



TF Kable
TELE-FONIKA Kable Sp. z o.o. S.K.A.



TELE- FONIKA Kable, one of the largest manufacturers of wire and cable in the world is a fully integrated manufacturer, recognized by the industry as a world class producer of quality wire and cable products.

The company specializes in electrical wire and cable products for heavy industry, mining, utility, and energy applications utilizing materials to meet strict mechanical and electrical performance requirements.

Global cable production

- Low Voltage Power, Control and Instrumentation cables
- Rubber insulated cables
- Medium and high voltage power cables
- Shipboard Cables
- Oil and Gas Cables
- Mining Cables
- Bare and insulated overhead conductors
- Automotive wires
- Winding wires
- Telecommunication cables
- Telephone, fiber optic, data & communication cables

TF Kable key statistics

- 2 billion USD in annual turnover
- 15th largest wire and cable manufacturer in the world
- 4th largest wire and cable manufacturer in Europe
- 4100 total Group employees
- 7 production facilities in Europe
- 14 wholly owned subsidiary companies (North/South America, Europe, Africa, Australia, Asia)
- 25,000 different types of wire and cable constructions



Your one-stop source for industrial and utility wire and cable; from manufacturing to distribution, TELE-FONIKA Kable is today's premier provider.

By 2020, it is estimated that 12% of the world's energy will be produced by wind power, which will have a tremendous effect on the demand for quality cable products for both in tower applications and the wind farm distribution system. Windmills are constantly evolving and are being installed in offshore environments that are more extreme and highly volatile. This has a tremendous affect on the equipment such as cables, which transmit the power to the distribution network. TELE-FONIKA's TFWIND cable line is specifically designed as the world's most comprehensive and technologically advanced cable solution for on-shore and offshore projects.

TELE-FONIKA Kable has accumulated expertise in both land-based and maritime energy cable

products in regions stretching across North America, Europe and Asia. Not only can we promptly respond to wind turbine specifications, we also understand the overall energy context, from generation, to transmission and final distribution within the grid. TELE-FONIKA Kable is keened on providing the right technical solution as per the OEM's requirements and will customize where appropriate. Long lasting partnerships have been formed with the largest wind tower companies by providing extensive engineering support during feasibility studies, in depth plant visits and the supply of quality products. With a global presence and a sales distribution network stretching 70 countries, TELE-FONIKA Kable is well positioned to provide the best products and logistics for any type of wind project.

TELE-FONIKA Kable TFWIND benefits

- Global Supplier of all energy cables for wind turbines
- Light, compact, flexible cables that can handle vibration, extreme environment temperatures, (-40°C to +55°C) and torque for durability
- Mastery of maritime conditions based on shipbuilding, oil & gas & submarine energy
- A comprehensive range of high-quality windmill cables from one supplier
- Supreme mechanical, thermal and chemical resistance
- Superior resistance to torsional stresses in tower applications.
- Fast delivery times through dedicated logistics



Content:	Page
1. Wind turbine cables	7
H07BQ-F Halogen Free Flexible	7
SC (105°C) Flexible	8
H07V-K Flexible	9
SIF Flexible	10
2. Wind tower cables	11
Flextreme Super Wind 6	11
Flextreme Wind	12
DLO	13
H07BN4-F, TQ 6381	14
NSSHOU	15
H07ZZ-F Low Smoke Halogen Free	16
NSGAFOU	17
NTSCGEWOU	18
3. Power distribution cables	19
N2XS(F)2Y, NA2XS(F)2Y	19
NYY -J	20

Wind Tower – cables application



NACELLE section	H07BQ-F SC 105 H07V-K SIF
TOWER section	Flextreme Super Wind 6 Flextreme Wind DLO H07BN4-F, TQ6381 H07ZZ-F NSGAFOU NTSCGEWOU NYY-J
POWER OUTPUT section	NYY-J N2XS(F)2Y, NA2XS(F)2Y

WIND TURBINE CABLES

H07BQ-F Halogen Free Flexible

Nominal voltage: 450/750

Standard: HD 22.20

Temperature range: -20° C to 90° C

Minimal bending radius: 5 D

Construction: annealed copper class 5 conductor, EPR insulation, TPU outer sheath

Approvals: HAR, CE

Properties: RoHS, UV resistant, oil resistant

Application: Control devices connection



H07BQ-F Flexible

Cross section mm ²	Outer diameter approx. mm	Weight approx. kg/km
2x1	7,4	66
2x1,5	8,2	85
2x2,5	9,8	124
3x1	7,8	80
3x1,5	8,7	104
3x2,5	10,3	154
4x1	8,7	101
4x1,5	9,7	130
4x2,5	11,5	193
5x1	9,7	129
5x1,5	10,6	161
5x2,5	12,8	244

WIND TURBINE CABLES

SC (105°C) Flexible

Nominal voltage:

Standard: UL 62; UL 1581

Temperature range: -40° C to 105° C

Minimal bending radius: 9 D

Construction: annealed copper class B conductor, EPR insulation, CPE outer sheath

Approvals: UL E228208

Properties: RoHS, UV resistant

Application: Energy transmission in wind power station tower



SC 105 Flexible

Size	Outer diameter approx. inch	Outer diameter approx. mm	Weight approx. lb/ Mfeet	Weight approx. kg/ km
8	0,36	9,1	100	148
6	0,371	9,4	131	195
4	0,43	10,9	189	282
2	0,509	12,9	285	424
1	0,611	15,5	379	564
1/0	0,672	17,1	463	689
2/0	0,697	17,7	549	816
3/0	0,777	19,7	674	1003
4/0	0,803	20,4	814	1212

WIND TURBINE CABLES

H07V-K Flexible

Nominal voltage: 450/750 V

Standard: DIN VDE 0281

Temperature range: -30° C to 70° C

Flame test: EN 60332-1-2:2004 ,IEC 60332-1-2:2004

Minimal bending radius: 4 D

Construction: annealed copper class 5 conductor, PVC insulation,

Approvals: CE, HAR

Properties: RoHS,

Application: For control panels



H07V-K Flexible

Cross section mm ²	Outer diameter approx. mm	Weight approx. kg/km
1,5	2,9	20
2,5	3,6	31
4	4,1	45
6	4,6	63
10	6	107
16	7,1	161
25	8,7	247
35	9,8	344
50	11,8	483
70	13,6	669
95	16,1	886
120	17,2	1111
150	19,4	1389
185	22,1	1697
240	24	2210

WIND TURBINE CABLES

SIF Flexible

Nominal voltage: 300/500 V

Standard: VDE 0250, HD 22

Temperature range: -60° C to 180° C

Flame test: EN 60332-1-2:2004 ,IEC 60332-1-2:2004

Minimal bending radius: 4 D

Construction: annealed, tinned copper class 5 conductor, silicone rubber insulation

Approval: HAR, CE

Properties: RoHS, UV resistant, oil resistant

Application: For connections in switching panels in extreme temperatures



SIF

Cross section mm ²	Outer diameter approx. mm	Weight approx. kg/km
0,5	2,1	8
0,75	2,3	10
1	2,4	13
1,5	2,7	17
2,5	3,4	28
4	4,1	43
6	4,6	61
10	6,1	103
16	7,2	157
25	10,3	270
35	11,6	372
50	13,9	524
70	16	724
95	18,4	944
120	20	1193

WIND TOWER CABLES

Flextreme Super Wind 6

Nominal voltage: 450/750 V

Standard: HD 22.4 S4

Temperature range: -40° C to 90° C

Flame test: EN 60332-1-2:2004 ,IEC 60332-1-2:2004

Minimal bending radius: 5 D

Construction: special construction copper conductor, special insulation rubber compound, special outer sheath rubber compound

Approval: CE

Properties: RoHS, UV resistant, oil resistant

Application: Loop cable, dedicated to torsions in extreme weather conditions



Flextreme Super wind 6

Cross section mm ²	Outer diameter approx. mm	Weight approx. kg/km
150	26,3	1736
185	29,4	2109

WIND TOWER CABLES

Flextreme Wind

Nominal voltage: 450/750 V

Standard: HD 22.4 S4

Temperature range: -40° C to 90° C

Flame test: EN 60332-1-2:2004, IEC 60332-1-2:2004

Minimal bending radius: 6 D

Construction: annealed, tinned copper class 5 conductor, EPR insulation, PCP outer sheath

Approvals: HAR, CE

Properties: RoHS, UV resistant, oil resistant

Application: Energy transmission in wind power station tower from generator to base, loop cable



Flextreme Wind

Cross section mm ²	Outer diameter approx. mm	Weight approx. kg/km
16	11,5	250
25	13,3	357
35	14,4	465
50	17,2	653
70	19,3	875
95	22,2	1142
120	23,7	1402
150	26,3	1736
185	29,4	2109
240	31,5	2665
300	35,7	3305
400	38,4	4216
500	43,8	5299
630	48,4	6852

WIND TOWER CABLES

DLO

Standard: ICEA S-75-381-1997/WC 58

Temperature range: -40° C to 90° C

Flame test: FT1, FT4

Minimal bending radius: 9 D

Construction: annealed, tinned copper conductor, suitable tape separator, EPR insulation, CPE outer sheath

Approvals: E193954 (UL), P-7K-268080-01-MSHA, VW -1 CSA 205591, RW 90 EP, ST1, FOR CT USE; TC, SR,

Properties: RoHS, UV resistant, oil resistant

Application: Energy transmission in wind power station tower, loop cable, flexible connections



DLO

Size	Outer diameter approx. inch	Outer diameter approx. mm	Weight approx. lb/ Mfeet	Weight approx. kg/ km
6	0,403	10,2	134	199
4	0,461	11,7	192	286
2	0,51	13,0	248	369
1	0,65	16,5	428	637
1/0	0,7	17,8	480	714
2/0	0,74	18,8	558	830
3/0	0,815	20,7	742	1104
4/0	0,87	22,1	872	1298
262.6	0,99	25,1	1068	1589
313.1	1,055	26,8	1258	1872
373.1	1,125	28,6	1462	2176
444.4	1,205	30,6	1726	2568
535.3	1,305	33,1	2047	3046
646.4	1,41	35,8	2416	3595
777.7	1,5	38,1	2881	4287
929.2	1,61	40,9	3455	5141
1111	1,8	45,7	4077	6067

WIND TOWER CABLES

H07BN4-F, TQ 6381

Nominal Voltage: 450/750 V

Standard: HD 22.12 S2

Temperature range: -40° C to 90° C

Flame test: EN 60332-1-2:2004, IEC 60332-1-2:2004

Minimal bending radius: 6 D

Construction: annealed, tinned copper class 5 conductor, EPR insulation, CPE outer sheath

Approvals: CE

Properties: RoHS, UV resistant, oil resistant

Application: Energy transmission in wind power station tower, loop cable



H07BN4-F, TQ 6381

Cross section mm ²	Outer diameter approx. mm	Weight approx. kg/km
1,5	5,9	50
2,5	6,6	65
4	7,5	89
6	8,2	115
10	10,1	179
16	11,4	248
25	13,2	354
35	14,4	464
50	17,1	650
70	19,3	872
95	22,2	1138
120	23,7	1398
150	26,3	1730
185	29,4	2102
240	32	2657
300	35,7	3296
400	38,5	4205
500	43,8	5285

WIND TOWER CABLES

NSSHOU

Nominal voltage: 0,6/1 V

Standard: DIN VDE 0250

Temperature range: -45° C to 90° C

Flame test: EN 60332-1-2:2004, IEC 60332-1-2:2004

Minimal bending radius: 9 D

Construction: annealed, tinned copper class 5 conductor, EPR insulation, PCP outer sheath

Approvals: CE

Properties: RoHS, UV resistant, oil resistant

Application: Energy transmission in wind power station tower extremely resistive to mechanical stress and abrasion



NSSHOU

Cross section mm ²	Outer diameter approx mm	Weight approx .kg/km
35	13,6	446
50	16	618
70	18,2	838
95	20,7	1 082
120	22,4	1 350
150	24,6	1 660
185	28,3	2 067
240	30,2	2 621
300	35,2	3 336
400	37,5	4 229

WIND TOWER CABLES

H07ZZ-F Low Smoke Halogen Free

Nominal voltage: 450/750 V

Standard: HD 22.13 S2, VDE 0282, BS 7919

Temperature range: -20° C to 70° C, Flexing -5° C to 70° C

Flame propagation: EN-5265-2-1 (HD 405.1), IEC 60332-3-24 (HD 405.3) Category C

Corrosive and acid gas emission of insulation: EN 50267-2-2 (HD 602) pH > 4,3;

Conductivity: < 10 μS/mm

Smoke emission: EN 50268-2 (HD 606)

Minimal bending radius: 6 D

Construction: annealed, tinned copper class 5 conductor, cross linked halogen free rubber insulation, cross linked halogen free rubber outer sheath

Approvals: CE

Properties: RoHS, UV resistant, oil resistant

Application: Energy transmission in wind power station tower from generator to base



H07ZZ-F

Cross section mm ²	Outer diameter approx. mm	Weight approx. kg/km
6	8,2	114
10	10,1	178
16	11,4	247
25	13,2	353
35	14,4	462
50	17,1	648
70	19,3	870
95	22,2	1135
120	23,7	1395
150	26,3	1726
185	29,4	2098
240	31,5	2652
300	35,7	3290
400	38,4	4199

WIND TOWER CABLES

NSGAFOU

Nominal voltage: 0.6/1 kV, 1,8/3 kV, 3,6/6 kV

Standard: DIN VDE 0250 p. 602

Temperature range: -25°C to +90°C

Flame test: DIN VDE 0472 p. 804, HD/EN 60332-1-2

Minimal bending radius: 9 D

Construction: annealed, tinned copper class 5 conductor, semi conductive tape, EPR insulation, CPE outer sheath

Approvals: CE

Properties: RoHS, UV resistant, oil resistant

Application: Short circuit proof cable for electrical panels



NSGAFOU

Cross section mm ²	Outer diameter approx. mm	Weight approx. kg/km
16	10,1	215
25	12,3	323
35	13	413
50	15	566
70	16,8	761
95	19,7	1006
120	20,8	1235
150	23,6	1576
185	25,7	1853
240	27,6	2376
300	31,4	2953

WIND TOWER CABLES

NTSCGEWOEU

Nominal voltage: 12/20 kV

Standard: DIN VDE 0250 – 813

Temperature range: -40° C to 90° C

Flame retardant

Minimal bending radius: 6 D

Construction: annealed, tinned copper class 5 conductor, semi – conductive compound, EPR insulation, semi – conductive compound, synthetic thermosetting inner sheath, PCP outer sheath

Approvals: CE

Properties: RoHS, UV resistant, oil resistant

Application: Energy transmission from upper transformer to base panel



NTSCGEWOEU 12/20 kV

No of conductors x cross section mm ²	Outer diameter approx. mm	Weight approx. kg/ km
3x25+3x25/3	56.0	4700
3x35+3x25/3	59.0	5265
3x50+3x25/3	64.0	6400
3x70+3x35/3	67.0	7210
3x95+3x50/3	72.0	8620
3x120+3x70/3	77.0	10300
3x150+3x70/3	81.0	11580

POWER DISTRIBUTION CABLES

N2XS(F)2Y, NA2XS(F)2Y

Nominal voltage: 6/10 kV, 12/20 kV, 18/30 kV up to 220 kV

Standard: DIN VDE 0276, IEC 502

Construction: copper or Aluminum conductor, XLPE insulation, PVC (or other) jacket

Approvals: CE

Properties: RoHS, UV resistant

Application: External power cable



N2XS(F)2Y, NA2XS(F)2Y 12/20 kV

Cross section mm ²	Max outer diameter approx. mm	Weight approx. kg/km
1x35/16	32	740
1x50/16	33	810
1x70/16	35	990
1x95/16	36	1200
1x120/16	38	1450
1x150/25	39	1570
1x185/25	41	1710
1x240/25	44	1920
1x300/25	46	2140
1x400/35	49	2490
1x500/35	52	2860
1x630/35	53	3370
1x800/35	57	3550
1x1000/35	62	4770

POWER DISTRIBUTION CABLES

NYY – J

Nominal voltage: 0,6/1 kV

Standard: DIN VDE 0276

Construction: copper conductor, PVC insulation, PVC jacket

Approvals: CE

Properties: RoHS, UV resistant;

Application: Tower output cable or internal wiring



NYY-J

Cross section mm ²	Outer diameter approx. mm	Weight approx. kg/km
25	12,1	348
35	13,2	448
50	15,1	596
70	16,2	792
95	18,6	1071
120	20,2	1318
150	22,2	1610
185	24,1	1983
240	27,2	2557
300	29,2	3146
400	34,4	4020
500	38,3	5106



TELE-FONIKA Kable

30-663 Kraków, ul. Wielicka 114
www.tfkable.pl

Renewable Energy Department

Tel: +48 12 652 59 71, +48 12 652 56 11
Fax: +48 12 652 59 28
e-mail: export@tfkable.pl

Domestic Market Office

Tel: +48 12 652 59 50,
Fax: +48 12 652 59 97
e-mail: marketing@tfkable.pl

Export Office

Tel: +48 12 652 59 05,
Fax: +48 12 652 59 28
e-mail: export@tfkable.pl

High Voltage Team

Tel: +48 12 652 59 63,
Fax: +48 12 652 59 28
e-mail: hvcs@tfkable.pl

TELE-FONIKA Kable Central Europe GmbH

Kleinhülsen 29, D-40721 Hilden [Germany]
Tel: +49 2103 584 0, Fax: +49 2103 584 150
e-mail: office@tele-fonika-europe.com
www.tele-fonika-europe.com

COPPER CABLE COMPANY

Interlink Park, Bardonia Hill Nr. Coalville Leicestershire LE67 1LA [UK]
Tel: +44 870 000 6242, Fax: +44 870 000 6241
e-mail: info@copper-cable.co.uk
www.copper-cable.co.uk

Copper Cable Company Ltd.

SAIF Zone, Sharjah [UAE]
Tel: +971 6 5573 828, Fax: +971 6 5573 858

Copper Cable Company Ltd. - Australia

Suite 9, 974 High Street, Armadale, Vic 3143 [Australia]
Tel: +61 3 9576 2368, Fax: +61 3 9576 0734

TF KABLE NORDIC AB

Bjurögatan 36, 211 24 Malmö [Sweden]
Tel: +46 40 18 04 90, Fax: +46 40 93 34 45
e-mail: office@tfnordic.com
www.tfnordic.com

TELE-FONIKA Cable Americas

1160 Pierson Drive, Suite 102 Batavia, IL 60510 [USA]
Tel: +1 630 406 9000, Fax: +1 630 406 6574
e-mail: sales@tfcable.com
www.tfcable.com

TOW TF KABEL

04210 Kiev, 7 Obdonska Naberezhna str. korp 2-A [Ukraine]
Tel: +380 44 537 65 25, Fax +380 44 537 65 25
e-mail: office@tf-cable.com
www.tf-cable.com

UAB TELE-FONIKA Baltic

R. Kalantos 59, LT-52304 Kaunas [Lithuania]
Tel: +370 37 328622, fax +370 37 32821
e-mail: office@tfbaltic.lt
www.tfbaltic.lt

TELE-FONIKA France

4, rue Louis-Néel, 21 600 Longvic [France]
Tel: +33 3 80 65 25 10, Fax: +33 3 80 65 27 04
e-mail: sales@tffrance.fr
www.tffrance.fr

TELE-FONIKA Kabely spol. s r.o.

Oborník 2131/31 a,
789 01 Zábřeh na Moravě. [Czech Rep.]
Tel.: +420 583 480 720, Fax: +420 583 480 742
e-mail: tfkabely@tfkabely.cz
www.tfkabely.cz

TELE-FONIKA Kábel Kft.

Nagytétényi út 228; 1225 Budapest; [Hungary]
tel: +36 1 886 48 40; fax: +36 1 886 48 41
e-mail: office@tfkabel.hu
www.tfkabel.hu

TELE-FONIKA Kabli d.o.o

Puhova ulica 18; 2 250 PTUJ; [Slovenia]
tel: +386 8 20 01 040; fax: +386 2 77 11 540
e-mail: office@tfkabli.si
www.tfkabli.si

TELE-FONIKA Kable Slovakia, s.r.o.

Niklová 4346, 926 01, Sereď [Slovakia]
tel: +421 317 711 713; fax: +421 317 711 730
e-mail: office@tfkable.sk
www.tfkable.sk

