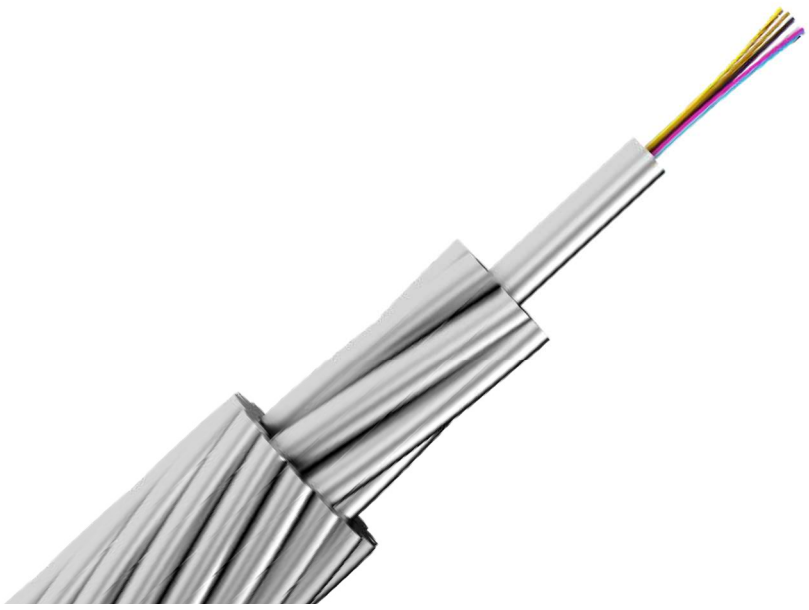
OPGW

Optical Ground Wire



Features & Benefits

- Our high quality standards for designing, testing and manufacturing with the highest grade materials available to ensure long-term reliability.
- Maximum fiber counts up to 72 fibers with minimized cable diameter due to variable designs.
- Superior optical performance over a broad temperature range from -40 ℃ to +85 ℃
- Engineering support, supervising and providing its own line of accessory hardware.
- Excellent tensile performance under cable elongation and contraction due to extreme tension and variation of temperature.
- Moisture-proof jelly filled core for superior protection to the optical fibers due to hydrogen generation in metal structure.
- Continuous and seamless tube for superior protection to the optical fibers from moisture and extreme environmental conditions such as lateral force.

Applicable Standards

- **Optical Fiber**
  - ITU-T G.650 / ITU-T G.652
  - ITU-T G.653 / ITU-T G.655
  - IEC 60793
- **Aluminum-Clad Steel Wire**
  - IEC 61232 / ASTM B 415
- **Aluminum Alloy Wire**
  - IEC 60104 / ASTM B 398
- **Complete OPGW**
  - IEC 61089 / IEC 60794
  - IEC 60794-4
  - ASTM B 416 / IEEE 1138

Steel Tube Specification

Item	Unit	Description
Material		Stainless Steel Tape
Inner Diameter	mm	(2.6,3.1,3.6)± 0.05
Outer Diameter	mm	(3,3.5,4.1)± 0.05
Filling Component		Water Repellent, Thixotropic
Fiber Number		24
Fiber Types		G655
Elongation	%	Min. 2.0
Fiber Excess Length	%	0.5 - 0.7

Fiber Specification (before Tubing)

Optical Specifications:

Maximum Attenuation

Wavelenght (nm)	Maximum Value (dB/km)
1383± 3*	≤0.34
1410	≤0.28
1450	≤0.24
1550	
1625	

* Attenuation values at this wavelength represent post hydrogen aging performance

Attenuation & Wavelength

Range (nm)	Ref.λ (nm)	Max.α Difference (dB/km)
1525 - 1575	1550	0.02
1625	1550	0.03

The attenuation in a given wavelength range does not exceed the attenuation of the reference wavelength(λ) by more the value α.

Macrobend Loss

Mandrel Diameter (mm)	Number of Turns	Wavelenght (nm)	Induced Attenuation*
32	1	1550&1625	≤0.50
60	100	1550&1625	≤0.05

* The induced attenuation due to fiber wrapped around a mandel of a specified diameter

Point Discontinuity

Wavelenght (nm)	Point Discontinuity (dB)
1550	≤0.05

Mode-Field Diameter

Wavelenght (nm)	MFD (µm)
1550	9.6 ± 0.4

Dispersion

Wavelenght (nm)	Dispersion Value [ps/(nm.km)]
1530	2.0 - 5.5
1565	4.5 - 6.0
1625	5.8 - 11.2

Polarization Mode Dispersion (PMD)

Wavelenght (nm)	Dispersion Value [ps/(nm.km)]
PMD Link Design Value	≤0.04*
Max Individual Fiber PMD	≤0.1

* Complies with IEC 60794-3: 2001, Sec 5.5, Method 1, (m = 20, Q = 0.01%), September 2001

The PMD link design value is a term used to describe the PMD of concatenated length of fiber. This value represents a statistical upper limit for total link PMD. Individual PMD values may change when cabled. Coming's fiber specification supports emerging network design requirements for high-data rate systems operating at 10Gb/s rates and higher.

Standards Compliance

- ITU-T G 655 (Table A,B,C,D)
- IEC Specifications 60793-2-50 Type B4
- TIA/EIA 492-EA00
- Telcordia's GR-20

Dimensional Specification:

Glass Geometry

Wavelenght (nm)	Maximum Value (dB/km)
Fiber Curl	4.0 m radius of curvature
Cladding Diameter	125.0 ± 0.7 µm
Core-Clad Concentricity	≤ 0.5 µm
Clad Non-Circularity	≤ 0.5 %

Coating Geometry

Coating Diameter	242 ± 5 µm
Coating Cladding Concentricity	<12 µm

Environmental Specification:

Environmental Test	Test Condition	Induced Attenuation 1150nm & 1625nm (dB/km)
Temperature Dependence	-60°C to +85°C *	≤ 0.05
Temperature Humidity Cycling	-10°C to +85°C up to 98% RH	≤ 0.05
Water Immersion	23 ±2° C	≤ 0.05
Heat Aging	85 ±2° C *	≤ 0.05
Damp Heat	85°C at 85% RH	≤ 0.05

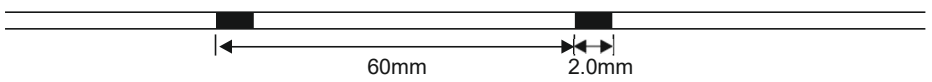
Color Identification of Fiber in the Stainless Steel Tube Unit

Without Color Ring		With S60 Color Ring		With D80 Color Ring		With S90 Color Ring	
Fiber No.	**Color**	**Fiber No.**	**Color**	**Fiber No.**	**Color**	**Fiber No.**	**Color**
1	Red	**13**	Red	**25**	Red	**37**	Red
2	Green	**14**	Green	**26**	Green	**38**	Green
3	Blue	**15**	Blue	**27**	Blue	**39**	Blue
4	Yellow	**16**	Yellow	**28**	Yellow	**40**	Yellow
5	Gray	**17**	Gray	**29**	Gray	**41**	Gray
6	Brown	**18**	Brown	**30**	Brown	**42**	Brown
7	Violet	**19**	Violet	**31**	Violet	**43**	Violet
8	Aqua	**20**	Aqua	**32**	Aqua	**44**	Aqua
9	Black	***21**	Black (White)	***33**	Black (White)	***45**	Black (White)
10	Orange	**22**	Orange	**34**	Orange	**46**	Orange
1	White	**23**	White	**35**	White	**47**	White
12	Pink	**24**	Pink	**36**	Pink	**48**	Pink

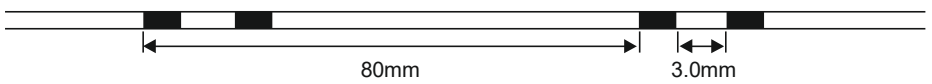
* **Remark:** The black color with color ring is changed to white color

Color Ring Method:

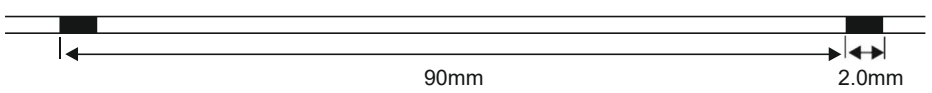
S60: Use single black color ring on the fiber surface with 60mm alternation:



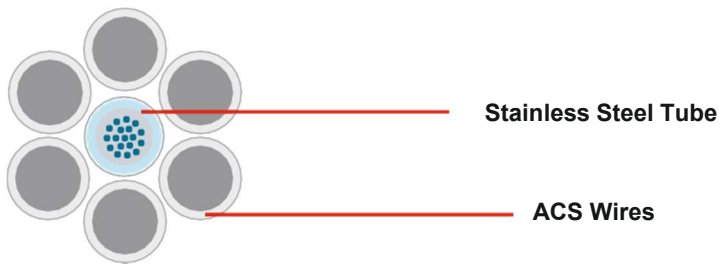
D80: Use single black color ring on the fiber surface with 60mm alternation:



S90: Use single black color ring on the fiber surface with 60mm alternation:

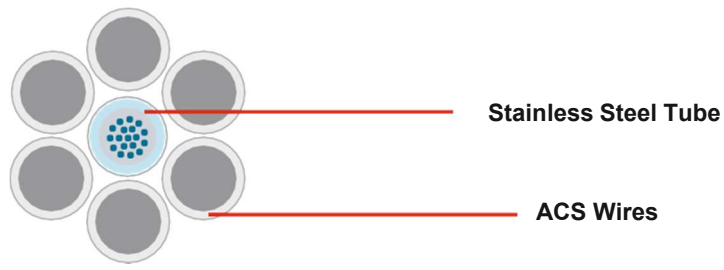


OPGW Datasheet 10.5



OPGW	ACS / 57.7	24/48 SM/NZDSF			10.5
Item	**Technical Data**	**Number**	**Material**	**Value**	**Unit**
01	**Tube**	1	SSLT	3.5	[mm]
02	**Total number of fibers**	24			
03	**Central tube**	1	SSLT	3.5	[mm]
04	**First layer roundwire**	6	ACS	3.5	[mm]
06	**Cable diameter**			10.50	[mm]
07	**Supporting Cross-section**			57.7	[mm²]
07/1	**Cross-section ACS**			57.7	[mm²]
08	**Cable weight**			406.8	[kg/km]
08/1	**weight of ACS wires**			381.9	[kg/km]
08/2	**weight of S.S TUBE**			23.7	[kg/km]
08/3	**weight of Grease**			1.2	[kg/km]
9	**Calculated breaking load**			68.6	[KN]
10	**Modulus of elasticity**			159.0	[kN/mm²]
11	**Coefficient of thermal expansion**	**..x10-6**		13.0	[1/K]
12	**Maximum tensile stress**			546.6	[N/mm²] at 46% UTS
13	**Everyday stress**			190.1	[N/mm²] at 16% UTS
14	**Permanent tensile stress**			855.4	[N/mm²] at 72% UTS
15	**D.C. Resistance at 20 °C**			1.493	[Ohm/km]
16	**Conductive cross-section**			14.4	[mm²]
17	**Calculated IEC60857 Short Circuit current from 20 to 180 °C**		- at (0.5) s	5.5	[kA]
18	**Calculated IEC60857 Short Circuit current from 20 to 200 °C**		- at (0.5) s	6.6	[kA]

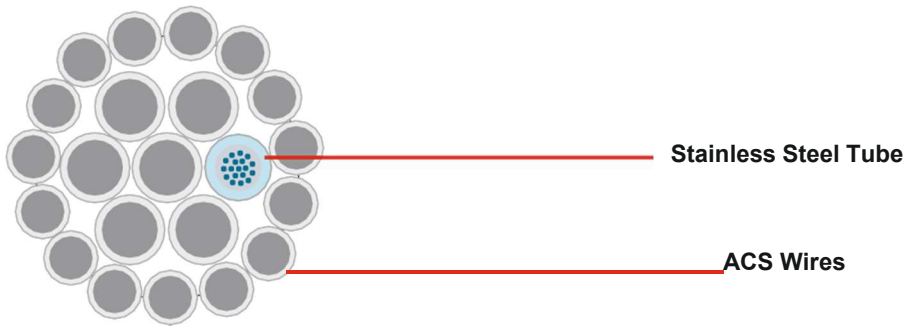
OPGW Datasheet 12



OPGW	ACS / 75.4	24/48 SM/NZDSF	12

Item	Technical Data	Number	Material	Value	Unit	
1	**Tube**	1	SSLT	4	[mm]	
2	**Total number of fibers**	24				
3	**Central tube**	1	SSLT	4.0	[mm]	
4	**First layer roundwire**	6	ACS	4.0	[mm]	
5	**Second layer**	0				
6	**Cable diameter**			12.00	[mm]	
7	**Supporting Cross-section**			75.4	[mm²]	
7/1	**Cross-section ACS**			75.4	[mm²]	
8	**Cable weight**			530.1	[kg/km]	
8/1	**weight of ACS wires**			499.7	[kg/km]	
8/2	**weight of S.S TUBE**			28.8	[kg/km]	
8/3	**weight of Grease**			1.6	[kg/km]	
9	**Calculated breaking load**			89.6	[KN]	
10	**Modulus of elasticity**			159.0	[kN/mm²]	
11	**Coefficient of thermal expansion ..x10-6**			13.0	]1/K]	
12	**Maximum tensile stress**			546.6	[N/mm²]	at 46% UTS
13	**Everyday stress**			190.1	[N/mm²]	at 16% UTS
14	**Permanent tensile stress**			855.0	[N/mm²]	at 72% UTS
15	**D.C. Resistance at 20 °C**			1.143	[Ohm/km]	
16	**Conductive cross-section**			18.8	[mm²]	
17	**Calculated IEC60857 Short Circuit current from 20 to 180 °C**			7.5	[kA]	
18	**Calculated IEC60857 Short Circuit current from 20 to 200 °C**			7.87	[kA]	

OPGW Datasheet 13.5



OPGW	ACS / 102.1	24 SM/NZDSF	13.5

Item	Technical Data	Number	Material	Value	Unit
1	Tube	1	SSLT	3.0	[mm]
2	Total number of fibers	24			No
3	Central tube	1	Steel tube	3.0	[mm]
4	First layer roundwire	5	ACS	3.0	[mm]
		1	SSLT	3.0	[mm]
5	Second layer roundwire	15	ACS	2.25	[mm]
6	Cable diameter			13.50	[mm]
7	Supporting Cross-section			102.1	[mm²]
7/1	Cross-section ACS			102.1	[mm²]
8	Cable weight			701.4	[kg/km]
8/1	weight of ACS wires			681.5	[kg/km]
8/2	weight of S.S TUBE			19.0	[kg/km]
8/3	weight of Grease			0.9	[kg/km]
9	Calculated breaking load			123.1	[KN]
10	Modulus of elasticity			159.0	[kN/mm²]
1	Coefficient of thermal expansion			13.0	[1/K]
12	Maximum tensile stress			506.5	[N/mm²]
13	Everyday stress			193.0	[N/mm²]
14	Permanent tensile stress			868.3	[N/mm²]
15	D.C. Resistance at 20 °C			0.731	[Ohm/km]
16	Conductive cross-section			25.5	[mm²]
17	Calculated IEC60857 Short Circuit current from 20 to 180 °C		- at (0.5) s	10.5	[kA]
18	Calculated IEC60857 Short Circuit current from 20 to 200 °C		- at (0.5) s	11	[kA]

General Installation

Complete Fiber Optic Solution

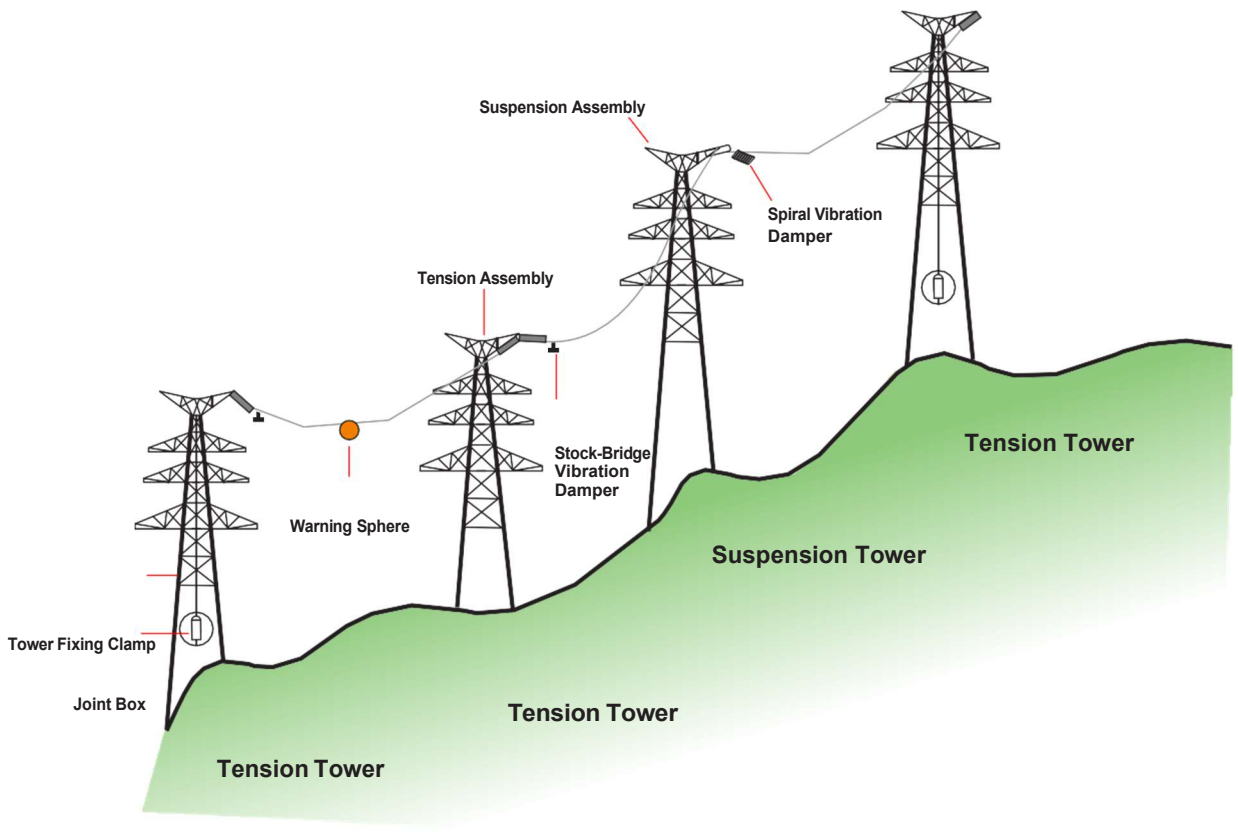
We supply a complete fiber optic solution. Sim Noor Yazdan Cable is ready to provide whatever assistance you require to install and integrate fiber technology into your aerial cable system.

Engineering & Installation Service

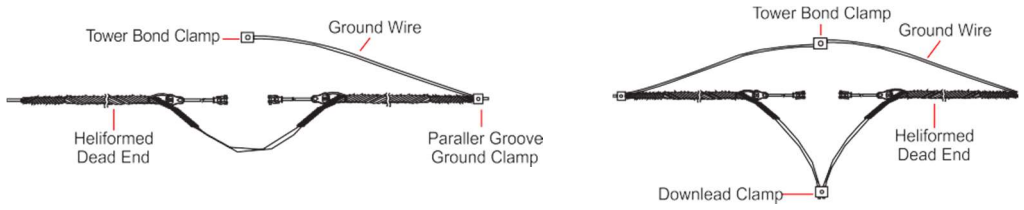
- Pre-Installation Planning
- Complete Turn-Key Installation
- Training / Commissioning
- Sag and Tension Calculations

Hardware & Accessories

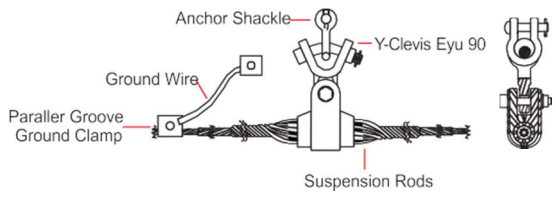
All Hardware & Accessories necessary for installation.



Tension Assembly Set

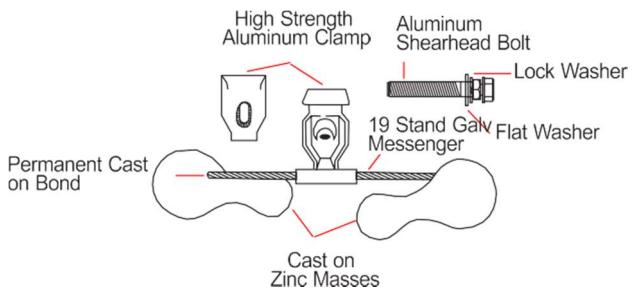


Suspension Assembly Set

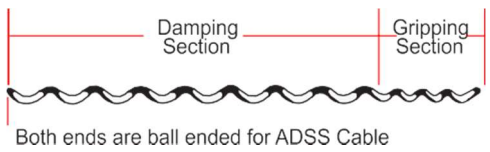


Vibration Damper

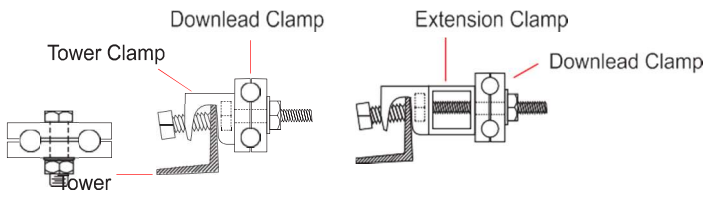
- Stock-Bridge Type



- Spiral Type



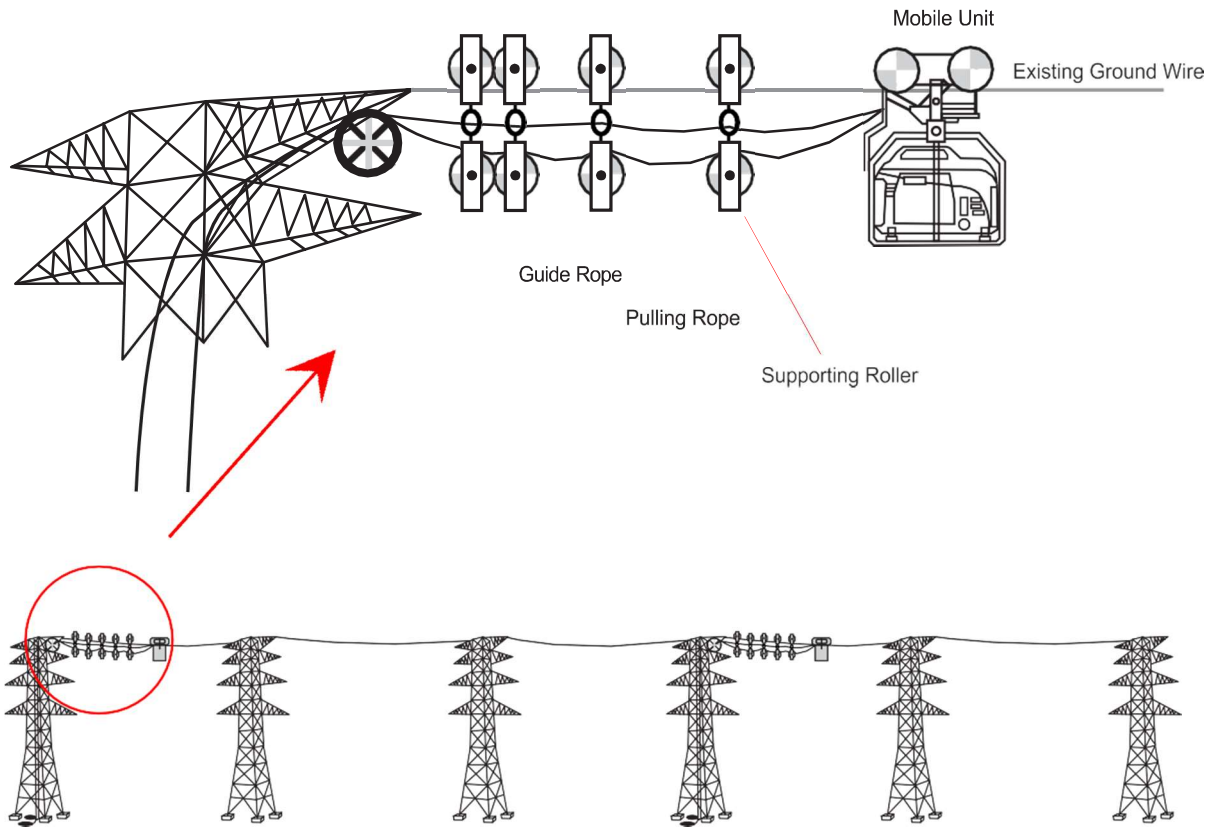
Tower Fixing & Earthing



Live-Line Installation

Features

- Preparation
- Analysis of Safety
- Attaching & Developing Supporting Roller
- Stringing & Turning-Over
- Recovering Existing Ground Wire
- Recovering & Supporting Roller & Rope
- Splicing & Testing


Mobile Unit
Existing Ground Wire
Guide Rope
Pulling Rope
Supporting Roller