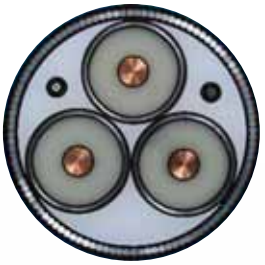
ORIENTCABLE
Stock Code: 603606



SUBMARINE CABLES

Company Profile

Who we are

Ningbo Orient Wires & Cables Co., Ltd (Orient Cable) established in 1998, listed in Shanghai Stock Exchange with Stock Code: 603606, is a hi-tech company in design, manufacture, installation service of subsea power cable, dynamic cable, umbilical systems.

In Orient Cable, the people are experienced and well understood the needs of power transmission industry. Our young engineers are well educated and work with passion, have perfect offshore Engineering knowledge and experience of project management in the offshore energy industry.

With over 700 employees in total, Orient Cable has three modern manufacture bases, one administrative center, one research & development center, and an office in Houston. We can confidently supply our customer with entire life-cycle products with high quality and properties. Orient Cable has entire Q&HSE management system awarded.

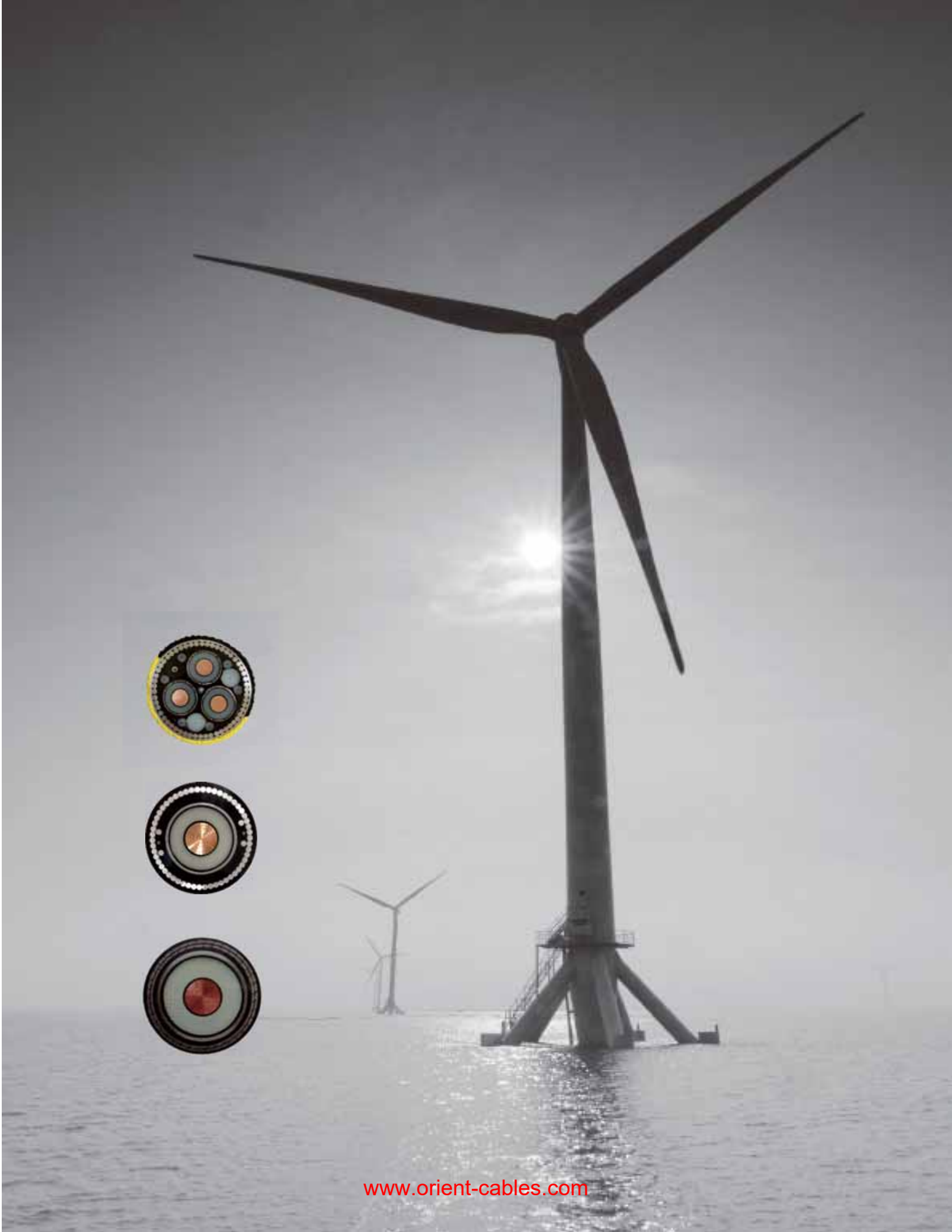
What we do

With full experience in wire and cable, we can make and supply full series of wire and cable products, including land cable, subsea cable, dynamic cable and umbilical systems etc.

Our professional engineering team can supply customers with technical support including installation, maintenance. Service covers the installation and maintenance of subsea power cable, dynamic cable, umbilical systems and renewable energy projects. In offshore engineering industry, our professional team supply professional power and control transmission solution for offshore wind power, oceanic energy and offshore Oil & gas industry.

With experience in offshore engineering in China and supplying professional service for Oil & Gas exploitation in Southeast Asia, we have possessed perfect ability of project management and installation service technology.

Contents



AC Optic Fiber Composite Submarine Cable

1kV to 35kV Optic Fiber Composite Submarine Cable

◯ Application

The product is mainly used in submarine for providing the smooth connection from islands to islands , from mainland to islands, from island to offshore platforms, between wind turbines and so on.

◯ Environmental type, three-core with round steel wire armored

1、Water Blocking Conductor
2、Conductor screen
3、XLPE insulation
4、Insulation screen
5、Lead sheath
6、Modified water proof sheath
7、Steel wire armoured
8、Outer covering

◯ Environmental type, three-core with round steel wire armored

1、Water Blocking Conductor
2、Conductor screen
3、XLPE insulation
4、Insulation screen
5、Copper TAPE
6、Modified water proof Semiconducting PE
7、PP Filler
8、Modified water proof PE jacket
9、Steel wire armoured
10、Outer covering

◯ Ordinary type, three cores with round steel wire armored

1、Water Blocking Conductor
2、Conductor screen
3、XLPE insulation
4、Insulation screen
5、Semiconductor water blocking tape
6、Lead sheath
7、Anticorrosive layer
8、PE sheath
9、Filler
10、Optical fibre elements
11、Bedding tape
12、Inner bedding
13、Galvanized steel wire
14、Outer covering

Main Technical Data of Submarine Power Cable Composite with OF single –core 8.7/15(10)kV

Spec.		50	70	95	120	150	185	240	300	400	500
Current Capacity	Seabed/Intertidal/Land	232/209/173	282/253/209	337/301/248	381/340/280	425/379/312	477/424/349	545/484/397	606/573/440	677/597/489	748/658/538
Resistance (Ω/km)	Max DC Resistance at 20° C	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366
	Max AC Resistance at 90° C	0.494	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.05
Capacitance (μF/km)		0.203	0.222	0.246	0.272	0.295	0.318	0.35	0.387	0.433	0.473
Designed Power (Without considering the power factor)		3.0	3.6	4.3	4.8	5.4	6.0	6.8	7.6	8.4	9.3
Min. Bending Radius		1220	1268	1325	1391	1449	1506	1587	1682	1797	1899
Outer Dia. (mm)		81.3	84.5	88.3	92.7	96.6	100.4	105.8	112.1	119.8	126.6
Weight of cable (kg/km)	at Air	16375	17831	19584	21658	23765	25874	29043	32844	38274	43390

Note: The power factor of the environmentally Submarine Power Cable Composite with OF is : 1.1–1.2

Main Technical Data of Submarine Power Cable Composite with OF single–core 12/20kV

Spec.		50	70	95	120	150	185	240	300	400	500
Current Capacity	Seabed/Intertidal/Land	232/209/173	282/253/209	337/301/248	381/340/280	425/379/312	477/424/349	545/484/397	606/573/440	677/597/489	748/658/538
Resistance (Ω/km)	Max DC Resistance at 20° C	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366
	Max AC Resistance at 90° C	0.494	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.05
(μF/km) Capacitance		0.176	0.192	0.211	0.232	0.251	0.27	0.296	0.327	0.365	0.397
Designed Power (Without considering the power factor)		6.0	7.2	8.6	9.7	10.8	12.0	13.7	15.2	16.9	18.6
Min. Bending Radius		1293	1340	1398	1463	1521	1580	1659	1754	1869	1971
Outer Dia. (mm)		86.2	89.3	93.2	97.5	101.4	105.3	110.6	116.9	124.6	131.4
Weight of cable (kg/km)	at Air	17871	19367	21328	23297	25453	27613	30845	34725	40252	45612

Note: The power factor of the environmentally Submarine Power Cable Composite with OF is : 1.1–1.2

Main Technical Data of Submarine Power Cable Composite with OF single –core 18/30kV

Spec.		70	95	120	150	185	240	300	400	500
Current Capacity	Seabed/Intertidal/Land	281/254/211	335/302/250	378/340/281	423/379/313	473/423/349	540/482/397	601/535/439	671/595/488	742/656/538
Resistance (Ω/km)	Max DC Resistance at 20° C	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366
	Max AC Resistance at 90° C	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.05
(μF/km) Capacitance		0.124	0.134	0.146	0.156	0.167	0.181	0.197	0.217	0.36
Designed Power (Without considering the power factor)		12.7	15.1	17.0	18.9	21.1	24.0	26.6	29.6	32.5
Min. Bending Radius		1703	1761	1826	1884	1943	2022	2117	2232	2334
Outer Dia. (mm)		113.5	117.4	121.7	125.6	129.5	134.8	141.1	148.8	155.6
Weight of cable (kg/km)	at Air	27970	30173	32415	34816	37213	40938	45215	51068	56850

Note: The power factor of the environmentally Submarine Power Cable Composite with OF is : 1.1–1.2

Note 1: Conditions of the current capacity: 1. sea-bed tem.25 ℃, the thermal resistance 0.7; 2. Intertidal soil tem. 25 ℃, the thermal resistance 1.0; 3. Land soil tem. 40 ℃, the thermal resistance 1.2
Note 2: Above data is for reference only.The actual design combined with engineering environment of submarine cable laying and can be tailored.

Main Technical Data of Submarine Power Cable Composite with OF three–core 8.7/15(10)kV

Spec.		3×50	3×70	3×95	3×120	3×150	3×185	3×240	3×300	3×400	3×500
Current Capacity	Seabed/Intertidal/Land	232/209/173	282/253/209	337/301/248	381/340/280	425/379/312	477/424/349	545/484/397	606/573/440	677/597/489	748/658/538
Resistance (Ω/km)	Max DC Resistance at 20° C	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366
	Max AC Resistance at 90° C	0.494	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.05
Capacitance (μF/km)		0.203	0.222	0.246	0.272	0.295	0.318	0.35	0.387	0.433	0.473
Designed Power (Without considering the power factor)		3.0	3.6	4.3	4.8	5.4	6.0	6.8	7.6	8.4	9.3
Min. Bending Radius		1220	1268	1325	1391	1449	1506	1587	1682	1797	1899
Outer Dia. (mm)		81.3	84.5	88.3	92.7	96.6	100.4	105.8	112.1	119.8	126.6
Weight of cable (kg/km)	at Air	16375	17831	19584	21658	23765	25874	29043	32844	38274	43390

Note: The power factor of the environmentally Submarine Power Cable Composite with OF is : 1.1–1.2

Main Technical Data of Submarine Power Cable Composite with OF three–core 12/20kV

Spec.		3×50	3×70	3×95	3×120	3×150	3×185	3×240	3×300	3×400	3×500
Current Capacity	Seabed/Intertidal/Land	232/209/173	282/253/209	337/301/248	381/340/280	425/379/312	477/424/349	545/484/397	606/573/440	677/597/489	748/658/538
Resistance (Ω/km)	Max DC Resistance at 20° C	0.387	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366
	Max AC Resistance at 90° C	0.494	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.05
(μF/km) Capacitance		0.176	0.192	0.211	0.232	0.251	0.27	0.296	0.327	0.365	0.397
Designed Power (Without considering the power factor)		6.0	7.2	8.6	9.7	10.8	12.0	13.7	15.2	16.9	18.6
Min. Bending Radius		1293	1340	1398	1463	1521	1580	1659	1754	1869	1971
Outer Dia. (mm)		86.2	89.3	93.2	97.5	101.4	105.3	110.6	116.9	124.6	131.4
Weight of cable (kg/km)	at Air	17871	19367	21328	23297	25453	27613	30845	34725	40252	45612

Note: The power factor of the environmentally Submarine Power Cable Composite with OF is : 1.1–1.2

Main Technical Data of Submarine Power Cable Composite with OF three–core 18/30kV

Spec.		3×70	3×95	3×120	3×150	3×185	3×240	3×300	3×400	3×500
Current Capacity	Seabed/Intertidal/Land	281/254/211	335/302/250	378/340/281	423/379/313	473/423/349	540/482/397	601/535/439	671/595/488	742/656/538
Resistance (Ω/km)	Max DC Resistance at 20° C	0.268	0.193	0.153	0.124	0.0991	0.0754	0.0601	0.047	0.0366
	Max AC Resistance at 90° C	0.342	0.247	0.196	0.159	0.128	0.098	0.079	0.063	0.05
(μF/km) Capacitance		0.124	0.134	0.146	0.156	0.167	0.181	0.197	0.217	0.36
Designed Power (Without considering the power factor)		12.7	15.1	17.0	18.9	21.1	24.0	26.6	29.6	32.5
Min. Bending Radius		1703	1761	1826	1884	1943	2022	2117	2232	2334
Outer Dia. (mm)		113.5	117.4	121.7	125.6	129.5	134.8	141.1	148.8	155.6
Weight of cable (kg/km)	at Air	27970	30173	32415	34816	37213	40938	45215	51068	56850

Note: The power factor of the environmentally Submarine Power Cable Composite with OF is : 1.1–1.2

Note 1: Conditions of the current capacity: 1. sea-bed tem.25 ℃, the thermal resistance 0.7; 2. Intertidal soil tem. 25 ℃, the thermal resistance 1.0; 3. Land soil tem. 40 ℃, the thermal resistance 1.2
Note 2: Above data is for reference only.The actual design combined with engineering environment of submarine cable laying and can be tailored.

AC Optic Fiber Composite Submarine Cable

66kV to 220kV Optic Fiber Composite Submarine Cable

Application

The product is mainly used in submarine for providing the smooth connection from islands to islands , from mainland to islands, from island to offshore platforms, between wind generators and so on.

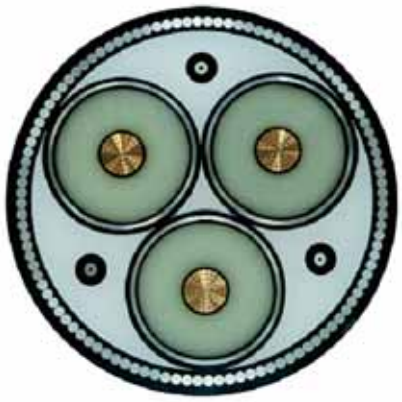
Single core with round steel wire armored

1、Water Blocking Conductor
2、Conductor screen
3、XLPE insulation
4、Insulation screen
5、Semiconductor water blocking tape
6、Lead sheath
7、Brass tape
8、Inner sheath
9、Inner bedding
10、Metal filler
11、Optical fibre elements
12、Plastic filler
13、Bedding tape
14、Galvanized steel wire
15、Outer covering

Single core single layer with flat non–magnetic alloy wire armored

1、Water Blocking Conductor
2、Conductor screen
3、XLPE insulation
4、Insulation screen
5、Semiconductor water blocking tape
6、Lead sheath
7、PE sheath
8、Bedding tape
9、Flat non–magnetic alloy wire
10、Outer covering

Three–core with round steel wire armored



1、Water Blocking Conductor
2、Conductor screen
3、XLPE insulation
4、Insulation screen
5、Semiconductor water blocking tape
6、Lead sheath
7、Anti-corrosion layer
8、PE sheath
9、Filler
10、Optical fibre elements
11、Bedding tape
12、Inner bedding
13、Galvanized steel wire
14、Outer covering

Main Technical Data of Submarine Power Cable Composite with OF 64/110kV (Galvanized steel wire armored)											
Spec.		1×240	1×300	1×400	1×500	1×630	1×800	1×1000	1×1200	1×1400	1×1600
Current Capacity	Seabed/Intertidal/Land	574/523/431	625/566/465	682/614/502	736/658/537	791/703/573	843/747/606	893/788/639	1003/882/713	1048/919/743	1083/948/765
Resistance (Ω/km)	Max DC Resistance at 20° C	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176	0.0151	0.0129	0.0113
	Max AC Resistance at 90° C	0.098	0.078	0.062	0.05	0.04	0.033	0.028	0.021	0.018	0.016
Capacitance		0.125	0.135	0.153	0.169	0.186	0.207	0.223	0.242	0.256	0.269
Designed Power (Without considering the power factor)		82	88	95	102	109	115	121	135	141	145
Min. Bending Radius		2170	2196	2224	2274	2324	2394	2484	2590	2666	2738
Outer Dia.		108.5	109.8	111.2	113.7	116.2	119.7	124.2	129.5	133.3	136.9
Weight of cable	at Air	27825	28845	30196	32039	34176	37103	40709	44690	48103	51436

Main Technical Data of Submarine Power Cable Composite with OF 64/110kV (Single - layer flat bronze wire armored)											
Spec.		1×240	1×300	1×400	1×500	1×630	1×800	1×1000	1×1200	1×1400	1×1600
Current Capacity	Seabed/Intertidal/Land	630/577/478	697/635/524	774/701/576	852/767/628	930/833/680	1062/948/773	1144/1018/828	1217/1080/878	1277/1130/917	1328/1174/952
Resistance (Ω/km)	Max DC Resistance at 20° C	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176	0.0151	0.0129	0.0113
	Max AC Resistance at 90° C	0.097	0.078	0.061	0.048	0.038	0.031	0.026	0.02	0.017	0.015
Capacitance		0.125	0.135	0.153	0.169	0.186	0.207	0.223	0.242	0.256	0.269
Designed Power (Without considering the power factor)		91	99	109	119	129	147	157	167	174	181
Min. Bending Radius		1788	1814	1842	1892	1932	2032	2122	2228	2304	2376
Outer Dia.		89.4	90.7	92.1	94.6	96.6	101.6	106.1	111.4	115.2	118.8
Weight of cable	at Air	18442	19368	20601	22249	24180	28089	31401	35035	38182	41279

Main Technical Data of Submarine Power Cable Composite with OF 64/110KV(Single nonmagnetic alloy wire armored)											
Spec.		1×240	1×300	1×400	1×500	1×630	1×800	1×1000	1×1200	1×1400	1×1600
Current Capacity	Seabed/Intertidal/Land	673/635/455	756/711/504	856/801/562	959/894/621	1069/993/681	1181/1093/742	1283/1184/796	1365/1257/839	1507/1382/915	1581/1447/952
Resistance (Ω/km)	Max DC Resistance at 20° C	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176	0.0151	0.0129	0.0113
	Max AC Resistance at 90° C	0.097	0.078	0.061	0.048	0.038	0.031	0.026	0.02	0.017	0.015
Capacitance		0.125	0.135	0.153	0.169	0.186	0.207	0.223	0.242	0.256	0.269
Designed Power (Without considering the power factor)		86	96	107	118	129	141	151	159	174	181
Min. Bending Radius		2170	2196	2224	2274	2324	2394	2484	2590	2666	2738
Outer Dia.		108.5	109.8	111.2	113.7	116.2	119.7	124.2	129.5	133.3	136.9
Weight of cable	at Air	28994	30029	31393	33261	35422	38299	41963	45978	49425	52792

Main Technical Data of Submarine Power Cable Composite with OF 64/110kV								
Spec.		3×240	3×300	3×400	3×500	3×630	3×800	3×1000
Current Capacity	Seabed/Intertidal/Land	532/482/399	593/536/443	666/598/494	741/664/547	834/745/613	912/812/667	980/870/714
Resistance (Ω/km)	Max DC Resistance at 20° C	0.0754	0.0601	0.047	0.0366	0.0283	0.0221	0.0176
	Max AC Resistance at 90° C	0.097	0.078	0.062	0.049	0.039	0.032	0.027
Capacitance		0.125	0.135	0.153	0.169	0.186	0.207	0.223
Designed Power (Without considering the power factor)		75	84	94	104	116	127	136
Min. Bending Radius		2874	2919	2963	3042	3125	3239	3456
Outer Dia.		191.6	194. 6	197. 5	202. 8	208. 3	215. 9	230.4
Weight of cable	at Air	72040	75091	79390	84511	91647	100622	114807

Note 1: Conditions of the current capacity: 1. sea-bed tem.25 ℃, the thermal resistance 0.7; 2. Intertidal soil tem. 25 ℃, the thermal resistance 1.0; 3. Land soil tem. 40 ℃, the thermal resistance 1.2
Note 2: Above data is for reference only.The actual design combined with engineering environment of submarine cable laying and can be tailored.

Main Technical Data of Submarine Power Cable Composite with OF 127/220kV (Galvanized steel wire armored)

Spec.		1×400	1×500	1×630	1×800	1×1000	1×1200	1×1400	1×1600	1×1800	1×2000	1×2200	1×2500
Current Capacity	Seabed/Intertidal/Land	722/619/475	791/670/513	855/717/545	918/717/577	958/790/601	1062/866/648	1110/905/675	1156/936/697	1192/962/715	1313/1059/786	1340/1078/799	1384/1110/821
Resistance (Ω/km)	Max DC Resistance at 20° C	0.047	0.0366	0.0283	0.0221	0.0176	0.0151	0.0129	0.0113	0.0101	0.009	0.0083	0.0073
	Max AC Resistance at 90° C	0.062	0.05	0.04	0.033	0.028	0.021	0.018	0.016	0.015	0.014	0.013	0.012
Capacitance		0.117	0.124	0.136	0.151	0.166	0.179	0.188	0.197	0.205	0.213	0.22	0.23
Designed Power (Without considering the power factor)		180	195	207	219	229	246	257	265	272	299	304	312
Min. Bending Radius		2714	2778	2806	2854	2898	3004	3108	3180	3240	3388	3442	3524
Outer Dia.		135.7	138.9	140.3	142.7	144.9	150.2	155.4	159	162	169.4	172.1	176.2
Weight of cable	at Air	41660	44030	45795	48338	51074	55409	59710	63297	66616	77314	80606	85630

Main Technical Data of Submarine Power Cable Composite with OF 127/220kV (Double layer flat bronze wire armored)

Spec.		1×400	1×500	1×630	1×800	1×1000	1×1200	1×1400	1×1600	1×1800	1×2000	1×2200	1×2500
Current Capacity	Seabed/Intertidal/Land	801/735/608	892/814/672	986/894/735	1080/973/797	1249/1121/915	1337/1196/974	1414/1261/1026	1601/1431/1166	1667/1487/1210	1735/1545/1255	1783/1585/1287	1860/1649/1338
Resistance (Ω/km)	Max DC Resistance at 20° C	0.047	0.0366	0.0283	0.0221	0.0176	0.0151	0.0129	0.0113	0.0101	0.009	0.0083	0.0073
	Max AC Resistance at 90° C	0.061	0.048	0.038	0.031	0.026	0.02	0.017	0.015	0.014	0.013	0.012	0.011
Capacitance		0.117	0.124	0.136	0.151	0.166	0.179	0.188	0.197	0.205	0.213	0.22	0.23
Designed Power (Without considering the power factor)		231	256	280	303	348	371	390	444	461	478	490	509
Min. Bending Radius		2394	2458	2486	2534	2618	2724	2828	2980	3040	3108	3162	3244
Outer Dia.		119.7	122.9	124.3	126.7	130.9	136.2	141.4	149	152	155.4	158.1	162.2
Weight of cable	at Air	36087	38380	40109	42594	48704	53057	57378	68804	72303	76022	79366	84485

Main Technical Data of Submarine Power Cable Composite with OF 127/220KV(Single nonmagnetic alloy wire armored)

Spec.		1×400	1×500	1×630	1×800	1×1000	1×1200	1×1400	1×1600	1×1800	1×2000	1×2200	1×2500
Current Capacity	Seabed/Intertidal/Land	844/797/515	951/895/629	1068/1000/720	1187/1107/826	1294/1202/948	1463/1355/1121	1561/1442/1192	1644/1516/1250	1713/1577/1250	1893/1745/1439	1950/1795/1480	2040/1875/1544
Resistance (Ω/km)	Max DC Resistance at 20° C	0.047	0.0366	0.0283	0.0221	0.0176	0.0151	0.0129	0.0113	0.0101	0.009	0.0083	0.0073
	Max AC Resistance at 90° C	0.061	0.048	0.038	0.031	0.026	0.02	0.017	0.015	0.014	0.013	0.012	0.011
Capacitance		0.117	0.124	0.136	0.151	0.166	0.179	0.188	0.197	0.205	0.213	0.22	0.23
Designed Power (Without considering the power factor)		196	239	274	314	361	427	454	476	495	548	564	588
Min. Bending Radius		2714	2778	2806	2854	2898	3004	3108	3180	3240	3388	3442	3524
Outer Dia.		135.7	138.9	140.3	142.7	144.9	150.2	155.4	159	162	169.4	172.1	176.2
Weight of cable	at Air	42756	45152	46930	49492	52248	56627	60971	64589	67934	79161	82484	87554

Main Technical Data of Submarine Power Cable Composite with OF three-core 127/220kV

Spec.		3×400	3×500	3×630	3×800	3×1000	3×1200
Current Capacity	Seabed/Intertidal/Land	675/610/504	753/677/559	835/749/617	915/817/671	986/878/720	1076/961/789
Resistance (Ω/km)	Max DC Resistance at 20° C	0.047	0.0366	0.0283	0.0221	0.0176	0.0151
	Max AC Resistance at 90° C	0.062	0.049	0.039	0.032	0.027	0.024
Capacitance		0.117	0.124	0.137	0.152	0.168	0.181
Designed Power (Without considering the power factor)		192	212	234	255	274	300.8
Min. Bending Radius		4894	5056	5116	5216	5312	5534
Outer Dia.		244.7	252.8	255.8	260.8	265.6	276.7
Weight of cable	at Air	113184	121927	127227	135003	143453	156707

Note 1: Conditions of the current capacity: 1. sea-bed tem.25 ℃, the thermal resistance 0.7; 2. Intertidal soil tem. 25 ℃, the thermal resistance 1.0; 3. Land soil tem. 40 ℃, the thermal resistance 1.2
Note 2: Above data is for reference only.The actual design combined with engineering environment of submarine cable laying and can be tailored.

AC Optic Fiber Composite Submarine Cable

400kV and 500kV Optic Fiber Composite Submarine Cable

Application

The product is mainly used in submarine for providing the smooth connection from islands to islands , from mainland to islands, from island to offshore platforms, between wind generators and so on.

Single core double layer with flat non–magnetic alloy wire armored

1、Water Blocking Conductor
2、Conductor screen
3、XLPE insulation
4、Insulation screen
5、Semiconductor water blocking tape
6、Lead sheath
7、PE sheath
8、Bedding tape
9、Outer flat non–magnetic alloy wire
10、Outer covering

Main Technical Data of Submarine Power Cable Composite with OF 290/500kV (Double layer flat bronze wire armored)

Spec.		1×800	1×1000	1×1200	1×1400	1×1600	1×1800	1×2000	1×2200	1×2500
Current Capacity	Seabed/Intertidal/Land	1192/1088/893	1314/1191/974	1411/1275/1040	1502/1351/1099	1662/1498/1219	1732/1555/1263	1847/1658/1346	1905/1707/1385	1994/1782/1443
Resistance (Ω/km)	Max DC Resistance at 20° C	0.0221	0.0176	0.0151	0.0129	0.0113	0.0101	0.009	0.0083	0.0073
	Max AC Resistance at 90° C	0.029	0.023	0.02	0.017	0.015	0.014	0.013	0.012	0.011
Capacitance		0.127	0.137	0.147	0.157	0.164	0.174	0.18	0.185	0.193
Designed Power (Without considering the power factor)		773	843	900	951	1055	1093	1165	1199	1249
Min. Bending Radius		3054	3098	3204	3264	3414	3430	3538	3592	3676
Outer Dia.		152.7	154.9	160.2	163.2	170.7	171.5	176.9	179.6	183.8
Weight of cable	at Air	62435	65396	70270	73592	86552	88695	97414	101061	106642

Note 1: Conditions of the current capacity: 1. sea–bed tem.25 ℃, the thermal resistance 0.7; 2. Intertidal soil tem. 25 ℃, the thermal resistance 1.0; 3. Land soil tem. 40 ℃, the thermal resistance 1.2
Note 2: Above data is for reference only.The actual design combined with engineering environment of submarine cable laying and can be tailored.

DC Optic Fiber Composite Submarine Cable

1 kV and 500kV DC Optic Fiber Composite Submarine Cable

Product Description

DC power transmission system includes the DC Submarine cable, converter transformers and related accessories.

Features

- Efficient transportation, slighter loss and long - distance transmission
- Easy to adjust and change the current power transmission direction and high stability
- No larger short circuit current and ring circuit current
- Longer life than AC system
- Improving the power quality of distribution

Application

It mainly used in Power transmission, AC power network interconnection and control, different networks, such as Island Power grid, offshore platforms, wind power, connecting power plants, long distance power supply and marine power supply.

Submarine Cable Structure for DC transmission system

1、Water Blocking Conductor
2、Conductor screen
3、HVDC XLPE insulation
4、Insulation screen
5、Semiconductor water blocking tape
6、Lead sheath
7、Inner sheath
8、Plastic filler
9、Optical fibre elements
10、Metal filler
11、Bedding tape
12、Galvanized steel wire
13、Outer covering

DC Optic Fiber Composite Submarine Cable

Main technical data of XLPE insulation DC cable for DC transmission

Seabed intertidal installation： Buried depth 1.0 m; Temperature 28 ℃; Thermal resistance 1.2 K. W/m

Cross section	Conductor	mm^2	95	120	150	185	240	300	400	500	630	800	1000	1200	1600
Current capacity	abreast installation	A	285	325	365	420	485	555	645	740	855	985	1125	1240	
	parallel installation		330	380	425	485	575	655	755	875	1020	1175	1340	1470	
±30kV Transmission Power	abreast installation	MW	17.1	19.5	21.9	25.2	29.1	33.3	38.7	44.4	51.3	59.1	67.5	74.4	87.0
	parallel installation		19.8	22.8	25.5	29.1	34.5	39.3	45.3	52.5	61.2	70.5	80.4	88.2	104.4
	Cable Weight	kg/m	10.8	11.4	12.1	12.8	14.0	15.2	17.0	18.8	21.0	23.8	26.9	30.3	36.3
	Outer Dia	mm	68.1	69.7	71.5	73.2	75.7	78.2	81.8	84.9	88.6	93.2	97.7	103.0	110.4
±80kV Transmission Power	abreast installation	MW	45.6	52.0	58.4	67.2	77.6	88.8	103.2	118.4	136.8	157.6	180.0	198.4	232.0
	parallel installation		52.8	60.8	68.0	77.6	92.0	104.8	120.8	140.0	163.2	188.0	214.4	235.2	278.4
	Cable Weight	kg/m	12.9	13.6	14.3	15.1	15.6	16.9	18.8	20.6	22.8	25.8	29.0	31.6	37.6
	Outer Dia	mm	75.9	77.5	79.3	81.1	81.3	83.8	87.4	90.6	94.3	98.9	103.4	106.4	113.8

Cross section	Conductor	mm^2	300	400	500	630	800	1000	1200	1600	2000	2500
Current capacity	abreast installation	A	530	615	710	820	950	1080	1190	1405	1605	1830
	parallel installation		605	700	810	945	1095	1255	1375	1640	1875	2145
±150kV Transmission Power	abreast installation	MW	159	184	213	246	285	324	357	421	481	549
	parallel installation		181	210	243	283	328	376	412	492	562	643
	Cable Weight	kg/m	26.9	25.6	29.4	30.1	30.1	32.4	35.8	42.1	48.7	51.8
	Outer Dia	mm	104.7	106.1	111.2	112.9	112.9	115.3	119.8	127	134.5	137.5
±200kV Transmission Power	abreast installation	MW	212	246	284	328	380	432	476	562	642	732
	parallel installation		242	280	324	378	438	502	550	656	750	858
	Cable Weight	kg/m	29.7	28.4	31.8	34.4	36.8	40.4	44.3	51.3	57.4	65.0
	Outer Dia	mm	112.6	111.2	115.7	119.4	121.8	126.3	131.5	139.4	145.4	152.2
±250kV Transmission Power	abreast installation	MW	–	307	355	410	475	540	595	702	802	915
	parallel installation		–	350	405	472	547	627	687	820	937	1072
	Cable Weight	kg/m	–	37.7	40.0	40.1	43.7	47.5	51.7	58.7	65.4	73.3
	Outer Dia	mm	–	130.5	133.7	131.8	136.4	140.9	146.1	153.6	160.0	166.8
±320kV Transmission Power	abreast installation	MW	–	–	–	–	608	691.2	761.6	899.2	1027.2	1171.2
	parallel installation		–	–	–	–	700.8	803.2	880	1049.6	1200	1372.8
	Cable Weight	kg/m	–	–	–	–	50.6	54.6	56.5	63.8	70.6	78.7
	Outer Dia	mm	–	–	–	–	149.9	154.4	155.1	162.6	169.0	175.8

Accessories

Chinese Finger / Pulling Head

Flexible enough, strong enough to ensure the transport safety and pulling.

Cable Termination

Well matched with different cable voltages and models, and qualified in special underwater conditions, the termination is characterized as anti-salt, moisture-proof, dirty-free, and etc.

Termination Junction box

Provide the smooth connection of electric cables between subsea and platforms. Equipped with drying system, the tank's inside will always remain dry with box's wire inlets safely protected.

Optical Fiber Junction Box

To Protect the transition of submarine optical fiber cable and optical fiber management system. Applied to urgently repair the fiber of optical composite submarine cable after damaged and it is simple to operate and

Accessories

Anchoring

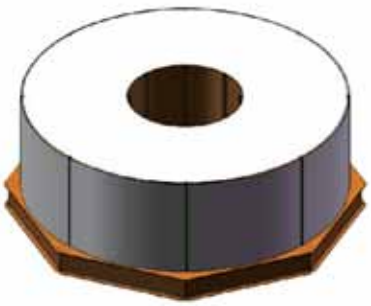
Mechanically fix the the cable armoring so as to ensure the safety of cable structure when it is power loaded. Anchoring system can be divided into offshore anchoring and land anchoring. Offshore anchoring system apply to oil platform, drilling platform for submarine cable suspension, fix. Land anchoring system apply to tower unit of submarine cable and overland cable suspension and fix.

Bend Stiffener

Designed to add local stiffness to a riser, flowline, cable or umbilical to limit the bending stresses and curvature to acceptable levels

Subamrine Cable Joint

To provide a quick optical and electrical cable connection, apply to both single core cable and three core submarine cable up to 500kV.



Packing Carousel

Customized designs based on different models and length of subsea cables. Provide a quick comfortable operatoin in lifting and mobilizing.

Typical performance

220kV AC 1x500mm2, submarine cable system for Zhoushan island connection

Customer requirements and project challenges

STATE GRID CORPORATION OF CHINA required a turnkey cable solution that is safe for the environment and that can reliably deliver the power from the island to the substation. The cable solution includes three 220 kV AC single core submarine XLPE cables installed with approximately 50m separation.

Three 20.7KM single-core submarine cables

Scope of supply

Cable system design and engineering

Type testing and fabrication of submarine cables, underground cables and accessories civil construction at the landing sites

cable laying and installation guidance

Commissioning

Project overview: Maximum depth of 49m, Sear out esdominated by silty clay, moisture content, soft soil. Landing area local bed rock; water temperature8-28℃.Cableoutof the ground part of the average daily maximum temperature of the hottest month is+40 ℃.

Required that each of the three submarine cables should be extruded in a single continuous length without any factory joints. Such a long extruded cable in one continuous length had never been attempted before at this voltage level and conductor square number. It requires an exceptional level of expertise and quality at the cable factory, with no margin for error in the extrusion process which, for a cable of this length, takes more than 15 days.

The ORIENT CABLE solution

ORIENT CABLE provided a turnkey 220 kV submarine XLPE cable system including system design and engineering, testing and manufacturing, cable laying and installation guidance, and commissioning. The 220kV submarine cable runs from November 2010 until now has maintained a good performance.

Typical performance

China first longest 220kV AC 1600mm2, submarine cable system for PuTian Wind Farm Renewable Energy Project, FuJian province, China.

- World's longest1600mm2, 220kV AC submarine cable.
- Three 15km single-coresubmarine cables – each cable extruded in one continuous lengthwithout factory joints
- Cables buried at up to 4m in bottom sediments.

Project description

PuTian Wind farm is a new high efficiency renewable Energy Project located in PuTian, Fujian province that is owned by the state-owned energy company CHINA LONGYUAN GROUP CORPORATION UMITED.

The wind farm is located close to the Nanri Island in Fujian province. When completed in the spring of 2015, the wind farm will be able to generate up to 400 MW of electricity for the Fujian province wholesale power market.

The power generated by the wind farm will be fed into the Fujian province power transmission network at Lock City's 220 kV substations. The power will be fed to the substation via the 220 kV AC submarine XLPE cable system.

Scope of supply

-Cable system design and engineering
-Type testing and fabrication of submarine cables,
-Cable laying and installation guidance
-Commissioning

Customer requirements and project challenges

-Required a turnkey cable solution that is safe for the environment and that can reliably deliver the power from the wind farm to the Lock city's substation. The cable solution includes three 220 kV AC singlecore submarine XLPE cables installed with approximately 8m separation.
-Due to concerns about future risk of anchor damage and fishing net, state agencies required that the cables be buried at a depth of up to 4m in the bottom sediments.
-Required that each of the three submarine cables should be extruded in a single continuous length without any factory joints.

The ORIENT CABLE solution

The construction work at the landing sites and the laying of the cables were performed by a Shanghai Foundation Engineering Group. field testing will be done in later 2015. The entire BEC project is scheduled to commence commercial operation and supply power to the Fujian province transmission network in the spring of 2016.

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