the construct of the conditions and prompt according to the conditions come

Indian Register Quality Systems

IA Department of Sales, Register of Williams the second contract of the contract of the second contract of the second

ACCRECATE OF THE REAL

Certificate Of Approval

This is to certify that the Quality Management System of

Apar Industries Limited (Unit: Uniflex Cables)

Marketing Office: 12/13, Jyoti Wire House, 23A, Shah Industrial Estate, Off. Veera Desai Road, Andheri (West),

Mumbai - 400 053

Site: Khatalwada-Manekpur Road, Tal: Umbergaon. Dist. Valsad, Gujarat - 396 120

> has been found to conform to the requirements of the Standard:

> > ISO 9001: 2008

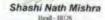
with respect to the following scope:

- . Design, Development and Manufacture & Supply of Elastomeric (Rubber) Cables and Electron Beam Crosslinked Special Cables
- · Provision of Electron Beam Irradiation Services.

This Approved is Adject to commend sententing interference of the Quality Messagement System of the Organization that also Statuted, which will be previously by \$15,50

Certificate No.: (ROS/1310328 granted on 29th May 2013

Current Certification Effective Date: 29th May 2012 Current Certificate Expiry: 28" May 2016



Continue or continue

Technical Specifications







The Cables are manufactured and tested as per customer requirements. The following are most commonly used specifications:

IS: 1554 (Part-I) for LT PVC Cables

IS: 7098 (Part-I) for LT XLPE

IS: 7098 (Part-II) for HT XLPE

IS: 14255 for LT ABC Cables

IS: 9968 (Part-I) for LT Elastomer Cables

IS: 9968 (Part-II) for HT Elastomer Cables

IS: 14494 (FT7) Elastomer Mining Cables

IS: 9857 for Welding Cables

IS: 694 for Flexible Cables

IS: 398 (Part-I, II, IV, V) for Conductors

TEC Specs for OFC Cables

For International customers, cables as per relevant specs are manufactured and tested. (IEC 60502 (Part-I & II) / VDE 0273/BS 6007/ BS:7870/ BS6004 / BS6500/CW1128, GR-20 or as per customer specifications & requirements)

Cables can be manufactured for any other International specifications or as per Customer specifications.

Few Testing Facilities









Hot set test / Ageing oven



Oxygen Index Testing



Physical Test Lab



Tensile Testing M/c



Electrical Test Apparatus



Partial Discharge / Tan δ

Manufacturing Infrastructure



- Wire Drawing Machines from Niehoff Germany for Rod Breakdown and for Multi-Wire Drawing supported by Copper Electro-Tinning facility (OTOMEC Italy).
- Royale USA CCV Line to manufacture HT XLPE Cables
- State of the art extruders from highly reputed manufacturers viz. Nextrom, Royale, Swisscab, Supermac etc for high quality extrusion.
- Stranding, Drum Twisters & Laying up machines, Armouring and other manufacturing machineries from most reputed machine manufacturers.
- Twin Screw, Intermix and Palletizing equipments etc for in-house manufacture of almost all compounds to maintain quality.
- High Quality Test & Measuring equipments and a centralized Laboratory manned by highly experienced Technical personnel
- Electron Beam (3.0 MeV & 1.5 MeV) Irradiation facility
- PTFE Recycling facility
- State of the art Fiber Optic Cable plant
- Highly experienced Managerial & Technical personnel supported by highly skilled work force.
- Plant capacities expanded in 2009 and later in 2013 to support increasing business volume
- Stranded/Compacted/Flexible Conductor manufacturing facility

Manufacturing Infrastructure









FLEXIBLE WIRE BUNCHER



EXTRUDER PANEL



Ebeam Cable Handling System



ROTATING CATERPILLAR FOR CORE LAYING

Cables Product Range







ELECTRICAL CABLES

ELASTOMER & ELECTRON BEAM IRRADIATED CABLES

OFC & Specialty Products

PVC Cables upto 3.3 KV
XLPE Cables upto 33 KV
LT & HT ABC Cables
Instrumentation Cables
Concentric Core Cables
Flexible Cables & Wires
FR/FRLS/LSOH Cables
Fire Survival Cables
Under Water Cables
Other Speciality Cables

Trailing Cables
Locomotive Cables
Ship Wiring Cables
Wind Mill & Solar Cables
Welding Cables
Mining Cables
LFH Cables & Wires
Fire Survival Cables
EPR, Silicon, EVA
Speciality Cables

Optical Fiber Cables
Loose Tube & Ribbon Type
Multi-mode/Single Mode
Armoured/Duct/Aerial/ADSS
Torpedo Cable
TOW Cables
Composite Cables with
Integrated Fiber Optics

Annual Plant Capacity







Sr. No.	Cable Product Category	Annual Production Capacity	
1	Elastomeric (Rubber) Cables upto 33 KV, single Core upto 630 sqmm and multi core copper upto 400 Sq. mm.]	12000 CKm/Yr for ≥120 sqmm 30000 CKm/Yr for ≤ 95 sqmm	
2	XLPE Power Cables Upto 33 KV, Single core upto 1000 Alum, 630 sqmm Copper Multi Core upto 630 Sq. mm. Alum and 400 sqmm Cu	5000 Core Km/Year HT Cables 6000 Core Km/Year LT Power Cable 90000 CKm/Yr LT Control Cable	
3	Optical Fiber Cables [upto 144 Fiber Cables] UniTube & Loose tube Armoured/DUCT/ADSS/Aerial Fig.8	90000 Km/Year (Loose Tube) 120000 Km/Year (UniTube)	
4	Fluoroplastic PVC/PE cables [including FRLS/FS and high temperature screened instrumentation cables and wires]	24000 Cable Km/ Year	
5	Electron Beam Irradiated Cables	60000 Cable KM/Year	
6	PTFE Micro Powder	120 MT/year	

Power & Control Cables







XLPE CABLES

- 1 KV to 33 KV
- Control Cables up to 61 Cores
- Single Core cables up to 1000 mm Sq.
- Multi core cables up to 400 mm Sq.
- Armored or Unarmored type
- HT / LT Aerial Bunched Cables
- Jacketing Material–FR/FRLS PVC, PE, LSOH
- Fire Survival, Under Water Cables





PVC CABLES

- Power Cables up to 1.1 KV
- Control Cables up to 61 Cores
- Railways Signaling & Auto Cables
- Screened instrumentation Cables
- House wiring and Flexible cables
- Flat Cables for submersible pumps
- Airport lighting and mining cables.
- FRLS / FR / HR / Fire Survival Cables
- Ebeam Cross Linked PVC and LSZH cables

Elastomeric Cables

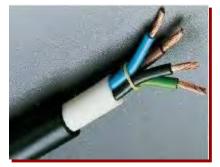






- Capability to offer Thermoset Elastomeric Insulation and sheaths Vulcanized by Chemical curing, Hot Air curing and Electron Beam curing
- Elastomeric Insulated Cables, Flexible cords, heavy duty HOFR Cables, Welding Cables (General Purpose and HOFR)
- Ship wiring cables, Pressure Tight Cables and cables for submerged connection.
- Railways locomotives and coach wiring cables.
- Mining Cables Flexible Trailing, coal cutter, pliable armoured and land line cables
- Silicone Rubber high temperature cable.
- Ebeam Irradiated Cables for Wind Mills / Solar PV, Railway Locomotives & Coach wiring, Shipping, Mining etc







Solar Cables





Complete range of cables for Solar Projects



- Cables 2.5 to 300 sqmm with Electron Beam Cross-Linking technology as per TuV 2Pfg-1169 /08.2007 PV1F
- Solar PV cables with Rodent resistant feature also available
- Solar PV cables with Flexible Aluminium conductor also available
- Aluminium Armoured Cables with Corrugated steel tape as well as Flat strip/Round Wire armouring for Combiner Box to Inverter available



- Electron Beam Irradiated LT XLPE cables suitable up to 120°C operating Temp available. These cables can offer 15% extra current rating over conventional LT XLPE
- Medium Voltage cables up to 33/33 KV up to 400 sqmm



Wind Mill Cables



- Major supplier of Wind Mill Cables in India
- Wide range of Cables for Wind Mill sector



LT Elastomer Cables with Chemical Cross Linking

LT Elastomer Cables with EBeam Cross Linking

MV Elastomer & XLPE Insulated Cables up to 33 KV

LT PVC & XLPE cables

- The product range includes cables for Nacelle that withstand Torsion, for Tower (both Copper & Aluminium) and others.
- Bare or Annealed Tinned Copper or Aluminium Flexible conductors as per requirements
- EPR Insulated and sheath Options PCP, CSP, CPE
- Flame retardant Sheaths available
- Operating range from -20°C (-40°C optional) up to 90°C
- Operating Temp. range upto 145°C by Ebeam process
- Major supplier in India to Suzlon, Wind World, Gamesa etc

Cable for Nuclear Plants



Apar is a major supplier for cables in India to Nuclear Power Industry



- Cables to meet 40-60 year life expectancy
- Cables meet Thermal ageing followed by Radiation resistance tests, LOCA test, MSLB meeting IEEE-383, and associated Fire performance and environmental performance tests
- Major supplies made to various Atomic Power Plants at Narora, Rajasthan (RAPP), Tarapore, Kakrapar, Kundakulam, Kalpakkam, Madras, Kaiga etc

E-Beam facility







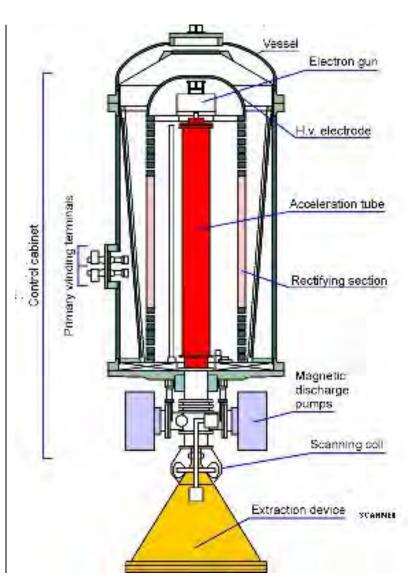
- Apar project set up over 75000 SqM land area.
- Only site in India starting with 2 Electron Beams: 1.5 MeV and 3.0 MeV to cover wide range of cables and handling system
- Under Beam handling system for several other products viz. PTFE Powder, Foam PE sheets, Heat Shrink Tubes & Moulded parts, PE Pipes, Packaging sheets etc

Technology:

- An Electron Gun is housed in a thick vessel where electrons are accelerated in an acceleration tube and are directed to a scanning device magnetically to scan
- The Cables are passed under the beam thru set of under-beam equipments

Benefits:

- Superior cross linking of polymers
- Superior Thermal & Mechanical properties



Products handled at E-Beam facility







Cables

- Locomotive Cables
- Ship Wiring Cables
- Windmill Cables
- Solar Cables
- Automotive wires
- Building wires
- Fire Survival wires & Cables
- Mining Cables
- Appliance Cables/Wires
- PVC insulated winding wires
- Aerial Bunch Cables

Service Centre Products

- Heat Shrink Tubes
- Thin wall sleeves/tubes
- Wrap around sleeves
- Bus bar sleeves
- Moulded components & O-Rings
- Foam PE & PE Sheets
- Polymeric Insulators
- Diamond Irradiation
- Hot Water Tubes
- PE Pipes, Hoses etc
- Medical Sterlization
- Teflon powder











APAR ANUSHAKTI Flexible Wires







- Can take >40% extra current loading for continuous use, a cushion for future loading or possible size reduction
- Non-softening, Infusible & non-dripping under overload and short circuit conditions to prevent Short Circuit thus ensure Fire safety
- Does not melt easily in contact with hot objects.
- High Oxygen & Temperature Index for improved fire retardancy:
 Self extinguishing and does not spread fire
- · High Insulation Resistance, avoids any electric shock
- Rugged mechanical properties—superior abrasion, cut through & crush resistance. Better ageing property thus longer life of wires

Cross sectiona I area	Number/ Nominal Diameter of each strand	Nominal Thickness of Insulation	Approx Wire Outer Diamete r	Max. DC Resistance of conductor at 20°C	Current Carrying capacity for "APAR ANUSHAKTI" FR PVC Insulated wires, 2 wires, single phase (40% extra current loading for continuous use assured)	
					In-Conduit	un-enclosed
sqmm	no./mm	mm	mm	'Ω/ Km	Amps	Amps
0.75	11/0.3	0.6	2.4	26.00	9	14
1.00	14/0.3	0.6	2.6	18.10	16	24
1.50	22/0.3	0.6	3.1	12.10	20	32
2.50	36/0.3	0.8	3.8	7.41	27	44
4.00	56/0.3	0.8	4.4	4.95	36	58
6.00	84/0.3	0.8	5.0	3.30	47	74



APAR ANUSHAKTI



Aerial Bunched Cables



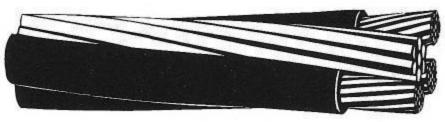






11 KV Aerial Bunched Cable





Service Drop Aerial LT Cable



LT ABC Cable

UNIDAC Cables (Prevent Theft of Electricity)



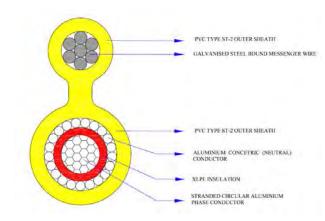


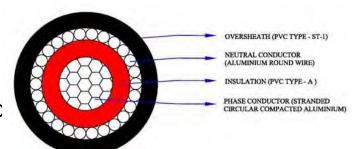


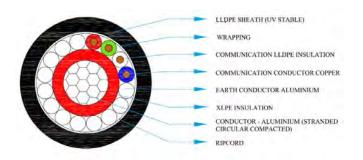




- Small overall diameter concentric design
- Light weight due to smaller diameter
- Increased safety
- Temper & vandal proof
- Unauthorized access to phase conductor inhibited by concentric layer
- Sizes 1x6/6, 1x10/10, 1x16/16, 1x25/25
 Higher sizes on request
- Can be offered in Aluminium or Copper
- CNE & SNE Options







Medium Voltage Covered Conductors







- No interruptions by contact of Tree branches.
- No faults with short duration touching of phase conductors during wind conditions.
- Phase to Phase conductor distance can be reduced (reduce the Tower costs)
- •Ideal and safer solution for installations for River/Lake/Railway/Road Crossings and in populated areas.
- Can protect Big birds like Peacocks, Flamingos etc, ideal for installations in Forest areas and in Bird sanctuaries
- Covered conductors are a cheaper alternative to underground cable and also to ABC cables, especially in difficult terrain and in densely populated areas.
- Lines near to areas where the public visit are not so dangerous because of accidental touching
- Overcomes costly Right of Way issues and Line can be commissioned faster



- A Semicon Tape & Extrusion
- **B** XLPE Insulation
- C UV Protection and Anti-Tracking HDPE



Instrumentation Cables

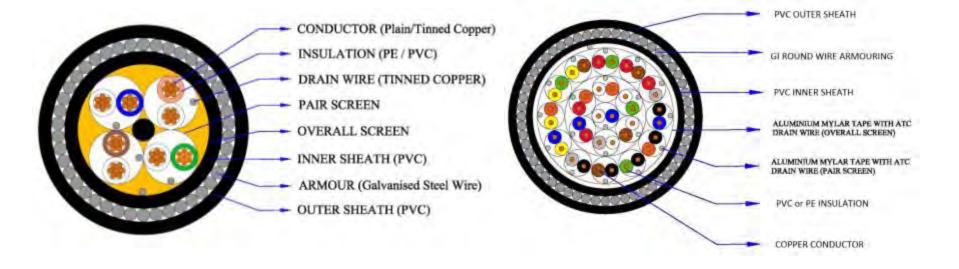






- Cables in Pair/Triad/Quad construction
- Individually and / or Overall screened
- Armoured/Unarmoured construction
- Screening of Aluminium Mylar Tape & Drain Wire (and / or Screening of ATC Braid)





Fiber Optic Cables







- Loose tube Cables from 2 to 432 Fibres and Unitube Cables upto 24 Fiber in Various constructions viz. Duct, Armoured, Aerial, FTTH, Indoor Types etc.
- Ribbon Cables up to 512 F
- SM: G652B / G652D / G655 / G657A / DSF & Multimode Fibers (OM1, OM2, OM3, OM4)
- Self Supporting ADSS & Fig.8 Aerial Cables
- Composite & Hybrid Cables
- Custom built cables designed for specific applications eg. Heavy / Light Density Tow cables for Sonar & Mine sweeping, Torpedo Cables





















INNOVATIVE CABLE SOLUTIONS UMBILICAL, TETHER and ROV Cables

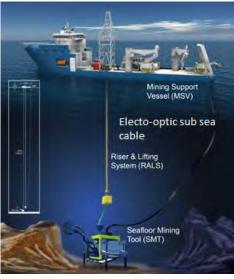






Associated with DRDO/NPOL for over 15 years for development of specialized import substitution cable products.







Some of the cables developed are for:

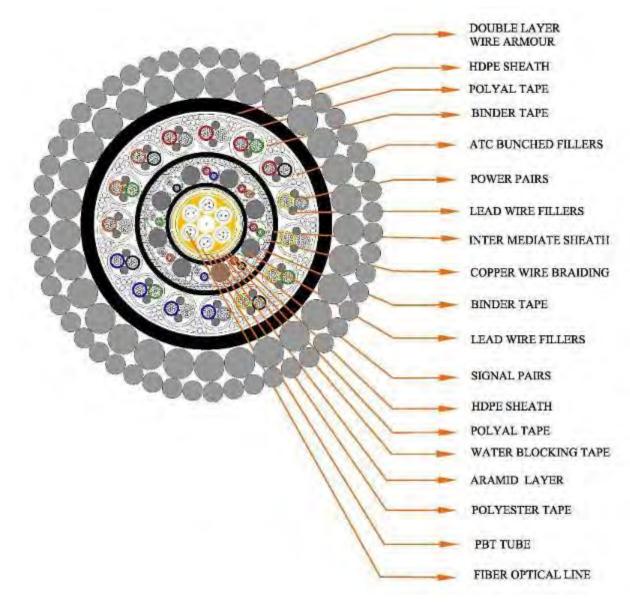
- Heavy Tow & Low Tow Cables for NPOL
- Mareech cable for NPOL and for BEL
- Hybrid Fiber Optic Cables (25 Km Length) for UWR Goa
- Electromechanical Cables for NIOT Chennai
- Tether Cable for ADRDE Agra for Air Surveillance Balloon system
- Torpedo Fiber Optic cable (50 Km Length) for NSTL
- Tactical Fiber Optic Cable for Army
- Pressure Tight and Non-Pressure Tight cables upto 60 BAR

Heavy TOW Composite Cable (Under Water Application)





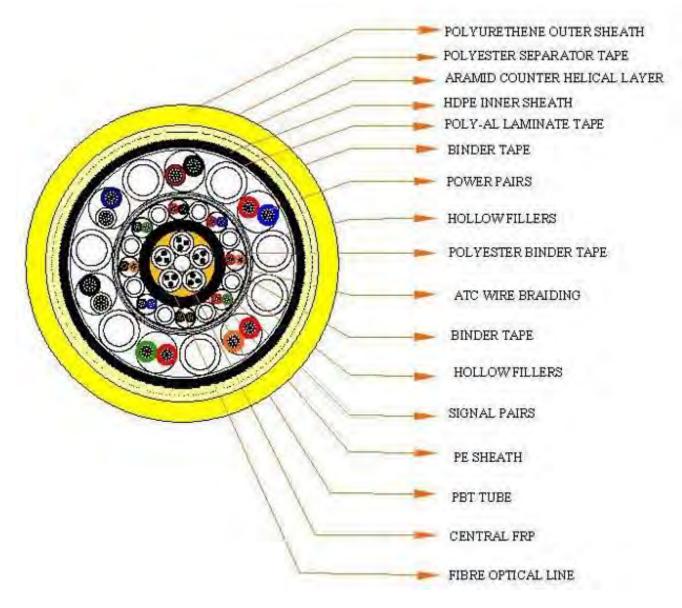




LIGHT TOW CABLE (Under Water Neutral Buoyancy Cable)







Commendation from DRDO









COMMENDATION CERTIFICATE

awarded to

Uniflex Cables Ltd., Mumbai

in recognition of valuable contribution in productionisation of

- Optical Fiber Armored Tow Cables
- Elastomeric & Telecom Cables
- XLPE Cables

based on DRDO Technology

Dr. A. Sivathanu Pillai

Distinguished Scientist Chief Controller, R&D

Defence Research & Development Organisation

13 December, 2008

Custom Designed Composite Cables

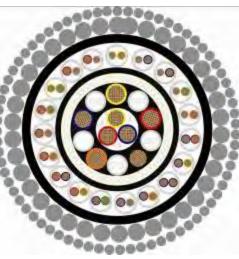








Fiber Optic Festoon Elastomer Cable



Electro Mech Subsea Cable

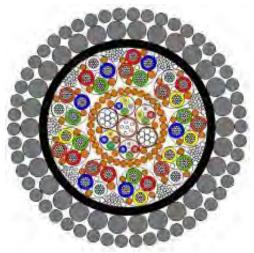


13x16 + 14x2.5 + 6Prx2.5



7x50 + 8x2.5 + 6Px2.5 + 6 Optical Fiber 11 KV 3x95 + 3x95/3





Heavy TOW Subsea Cable

Our Customers: Energy Sector











































































































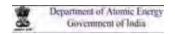












Our Customers: Renewable Energy

































































Our Customers: Industry Sector











































AVANT-GARDE ENGINEERS AND CONSULTANTS (P) LTD.





















































Our Customers: Industry Sector



















































































































Our Customers – Exports Sector





















































































Exporting to Countries



- South Africa
- Nigeria
- Sudan
- Angola
- Tunisia
- Mozambique
- Zimbabwe
- Kenya
- Ethopia
- Uganda
- Tanzania
- Burkina Faso

- Mauritius
- Zambia
- UAE
- Oman
- Syria
- Yemen
- Iraq
- U.K
- Spain
- Malaysia
- Bangladesh
- Nepal

Contact Us







Corporate Office

Apar Industries Ltd (Unit: Uniflex Cables)

12/13, Jyoti Wire House, 1st Floor,

23A, Shah Industrial Estate,

Off. Veera Desai Road, Andheri (W),

Mumbai – 400 053 (India)

Tel: +91 22 2674 0001 / 2 / 3

Fax: +91 22 2674 0600

Visit us @ www.apar.com

Email: info.cable@apar.com

Works

UMBERGAON

Plot No. 158-163 GIDC, Umbergaon, Dist: Valsad, Gujarat – 396 171 (India).

Tel: +91 (0260) 2562412 / 2563412 Fax: +91 (0260) 2562950 / 2562954

KHATALWAD

Khatalwad Manekpur Road

Village: Khatalwad, Taluka: Umbergaon

Dist: Valsad, Gujarat, Pincode 396120

Tel: +91 260 2406121, 2406103



Thank you for your patience

