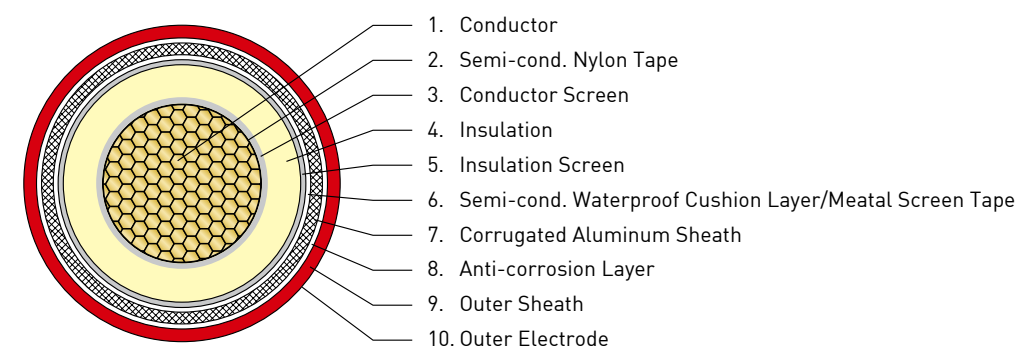


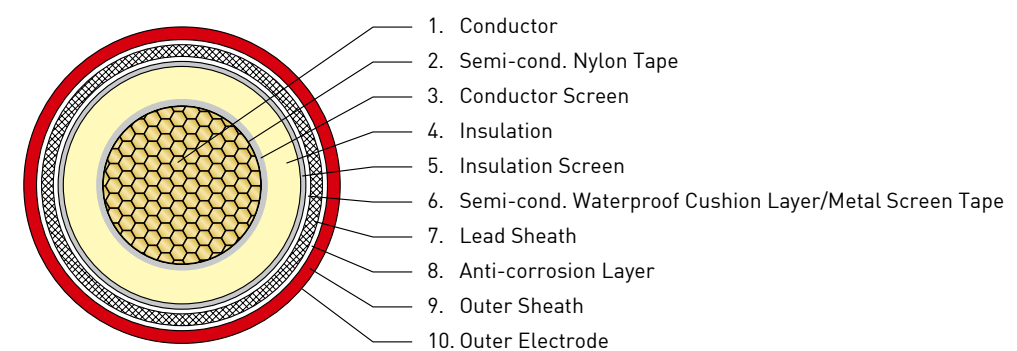
# Technical Parameter

## 3. Typical Cable Structure

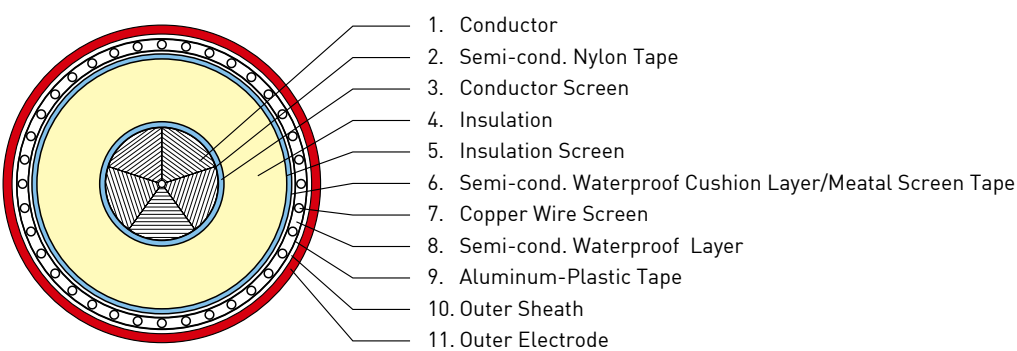
### 1) Corrugated Aluminum Sheath Cable



### 2) Lead Sheath Cable

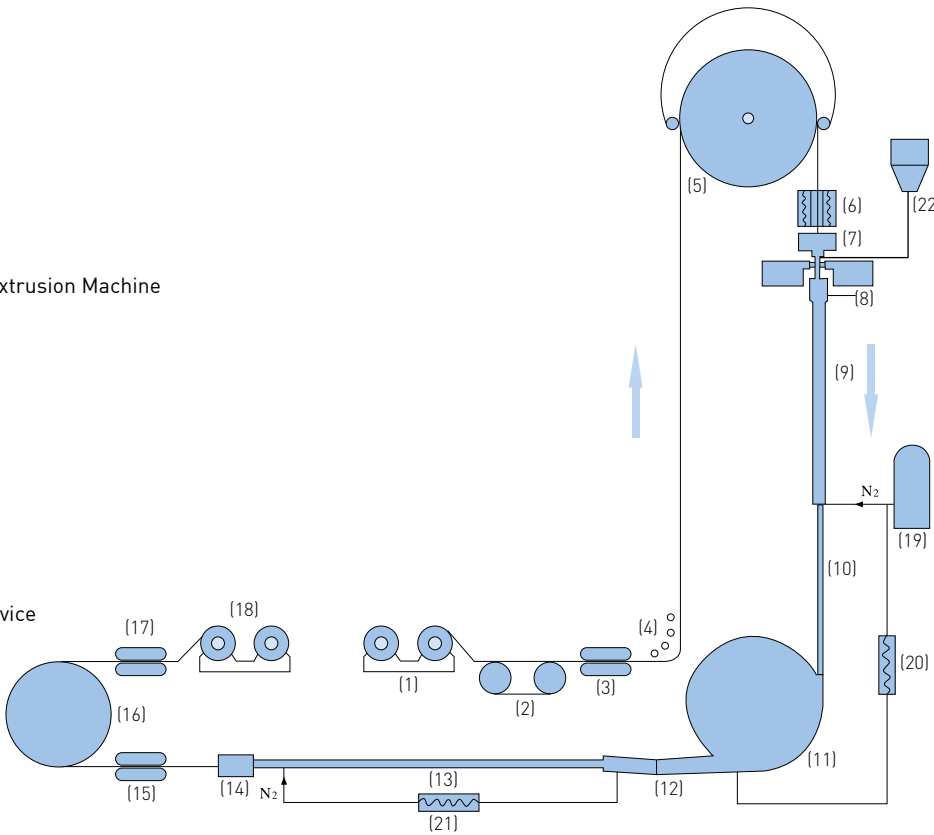


### 3). Copper Wire Screen & Aluminum-Plastic Tape Sheath Cable Structure



## 4. Process Flow-Chart

- 1 Pay-off Stand
- 2 Capstan Accumulator
- 3, 15, 17 Caterpillar
- 4, 16 Guide Roller
- 5 Wheel Capstan
- 6 Conductor Preheater
- 7 Extruders and Triple-extrusion Machine
- 8 Eccentricity Gage
- 9 Curing Tube
- 10, 13 Cooling Tube
- 11 Pressure Wheel
- 12 Relaxation Equipment
- 14 End Seal
- 18 Take-up Stand
- 19 Nitrogen Equipment
- 20, 21 Heat Exchanger
- 22 Self-gravity Feeling Device



## 5. Technical Data Sheet

Max. Conductor Resistance and Max. Allowable Short-circuit Current:

| Nominal Cross Section of Copper<br>mm <sup>2</sup> | DC Resistance [20°C] Ω/km |          | AC Resistance [90°C] Ω/km |          | Short Circuit Current (kA/1s) |          |
|----------------------------------------------------|---------------------------|----------|---------------------------|----------|-------------------------------|----------|
|                                                    | Copper                    | Aluminum | Copper                    | Aluminum | Copper                        | Aluminum |
| 150                                                | 0.124                     | 0.206    | 0.159                     | 0.264    | 21.5                          | 14.2     |
| 185                                                | 0.0991                    | 0.164    | 0.127                     | 0.211    | 26.5                          | 17.5     |
| 240                                                | 0.0754                    | 0.125    | 0.0970                    | 0.161    | 34.3                          | 22.7     |
| 300                                                | 0.0601                    | 0.100    | 0.0777                    | 0.129    | 42.9                          | 28.4     |
| 400                                                | 0.0470                    | 0.0778   | 0.0614                    | 0.101    | 57.2                          | 37.8     |
| 500                                                | 0.0366                    | 0.0605   | 0.0485                    | 0.0787   | 71.5                          | 47.2     |
| 630                                                | 0.0283                    | 0.0469   | 0.0384                    | 0.0616   | 90.1                          | 59.5     |
| 800                                                | 0.0221                    | 0.0367   | 0.0311                    | 0.0489   | 114.5                         | 75.6     |
| 800*                                               | 0.0221                    | 0.0367   | 0.0288                    | 0.0478   | 114.5                         | 75.6     |
| 1000*                                              | 0.0176                    | 0.0291   | 0.0232                    | 0.0386   | 143.1                         | 94.5     |
| 1200*                                              | 0.0151                    | 0.0247   | 0.0201                    | 0.0322   | 171.7                         | 113.4    |
| 1400*                                              | 0.0129                    | 0.0212   | 0.0175                    | 0.0278   | 200.3                         | 132.3    |
| 1600*                                              | 0.0113                    | 0.0186   | 0.0156                    | 0.0246   | 228.9                         | 151.2    |
| 1800*                                              | 0.0101                    | 0.0165   | 0.0141                    | 0.0220   | 257.6                         | 170.1    |
| 2000*                                              | 0.0090                    | 0.0149   | 0.0129                    | 0.0201   | 286.2                         | 189.0    |
| 2200*                                              | 0.0083                    |          | 0.0121                    |          | 315.7                         | 207.9    |
| 2500*                                              | 0.0072                    | 0.0127   | 0.0110                    | 0.0173   | 357.8                         | 236.2    |

# Technical Parameter

## 1. 38/66 (72.5)kV

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 150                                                        | 13.0                                  | 71.0                                    | 0.128                         | 0.159+j0.256                                       | 0.159+j0.162 | 0.307+j0.473                      | 0.307+j0.66  | 0.804                 | 0.508   | 58                  | 563                            | 498     | 411             | 374     |
| 185                                                        | 13.0                                  | 72.5                                    | 0.137                         | 0.127+j0.254                                       | 0.127+j0.162 | 0.275+j0.471                      | 0.275+j0.655 | 0.782                 | 0.490   | 55                  | 643                            | 567     | 464             | 421     |
| 240                                                        | 12.0                                  | 72.5                                    | 0.156                         | 0.097+j0.241                                       | 0.097+j0.149 | 0.245+j0.459                      | 0.245+j0.642 | 0.757                 | 0.465   | 50                  | 759                            | 662     | 538             | 485     |
| 300                                                        | 12.0                                  | 75.0                                    | 0.168                         | 0.078+j0.234                                       | 0.078+j0.144 | 0.226+j0.452                      | 0.226+j0.631 | 0.724                 | 0.118   | 47                  | 870                            | 753     | 607             | 545     |
| 400                                                        | 12.0                                  | 78.0                                    | 0.186                         | 0.061+j0.225                                       | 0.062+j0.138 | 0.209+j0.443                      | 0.210+j0.617 | 0.708                 | 0.430   | 43                  | 1009                           | 865     | 691             | 615     |
| 500                                                        | 12.0                                  | 81.0                                    | 0.201                         | 0.048+j0.218                                       | 0.049+j0.133 | 0.196+j0.436                      | 0.197+j0.606 | 0.683                 | 0.413   | 40                  | 1169                           | 990     | 785             | 692     |
| 630                                                        | 12.0                                  | 84.5                                    | 0.220                         | 0.038+j0.211                                       | 0.039+j0.128 | 0.186+j0.428                      | 0.187+j0.593 | 0.659                 | 0.397   | 37                  | 1350                           | 1126    | 888             | 773     |
| 800                                                        | 12.0                                  | 90.5                                    | 0.242                         | 0.031+j0.203                                       | 0.032+j0.125 | 0.179+j0.421                      | 0.180+j0.577 | 0.634                 | 0.385   | 35                  | 1540                           | 1264    | 992             | 853     |
| 800*                                                       | 12.0                                  | 94.0                                    | 0.244                         | 0.029+j0.203                                       | 0.029+j0.128 | 0.177+j0.421                      | 0.177+j0.572 | 0.627                 | 0.387   | 35                  | 1585                           | 1313    | 1026            | 892     |
| 1000*                                                      | 12.0                                  | 98.0                                    | 0.272                         | 0.023+j0.196                                       | 0.023+j0.123 | 0.171+j0.414                      | 0.171+j0.559 | 0.606                 | 0.375   | 33                  | 1823                           | 1483    | 1140            | 972     |
| 1200*                                                      | 12.0                                  | 101.5                                   | 0.292                         | 0.020+j0.190                                       | 0.020+j0.120 | 0.168+j0.408                      | 0.168+j0.549 | 0.589                 | 0.365   | 31                  | 1993                           | 1599    | 1222            | 1030    |
| 1400*                                                      | 12.0                                  | 105.0                                   | 0.303                         | 0.017+j0.186                                       | 0.018+j0.118 | 0.165+j0.403                      | 0.166+j0.539 | 0.573                 | 0.357   | 29                  | 2166                           | 1715    | 1303            | 1088    |
| 1600*                                                      | 12.0                                  | 108.5                                   | 0.314                         | 0.016+j0.181                                       | 0.016+j0.115 | 0.163+j0.399                      | 0.164+j0.531 | 0.560                 | 0.350   | 28                  | 2320                           | 1814    | 1371            | 1135    |

Technical Parameter for Power Cable with Lead Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 150                                                        | 13.0                                  | 63.6                                    | 0.128                         | 0.159+j0.256                                       | 0.159+j0.156 | 0.307+j0.473                      | 0.307+j0.673 | 0.804                 | 0.487   | 54                  | 573                            | 506     | 379             | 375     |
| 185                                                        | 13.0                                  | 65.3                                    | 0.137                         | 0.127+j0.254                                       | 0.127+j0.156 | 0.275+j0.471                      | 0.275+j0.667 | 0.782                 | 0.470   | 50                  | 655                            | 578     | 428             | 423     |
| 240                                                        | 12.0                                  | 65.5                                    | 0.156                         | 0.097+j0.241                                       | 0.097+j0.143 | 0.245+j0.459                      | 0.245+j0.654 | 0.757                 | 0.446   | 45                  | 775                            | 678     | 495             | 487     |
| 300                                                        | 12.0                                  | 67.7                                    | 0.168                         | 0.078+j0.234                                       | 0.078+j0.138 | 0.226+j0.452                      | 0.226+j0.643 | 0.734                 | 0.430   | 42                  | 889                            | 774     | 558             | 547     |
| 400                                                        | 12.0                                  | 70.8                                    | 0.186                         | 0.061+j0.225                                       | 0.062+j0.132 | 0.209+j0.443                      | 0.210+j0.628 | 0.708                 | 0.412   | 39                  | 1034                           | 895     | 635             | 617     |
| 500                                                        | 12.0                                  | 73.9                                    | 0.201                         | 0.048+j0.218                                       | 0.049+j0.128 | 0.196+j0.436                      | 0.197+j0.616 | 0.683                 | 0.396   | 36                  | 1200                           | 1031    | 720             | 694     |
| 630                                                        | 12.0                                  | 77.4                                    | 0.220                         | 0.038+j0.211                                       | 0.039+j0.123 | 0.186+j0.428                      | 0.187+j0.603 | 0.660                 | 0.381   | 34                  | 1390                           | 1183    | 813             | 774     |
| 800                                                        | 12.0                                  | 82.7                                    | 0.242                         | 0.031+j0.203                                       | 0.032+j0.120 | 0.179+j0.421                      | 0.180+j0.587 | 0.634                 | 0.369   | 31                  | 1597                           | 1341    | 906             | 848     |
| 800*                                                       | 12.0                                  | 87.5                                    | 0.244                         | 0.029+j0.203                                       | 0.041+j0.120 | 0.177+j0.421                      | 0.177+j0.582 | 0.627                 | 0.371   | 32                  | 1662                           | 1423    | 1058            | 957     |
| 1000*                                                      | 12.0                                  | 90.5                                    | 0.272                         | 0.023+j0.196                                       | 0.023+j0.118 | 0.171+j0.414                      | 0.171+j0.558 | 0.606                 | 0.359   | 29                  | 1903                           | 1615    | 1069            | 951     |
| 1200*                                                      | 12.0                                  | 94.3                                    | 0.292                         | 0.020+j0.190                                       | 0.020+j0.115 | 0.168+j0.408                      | 0.168+j0.549 | 0.589                 | 0.350   | 28                  | 2094                           | 1762    | 1148            | 1001    |
| 1400*                                                      | 12.0                                  | 98.0                                    | 0.303                         | 0.017+j0.186                                       | 0.018+j0.113 | 0.165+j0.403                      | 0.166+j0.540 | 0.573                 | 0.341   | 26                  | 2297                           | 1915    | 1230            | 1047    |
| 1600*                                                      | 12.0                                  | 101.3                                   | 0.314                         | 0.016+j0.181                                       | 0.016+j0.111 | 0.163+j0.399                      | 0.164+j0.540 | 0.560                 | 0.335   | 25                  | 2478                           | 2046    | 1298            | 1081    |

## 2. 48/66 (72.5)kV

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 150                                                        | 14.0                                  | 74.0                                    | 0.123                         | 0.159+j0.256                                       | 0.159+j0.165 | 0.307+j0.473                      | 0.307+j0.655 | 0.804                 | 0.516   | 60                  | 560                            | 497     | 409             | 373     |
| 185                                                        | 14.0                                  | 75.5                                    | 0.132                         | 0.097+j0.254                                       | 0.097+j0.164 | 0.245+j0.471                      | 0.245+j0.650 | 0.782                 | 0.498   | 56                  | 732                            | 644     | 528             | 479     |
| 240                                                        | 13.5                                  | 76.5                                    | 0.146                         | 0.127+j0.241                                       | 0.127+j0.153 | 0.275+j0.459                      | 0.275+j0.635 | 0.757                 | 0.476   | 52                  | 659                            | 579     | 468             | 425     |
| 300                                                        | 13.5                                  | 79.0                                    | 0.157                         | 0.078+j0.234                                       | 0.078+j0.147 | 0.226+j0.452                      | 0.226+j0.625 | 0.734                 | 0.459   | 49                  | 863                            | 751     | 604             | 544     |
| 400                                                        | 13.0                                  | 81.0                                    | 0.177                         | 0.061+j0.225                                       | 0.062+j0.140 | 0.209+j0.443                      | 0.210+j0.613 | 0.708                 | 0.437   | 45                  | 1003                           | 863     | 688             | 614     |
| 500                                                        | 13.0                                  | 84.0                                    | 0.191                         | 0.048+j0.218                                       | 0.049+j0.135 | 0.196+j0.436                      | 0.197+j0.601 | 0.683                 | 0.420   | 41                  | 1160                           | 987     | 781             | 691     |
| 630                                                        | 13.0                                  | 87.5                                    | 0.209                         | 0.038+j0.211                                       | 0.039+j0.130 | 0.186+j0.428                      | 0.187+j0.589 | 0.660                 | 0.404   | 38                  | 1340                           | 1123    | 884             | 772     |
| 800                                                        | 13.0                                  | 92.5                                    | 0.229                         | 0.159+j0.256                                       | 0.159+j0.165 | 0.307+j0.473                      | 0.307+j0.655 | 0.627                 | 0.391   | 36                  | 1531                           | 1262    | 1022            | 890     |
| 800*                                                       | 13.0                                  | 96.2                                    | 0.231                         | 0.029+j0.203                                       | 0.029+j0.129 | 0.177+j0.421                      | 0.177+j0.569 | 0.627                 | 0.391   | 36                  | 1592                           | 1328    | 1022            | 890     |
| 1000*                                                      | 13.0                                  | 100.0                                   | 0.257                         | 0.023+j0.196                                       | 0.023+j0.125 | 0.171+j0.414                      | 0.171+j0.557 | 0.606                 | 0.379   | 34                  | 1812                           | 1480    | 1135            | 969     |
| 1200*                                                      | 13.0                                  | 103.5                                   | 0.276                         | 0.020+j0.190                                       | 0.020+j0.121 | 0.168+j0.408                      | 0.168+j0.547 | 0.589                 | 0.368   | 32                  | 1981                           | 1596    | 1215            | 1027    |
| 1400*                                                      | 13.0                                  | 107.0                                   | 0.286                         | 0.017+j0.186                                       | 0.018+j0.119 | 0.165+j0.403                      | 0.166+j0.536 | 0.573                 | 0.361   | 30                  | 2152                           | 1712    | 1295            | 1086    |
| 1600*                                                      | 13.0                                  | 110.5                                   | 0.297                         | 0.016+j0.181                                       | 0.016+j0.117 | 0.163+j0.399                      | 0.164+j0.529 | 0.560                 | 0.354   | 29                  | 2305                           | 1810    | 1362            | 1132    |

Technical Parameter for Power Cable with Lead Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 150                                                        | 14.0                                  | 66.6                                    | 0.123                         | 0.159+j0.256                                       | 0.159+j0.159 | 0.307+j0.473                      | 0.307+j0.667 | 0.804                 | 0.497   | 55                  | 569                            | 505     | 414             | 379     |
| 185                                                        | 14.0                                  | 68.3                                    | 0.132                         | 0.127+j0.254                                       | 0.127+j0.159 | 0.275+j0.471                      | 0.275+j0.662 | 0.782                 | 0.479   | 52                  | 651                            | 576     | 468             | 427     |
| 240                                                        | 13.5                                  | 69.5                                    | 0.146                         | 0.097+j0.241                                       | 0.097+j0.147 | 0.245+j0.459                      | 0.245+j0.647 | 0.757                 | 0.457   | 47                  | 768                            | 676     | 542             | 494     |
| 300                                                        | 13.5                                  | 71.7                                    | 0.157                         | 0.078+j0.234                                       | 0.078+j0.142 | 0.226+j0.452                      | 0.226+j0.636 | 0.734                 | 0.441   | 44                  | 881                            | 772     | 612             | 558     |
| 400                                                        | 13.0                                  | 73.8                                    | 0.177                         | 0.061+j0.225                                       | 0.062+j0.135 | 0.209+j0.443                      | 0.210+j0.623 | 0.708                 | 0.420   | 40                  | 1026                           | 892     | 699             | 634     |
| 500                                                        | 13.0                                  | 76.9                                    | 0.191                         | 0.048+j0.218                                       | 0.049+j0.130 | 0.196+j0.436                      | 0.197+j0.611 | 0.683                 | 0.404   | 37                  | 1191                           | 1027    | 796             | 719     |
| 630                                                        | 13.0                                  | 80.4                                    | 0.209                         | 0.038+j0.211                                       | 0.039+j0.126 | 0.186+j0.428                      | 0.187+j0.598 | 0.660                 | 0.389   | 35                  | 1379                           | 1179    | 904             | 812     |
| 800                                                        | 13.0                                  | 84.7                                    | 0.229                         | 0.031+j0.203                                       | 0.032+j0.121 | 0.179+j0.421                      | 0.180+j0.584 | 0.634                 | 0.374   | 32                  | 1587                           | 1339    | 1016            | 905     |
| 800*                                                       | 13.0                                  | 89.0                                    | 0.231                         | 0.029+j0.203                                       | 0.029+j0.124 | 0.177+j0.421                      | 0.177+j0.579 | 0.627                 | 0.376   | 33                  | 1652                           | 1419    | 1054            | 956     |
| 1000*                                                      | 13.0                                  | 92.5                                    | 0.257                         | 0.023+j0.196                                       | 0.023+j0.120 | 0.171+j0.414                      | 0.171+j0.566 | 0.606                 | 0.364   | 30                  | 1892                           | 1611    | 1183            | 1067    |
| 1200*                                                      | 13.0                                  | 96.3                                    | 0.276                         | 0.020+j0.190                                       | 0.020+j0.117 | 0.168+j0.408                      | 0.168+j0.556 | 0.589                 | 0.354   | 29                  | 2080                           | 1758    | 1278            | 1147    |
| 1400*                                                      | 13.0                                  | 100.0                                   | 0.286                         | 0.017+j0.186                                       | 0.018+j0.114 | 0.165+j0.403                      | 0.166+j0.546 | 0.573                 | 0.345   | 27                  | 2282                           | 1910    | 1377            | 1228    |
| 1600*                                                      | 13.0                                  | 103.3                                   | 0.297                         | 0.016+j0.181                                       | 0.016+j0.112 | 0.163+j0.399                      | 0.164+j0.538 | 0.560                 | 0.339   | 26                  | 2461                           | 2041    | 1462            | 1296    |

# Technical Parameter

### 3. 64/110 (126)kV

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 240                                                        | 19.0                                  | 88.5                                    | 0.120                         | 0.097+j0.241                                       | 0.097+j0.161 | 0.245+j0.459                      | 0.245+j0.619 | 0.757                 | 0.502   | 58                  | 739                            | 657     | 528             | 483     |
| 300                                                        | 18.5                                  | 90.0                                    | 0.130                         | 0.078+j0.234                                       | 0.078+j0.155 | 0.226+j0.452                      | 0.226+j0.61  | 0.734                 | 0.482   | 54                  | 846                            | 747     | 596             | 542     |
| 400                                                        | 17.5                                  | 91.0                                    | 0.147                         | 0.061+j0.225                                       | 0.062+j0.146 | 0.209+j0.443                      | 0.210+j0.600 | 0.708                 | 0.458   | 50                  | 984                            | 858     | 679             | 612     |
| 500                                                        | 17.0                                  | 93.0                                    | 0.160                         | 0.048+j0.218                                       | 0.049+j0.141 | 0.196+j0.436                      | 0.197+j0.590 | 0.683                 | 0.438   | 46                  | 1140                           | 982     | 771             | 689     |
| 630                                                        | 16.5                                  | 96.5                                    | 0.177                         | 0.038+j0.211                                       | 0.039+j0.136 | 0.186+j0.428                      | 0.187+j0.578 | 0.660                 | 0.422   | 42                  | 1315                           | 1116    | 873             | 770     |
| 800                                                        | 16.0                                  | 100.5                                   | 0.197                         | 0.031+j0.203                                       | 0.032+j0.131 | 0.179+j0.421                      | 0.180+j0.565 | 0.634                 | 0.404   | 39                  | 1505                           | 1256    | 976             | 850     |
| 800*                                                       | 16.0                                  | 103.5                                   | 0.200                         | 0.029+j0.203                                       | 0.029+j0.133 | 0.177+j0.421                      | 0.177+j0.560 | 0.627                 | 0.405   | 39                  | 1565                           | 1318    | 1009            | 886     |
| 1000*                                                      | 16.0                                  | 108.5                                   | 0.219                         | 0.023+j0.196                                       | 0.023+j0.129 | 0.171+j0.414                      | 0.171+j0.548 | 0.606                 | 0.393   | 37                  | 1778                           | 1470    | 1119            | 966     |
| 1200*                                                      | 16.0                                  | 113.5                                   | 0.234                         | 0.020+j0.190                                       | 0.020+j0.126 | 0.168+j0.408                      | 0.168+j0.537 | 0.589                 | 0.383   | 35                  | 1938                           | 1584    | 1196            | 1026    |
| 1400*                                                      | 16.0                                  | 117.5                                   | 0.242                         | 0.017+j0.186                                       | 0.018+j0.123 | 0.165+j0.403                      | 0.166+j0.528 | 0.573                 | 0.375   | 33                  | 2103                           | 1699    | 1273            | 1085    |
| 1600*                                                      | 16.0                                  | 120.5                                   | 0.251                         | 0.016+j0.181                                       | 0.016+j0.121 | 0.163+j0.399                      | 0.164+j0.520 | 0.560                 | 0.367   | 32                  | 2251                           | 1798    | 1337            | 1132    |

Technical Parameter for Power Cable with Lead Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 240                                                        | 19.0                                  | 80.5                                    | 0.120                         | 0.097+j0.241                                       | 0.097+j0.156 | 0.245+j0.459                      | 0.245+j0.629 | 0.757                 | 0.486   | 54                  | 752                            | 672     | 535             | 494     |
| 300                                                        | 18.5                                  | 81.7                                    | 0.130                         | 0.078+j0.234                                       | 0.078+j0.150 | 0.226+j0.452                      | 0.226+j0.620 | 0.734                 | 0.467   | 50                  | 863                            | 768     | 604             | 557     |
| 400                                                        | 17.5                                  | 82.8                                    | 0.147                         | 0.061+j0.225                                       | 0.062+j0.142 | 0.209+j0.443                      | 0.210+j0.609 | 0.708                 | 0.443   | 46                  | 1005                           | 887     | 691             | 634     |
| 500                                                        | 17.0                                  | 84.9                                    | 0.160                         | 0.048+j0.218                                       | 0.049+j0.136 | 0.196+j0.436                      | 0.197+j0.599 | 0.683                 | 0.423   | 42                  | 1168                           | 1022    | 787             | 719     |
| 630                                                        | 16.5                                  | 88.4                                    | 0.177                         | 0.038+j0.211                                       | 0.039+j0.131 | 0.186+j0.428                      | 0.187+j0.587 | 0.660                 | 0.408   | 38                  | 1352                           | 1171    | 893             | 811     |
| 800                                                        | 16.0                                  | 91.7                                    | 0.197                         | 0.031+j0.203                                       | 0.032+j0.126 | 0.179+j0.421                      | 0.180+j0.575 | 0.634                 | 0.389   | 35                  | 1557                           | 1331    | 1005            | 905     |
| 800*                                                       | 16.0                                  | 96.0                                    | 0.200                         | 0.029+j0.203                                       | 0.029+j0.129 | 0.177+j0.421                      | 0.177+j0.570 | 0.627                 | 0.390   | 36                  | 1622                           | 1407    | 1044            | 953     |
| 1000*                                                      | 16.0                                  | 99.5                                    | 0.219                         | 0.023+j0.196                                       | 0.023+j0.124 | 0.171+j0.414                      | 0.171+j0.557 | 0.606                 | 0.378   | 33                  | 1855                           | 1597    | 1171            | 1064    |
| 1200*                                                      | 16.0                                  | 104.3                                   | 0.234                         | 0.020+j0.190                                       | 0.020+j0.122 | 0.168+j0.408                      | 0.168+j0.546 | 0.589                 | 0.370   | 31                  | 2034                           | 1737    | 1262            | 1144    |
| 1400*                                                      | 16.0                                  | 108.0                                   | 0.242                         | 0.017+j0.186                                       | 0.018+j0.119 | 0.165+j0.403                      | 0.166+j0.537 | 0.573                 | 0.361   | 30                  | 2229                           | 1888    | 1360            | 1225    |
| 1600*                                                      | 16.0                                  | 111.3                                   | 0.251                         | 0.016+j0.181                                       | 0.016+j0.117 | 0.163+j0.399                      | 0.164+j0.529 | 0.560                 | 0.354   | 28                  | 2402                           | 2017    | 1443            | 1293    |

### 4. 76/132 (145)kV

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 240                                                        | 19.0                                  | 88.5                                    | 0.119                         | 0.097+j0.24                                        | 0.097+j0.161 | 0.245+j0.459                      | 0.245+j0.619 | 0.757                 | 0.502   | 58                  | 738                            | 656     | 527             | 482     |
| 300                                                        | 19.0                                  | 90.0                                    | 0.128                         | 0.077+j0.233                                       | 0.077+j0.155 | 0.226+j0.452                      | 0.226+j0.608 | 0.734                 | 0.485   | 55                  | 844                            | 746     | 594             | 541     |
| 400                                                        | 19.0                                  | 91.0                                    | 0.139                         | 0.061+j0.224                                       | 0.061+j0.148 | 0.209+j0.443                      | 0.210+j0.595 | 0.708                 | 0.465   | 51                  | 978                            | 856     | 676             | 611     |
| 500                                                        | 19.0                                  | 93.0                                    | 0.149                         | 0.048+j0.217                                       | 0.048+j0.143 | 0.196+j0.436                      | 0.197+j0.584 | 0.683                 | 0.446   | 48                  | 1130                           | 979     | 766             | 687     |
| 630                                                        | 19.0                                  | 96.5                                    | 0.161                         | 0.038+j0.210                                       | 0.038+j0.139 | 0.186+j0.428                      | 0.187+j0.572 | 0.660                 | 0.432   | 44                  | 1300                           | 1112    | 865             | 768     |
| 800                                                        | 18.0                                  | 100.5                                   | 0.182                         | 0.031+j0.203                                       | 0.031+j0.133 | 0.179+j0.421                      | 0.180+j0.560 | 0.634                 | 0.412   | 41                  | 1490                           | 1252    | 968             | 848     |
| 800*                                                       | 18.0                                  | 103.5                                   | 0.185                         | 0.028+j0.203                                       | 0.028+j0.135 | 0.177+j0.421                      | 0.177+j0.556 | 0.627                 | 0.412   | 41                  | 1549                           | 1313    | 1001            | 883     |
| 1000*                                                      | 18.0                                  | 108.5                                   | 0.203                         | 0.023+j0.196                                       | 0.023+j0.131 | 0.171+j0.414                      | 0.171+j0.544 | 0.606                 | 0.400   | 38                  | 1759                           | 1465    | 1109            | 963     |
| 1200*                                                      | 18.0                                  | 113.5                                   | 0.216                         | 0.020+j0.190                                       | 0.020+j0.127 | 0.168+j0.408                      | 0.168+j0.533 | 0.589                 | 0.390   | 36                  | 1916                           | 1578    | 1184            | 1023    |
| 1400*                                                      | 18.0                                  | 117.5                                   | 0.224                         | 0.017+j0.185                                       | 0.017+j0.125 | 0.165+j0.403                      | 0.166+j0.523 | 0.573                 | 0.382   | 35                  | 2079                           | 1694    | 1259            | 1081    |
| 1600*                                                      | 18.0                                  | 120.5                                   | 0.232                         | 0.015+j0.181                                       | 0.015+j0.122 | 0.163+j0.399                      | 0.164+j0.516 | 0.560                 | 0.374   | 33                  | 2224                           | 1792    | 1322            | 1128    |

Technical Parameter for Power Cable with Lead Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 240                                                        | 19.0                                  | 80.5                                    | 0.119                         | 0.097+j0.241                                       | 0.097+j0.156 | 0.245+j0.459                      | 0.245+j0.629 | 0.757                 | 0.486   | 54                  | 751                            | 672     | 534             | 493     |
| 300                                                        | 19.0                                  | 82.7                                    | 0.128                         | 0.078+j0.234                                       | 0.078+j0.151 | 0.226+j0.452                      | 0.226+j0.618 | 0.734                 | 0.469   | 51                  | 860                            | 767     | 603             | 556     |
| 400                                                        | 19.0                                  | 85.8                                    | 0.139                         | 0.061+j0.225                                       | 0.062+j0.144 | 0.209+j0.443                      | 0.210+j0.605 | 0.708                 | 0.450   | 47                  | 999                            | 885     | 687             | 633     |
| 500                                                        | 19.0                                  | 88.9                                    | 0.149                         | 0.048+j0.218                                       | 0.049+j0.139 | 0.196+j0.436                      | 0.197+j0.593 | 0.683                 | 0.432   | 44                  | 1157                           | 1019    | 782             | 718     |
| 630                                                        | 19.0                                  | 93.4                                    | 0.161                         | 0.038+j0.211                                       | 0.039+j0.135 | 0.186+j0.428                      | 0.187+j0.580 | 0.660                 | 0.419   | 41                  | 1336                           | 1167    | 887             | 811     |
| 800                                                        | 18.0                                  | 95.7                                    | 0.182                         | 0.031+j0.203                                       | 0.032+j0.129 | 0.179+j0.421                      | 0.180+j0.569 | 0.634                 | 0.398   | 37                  | 1541                           | 1327    | 999             | 905     |
| 800*                                                       | 18.0                                  | 100.0                                   | 0.185                         | 0.029+j0.203                                       | 0.029+j0.131 | 0.177+j0.421                      | 0.177+j0.564 | 0.627                 | 0.399   | 37                  | 1605                           | 1401    | 1037            | 951     |
| 1000*                                                      | 18.0                                  | 103.5                                   | 0.203                         | 0.023+j0.196                                       | 0.023+j0.127 | 0.171+j0.414                      | 0.171+j0.553 | 0.606                 | 0.386   | 35                  | 1836                           | 1589    | 1163            | 1062    |
| 1200*                                                      | 18.0                                  | 108.3                                   | 0.216                         | 0.020+j0.190                                       | 0.020+j0.124 | 0.168+j0.408                      | 0.168+j0.541 | 0.589                 | 0.377   | 33                  | 2012                           | 1729    | 1254            | 1141    |
| 1400*                                                      | 18.0                                  | 112.0                                   | 0.224                         | 0.017+j0.186                                       | 0.018+j0.121 | 0.165+j0.403                      | 0.166+j0.532 | 0.573                 | 0.368   | 31                  | 2204                           | 1878    | 1350            | 1222    |
| 1600*                                                      | 18.0                                  | 115.3                                   | 0.232                         | 0.016+j0.181                                       | 0.016+j0.119 | 0.163+j0.399                      | 0.164+j0.524 | 0.560                 | 0.361   | 30                  | 2373                           | 2007    | 1432            | 1290    |

Technical Parameter

5. 127/220 (252)kV

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 400                                                        | 27.0                                  | 115.5                                   | 0.111                         | 0.061+j0.225                                       | 0.062+j0.162 | 0.209+j0.443                      | 0.209+j0.568 | 0.707                 | 0.507   | 59                  | 942                            | 841     | 655             | 604     |
| 500                                                        | 27.0                                  | 118.5                                   | 0.119                         | 0.048+j0.218                                       | 0.049+j0.157 | 0.196+j0.436                      | 0.197+j0.558 | 0.683                 | 0.488   | 55                  | 1085                           | 960     | 741             | 678     |
| 630                                                        | 26.0                                  | 119.5                                   | 0.131                         | 0.038+j0.211                                       | 0.039+j0.150 | 0.186+j0.428                      | 0.187+j0.549 | 0.659                 | 0.466   | 51                  | 1252                           | 1093    | 836             | 757     |
| 800                                                        | 25.0                                  | 121.5                                   | 0.144                         | 0.031+j0.203                                       | 0.032+j0.144 | 0.179+j0.421                      | 0.179+j0.540 | 0.634                 | 0.445   | 47                  | 1432                           | 1230    | 933             | 834     |
| 800*                                                       | 25.0                                  | 122.5                                   | 0.147                         | 0.029+j0.203                                       | 0.029+j0.144 | 0.177+j0.421                      | 0.177+j0.539 | 0.626                 | 0.437   | 46                  | 1500                           | 1290    | 969             | 867     |
| 1000*                                                      | 24.0                                  | 126.5                                   | 0.165                         | 0.023+j0.196                                       | 0.023+j0.139 | 0.171+j0.414                      | 0.171+j0.528 | 0.604                 | 0.423   | 43                  | 1703                           | 1444    | 1070            | 949     |
| 1200*                                                      | 24.0                                  | 129.5                                   | 0.176                         | 0.020+j0.190                                       | 0.020+j0.135 | 0.168+j0.408                      | 0.168+j0.519 | 0.587                 | 0.411   | 41                  | 1855                           | 1557    | 1141            | 1005    |
| 1400*                                                      | 24.0                                  | 133.5                                   | 0.181                         | 0.017+j0.186                                       | 0.018+j0.132 | 0.165+j0.403                      | 0.166+j0.510 | 0.571                 | 0.401   | 39                  | 2014                           | 1673    | 1211            | 1062    |
| 1600*                                                      | 24.0                                  | 137.5                                   | 0.187                         | 0.016+j0.181                                       | 0.016+j0.130 | 0.163+j0.399                      | 0.164+j0.503 | 0.558                 | 0.394   | 38                  | 2145                           | 1770    | 1265            | 1109    |
| 1800*                                                      | 24.0                                  | 140.5                                   | 0.198                         | 0.014+j0.178                                       | 0.014+j0.127 | 0.162+j0.395                      | 0.162+j0.496 | 0.547                 | 0.387   | 36                  | 2263                           | 1853    | 1308            | 1144    |
| 2000*                                                      | 24.0                                  | 143.5                                   | 0.203                         | 0.013+j0.174                                       | 0.013+j0.125 | 0.161+j0.392                      | 0.161+j0.490 | 0.536                 | 0.380   | 35                  | 2381                           | 1936    | 1351            | 1181    |
| 2200*                                                      | 24.0                                  | 146.0                                   | 0.224                         | 0.012+j0.171                                       | 0.012+j0.123 | 0.160+j0.389                      | 0.160+j0.486 | 0.532                 | 0.378   | 34                  | 2456                           | 1987    | 1381            | 1204    |
| 2500*                                                      | 24.0                                  | 150.0                                   | 0.235                         | 0.011+j0.167                                       | 0.011+j0.121 | 0.159+j0.385                      | 0.159+j0.477 | 0.514                 | 0.367   | 32                  | 2599                           | 2091    | 1417            | 1244    |

Technical Parameter for Power Cable with Lead Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 400                                                        | 27.0                                  | 105.4                                   | 0.111                         | 0.061+j0.225                                       | 0.062+j0.156 | 0.209+j0.443                      | 0.209+j0.579 | 0.707                 | 0.489   | 55                  | 964                            | 871     | 671             | 629     |
| 500                                                        | 27.0                                  | 108.5                                   | 0.119                         | 0.048+j0.218                                       | 0.049+j0.151 | 0.196+j0.436                      | 0.197+j0.569 | 0.683                 | 0.471   | 52                  | 1114                           | 1001    | 762             | 713     |
| 630                                                        | 26.0                                  | 110.0                                   | 0.131                         | 0.038+j0.211                                       | 0.039+j0.145 | 0.186+j0.428                      | 0.187+j0.560 | 0.659                 | 0.450   | 48                  | 1291                           | 1150    | 867             | 805     |
| 800                                                        | 25.0                                  | 112.1                                   | 0.144                         | 0.031+j0.203                                       | 0.032+j0.138 | 0.179+j0.421                      | 0.180+j0.550 | 0.634                 | 0.428   | 43                  | 1484                           | 1308    | 975             | 899     |
| 800*                                                       | 25.0                                  | 112.5                                   | 0.174                         | 0.029+j0.203                                       | 0.029+j0.139 | 0.177+j0.421                      | 0.177+j0.550 | 0.626                 | 0.427   | 42                  | 1559                           | 1380    | 1016            | 943     |
| 1000*                                                      | 24.0                                  | 116.1                                   | 0.165                         | 0.023+j0.196                                       | 0.023+j0.134 | 0.171+j0.414                      | 0.171+j0.538 | 0.604                 | 0.406   | 39                  | 1784                           | 1568    | 1139            | 1053    |
| 1200*                                                      | 24.0                                  | 119.9                                   | 0.176                         | 0.020+j0.190                                       | 0.020+j0.130 | 0.168+j0.408                      | 0.168+j0.529 | 0.587                 | 0.395   | 37                  | 1956                           | 1709    | 1227            | 1131    |
| 1400*                                                      | 24.0                                  | 123.6                                   | 0.181                         | 0.017+j0.186                                       | 0.018+j0.127 | 0.165+j0.403                      | 0.166+j0.520 | 0.571                 | 0.386   | 35                  | 2140                           | 1857    | 1320            | 1212    |
| 1600*                                                      | 24.0                                  | 126.9                                   | 0.187                         | 0.016+j0.181                                       | 0.016+j0.125 | 0.163+j0.399                      | 0.164+j0.512 | 0.558                 | 0.378   | 34                  | 2302                           | 1984    | 1398            | 1279    |
| 1800*                                                      | 24.0                                  | 129.8                                   | 0.198                         | 0.014+j0.178                                       | 0.014+j0.122 | 0.162+j0.395                      | 0.162+j0.506 | 0.547                 | 0.371   | 33                  | 2448                           | 2097    | 1465            | 1337    |
| 2000*                                                      | 24.0                                  | 133.1                                   | 0.203                         | 0.013+j0.174                                       | 0.013+j0.121 | 0.161+j0.392                      | 0.161+j0.500 | 0.536                 | 0.365   | 32                  | 2594                           | 2208    | 1530            | 1392    |
| 2200*                                                      | 24.0                                  | 135.6                                   | 0.224                         | 0.012+j0.171                                       | 0.012+j0.118 | 0.160+j0.389                      | 0.160+j0.495 | 0.532                 | 0.363   | 31                  | 2687                           | 2277    | 1574            | 1427    |
| 2500*                                                      | 24.0                                  | 139.8                                   | 0.235                         | 0.011+j0.167                                       | 0.011+j0.117 | 0.159+j0.385                      | 0.159+j0.486 | 0.514                 | 0.353   | 29                  | 2876                           | 2416    | 1641            | 1486    |

6. 160/275 (300)kV

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 500                                                        | 28.0                                  | 120.9                                   | 0.134                         | 0.048+j0.218                                       | 0.049+j0.158 | 0.196+j0.436                      | 0.197+j0.556 | 0.683                 | 0.491   | 56                  | 1079                           | 956     | 735             | 674     |
| 630                                                        | 28.0                                  | 124.3                                   | 0.143                         | 0.038+j0.211                                       | 0.039+j0.152 | 0.186+j0.428                      | 0.187+j0.545 | 0.659                 | 0.473   | 53                  | 1241                           | 1088    | 827             | 752     |
| 800                                                        | 27.0                                  | 126.3                                   | 0.157                         | 0.031+j0.203                                       | 0.032+j0.146 | 0.179+j0.421                      | 0.179+j0.536 | 0.634                 | 0.451   | 48                  | 1417                           | 1224    | 921             | 828     |
| 800*                                                       | 27.0                                  | 128.6                                   | 0.164                         | 0.029+j0.203                                       | 0.029+j0.147 | 0.177+j0.421                      | 0.177+j0.533 | 0.626                 | 0.447   | 48                  | 1479                           | 1281    | 953             | 860     |
| 1000*                                                      | 26.0                                  | 131.1                                   | 0.180                         | 0.023+j0.196                                       | 0.023+j0.141 | 0.171+j0.414                      | 0.171+j0.524 | 0.604                 | 0.429   | 44                  | 1685                           | 1436    | 1055            | 941     |
| 1200*                                                      | 26.0                                  | 134.7                                   | 0.190                         | 0.020+j0.190                                       | 0.020+j0.137 | 0.168+j0.408                      | 0.168+j0.515 | 0.587                 | 0.417   | 42                  | 1834                           | 1549    | 1123            | 997     |
| 1400*                                                      | 26.0                                  | 138.2                                   | 0.200                         | 0.017+j0.186                                       | 0.018+j0.134 | 0.165+j0.403                      | 0.166+j0.507 | 0.571                 | 0.406   | 40                  | 1991                           | 1665    | 1191            | 1053    |
| 1600*                                                      | 25.0                                  | 140.3                                   | 0.214                         | 0.016+j0.181                                       | 0.016+j0.131 | 0.163+j0.399                      | 0.164+j0.501 | 0.558                 | 0.397   | 38                  | 2130                           | 1762    | 1249            | 1099    |
| 1800*                                                      | 25.0                                  | 143.7                                   | 0.223                         | 0.014+j0.178                                       | 0.014+j0.128 | 0.162+j0.395                      | 0.162+j0.494 | 0.547                 | 0.390   | 39                  | 2246                           | 1845    | 1290            | 1134    |
| 2000*                                                      | 25.0                                  | 146.5                                   | 0.231                         | 0.013+j0.174                                       | 0.013+j0.126 | 0.161+j0.392                      | 0.161+j0.488 | 0.536                 | 0.383   | 40                  | 2363                           | 1928    | 1332            | 1170    |
| 2200*                                                      | 25.0                                  | 147.6                                   | 0.234                         | 0.012+j0.171                                       | 0.012+j0.124 | 0.160+j0.389                      | 0.160+j0.484 | 0.532                 | 0.381   | 40                  | 2437                           | 1979    | 1361            | 1193    |
| 2500*                                                      | 25.0                                  | 153.1                                   | 0.250                         | 0.011+j0.167                                       | 0.011+j0.122 | 0.159+j0.385                      | 0.159+j0.476 | 0.514                 | 0.369   | 42                  | 2578                           | 2083    | 1395            | 1231    |

Technical Parameter for Power Cable with Lead Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 500                                                        | 28.0                                  | 110.5                                   | 0.134                         | 0.048+j0.218                                       | 0.049+j0.152 | 0.196+j0.436                      | 0.197+j0.567 | 0.683                 | 0.474   | 52                  | 1108                           | 997     | 757             | 708     |
| 630                                                        | 28.0                                  | 114.1                                   | 0.143                         | 0.038+j0.211                                       | 0.039+j0.147 | 0.186+j0.428                      | 0.187+j0.555 | 0.659                 | 0.457   | 49                  | 1279                           | 1144    | 858             | 800     |
| 800                                                        | 27.0                                  | 116.1                                   | 0.157                         | 0.031+j0.203                                       | 0.032+j0.141 | 0.179+j0.421                      | 0.180+j0.546 | 0.634                 | 0.435   | 45                  | 1470                           | 1301    | 964             | 893     |
| 800*                                                       | 27.0                                  | 118.4                                   | 0.164                         | 0.029+j0.203                                       | 0.029+j0.142 | 0.177+j0.421                      | 0.177+j0.543 | 0.626                 | 0.432   | 44                  | 1537                           | 1369    | 1003            | 936     |
| 1000*                                                      | 26.0                                  | 120.5                                   | 0.180                         | 0.023+j0.196                                       | 0.023+j0.136 | 0.171+j0.414                      | 0.171+j0.534 | 0.604                 | 0.413   | 41                  | 1765                           | 1558    | 1126            | 1045    |
| 1200*                                                      | 26.0                                  | 124.3                                   | 0.190                         | 0.020+j0.190                                       | 0.020+j0.132 | 0.168+j0.408                      | 0.168+j0.524 | 0.587                 | 0.402   | 39                  | 1935                           | 1698    | 1212            | 1122    |
| 1400*                                                      | 26.0                                  | 128.0                                   | 0.200                         | 0.017+j0.186                                       | 0.018+j0.129 | 0.165+j0.403                      | 0.166+j0.516 | 0.571                 | 0.392   | 37                  | 2116                           | 1844    | 1303            | 1201    |
| 1600*                                                      | 25.0                                  | 129.3                                   | 0.214                         | 0.016+j0.181                                       | 0.016+j0.126 | 0.163+j0.399                      | 0.164+j0.510 | 0.558                 | 0.381   | 35                  | 2286                           | 1974    | 1382            | 1266    |
| 1800*                                                      | 25.0                                  | 132.3                                   | 0.223                         | 0.014+j0.178                                       | 0.014+j0.123 | 0.162+j0.395                      | 0.162+j0.504 | 0.547                 | 0.374   | 36                  | 2429                           | 2086    | 1448            | 1324    |
| 2000*                                                      | 25.0                                  | 135.3                                   | 0.231                         | 0.013+j0.174                                       | 0.013+j0.121 | 0.161+j0.392                      | 0.161+j0.498 | 0.536                 | 0.368   | 37                  | 2574                           | 2196    | 1512            | 1378    |
| 2200*                                                      | 25.0                                  | 136.6                                   | 0.234                         | 0.012+j0.171                                       | 0.012+j0.119 | 0.160+j0.389                      | 0.160+j0.494 | 0.532                 | 0.366   | 37                  | 2666                           | 2265    | 1554            | 1412    |
| 2500*                                                      | 25.0                                  | 142.3                                   | 0.250                         | 0.011+j0.167                                       | 0.011+j0.118 | 0.159+j0.385                      | 0.159+j0.484 | 0.514                 | 0.355   | 39                  | 2852                           | 2403    | 1619            | 1470    |

# Technical Parameter

## 7. 190/330 (362)kV

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 500                                                        | 30.0                                  | 127.4                                   | 0.128                         | 0.048+j0.218                                       | 0.049+j0.161 | 0.196+j0.436                      | 0.197+j0.549 | 0.683                 | 0.503   | 58                  | 1067                           | 948     | 725             | 668     |
| 630                                                        | 30.0                                  | 130.8                                   | 0.137                         | 0.038+j0.211                                       | 0.039+j0.156 | 0.186+j0.428                      | 0.187+j0.538 | 0.659                 | 0.484   | 55                  | 1226                           | 1079    | 815             | 745     |
| 800                                                        | 30.0                                  | 134.8                                   | 0.147                         | 0.031+j0.203                                       | 0.031+j0.150 | 0.179+j0.421                      | 0.179+j0.527 | 0.634                 | 0.465   | 51                  | 1394                           | 1213    | 903             | 821     |
| 800*                                                       | 30.0                                  | 137.1                                   | 0.153                         | 0.029+j0.203                                       | 0.029+j0.151 | 0.177+j0.421                      | 0.177+j0.525 | 0.626                 | 0.461   | 50                  | 1455                           | 1269    | 934             | 852     |
| 1000*                                                      | 29.0                                  | 140.4                                   | 0.167                         | 0.023+j0.196                                       | 0.023+j0.146 | 0.171+j0.414                      | 0.171+j0.515 | 0.604                 | 0.443   | 47                  | 1652                           | 1422    | 1032            | 934     |
| 1200*                                                      | 28.0                                  | 142.0                                   | 0.180                         | 0.020+j0.190                                       | 0.020+j0.141 | 0.168+j0.408                      | 0.168+j0.508 | 0.587                 | 0.428   | 44                  | 1804                           | 1535    | 1100            | 989     |
| 1400*                                                      | 28.0                                  | 145.5                                   | 0.189                         | 0.017+j0.186                                       | 0.018+j0.137 | 0.165+j0.403                      | 0.166+j0.500 | 0.571                 | 0.417   | 42                  | 1956                           | 1650    | 1165            | 1045    |
| 1600*                                                      | 27.0                                  | 147.8                                   | 0.203                         | 0.016+j0.181                                       | 0.016+j0.134 | 0.163+j0.399                      | 0.164+j0.494 | 0.558                 | 0.408   | 40                  | 2091                           | 1748    | 1220            | 1090    |
| 1800*                                                      | 27.0                                  | 150.6                                   | 0.211                         | 0.014+j0.178                                       | 0.014+j0.131 | 0.162+j0.395                      | 0.162+j0.488 | 0.547                 | 0.400   | 39                  | 2204                           | 1832    | 1261            | 1128    |
| 2000*                                                      | 26.0                                  | 151.8                                   | 0.224                         | 0.013+j0.174                                       | 0.013+j0.129 | 0.161+j0.392                      | 0.161+j0.483 | 0.536                 | 0.391   | 37                  | 2329                           | 1916    | 1307            | 1163    |
| 2200*                                                      | 26.0                                  | 152.9                                   | 0.227                         | 0.012+j0.171                                       | 0.012+j0.126 | 0.160+j0.389                      | 0.160+j0.479 | 0.532                 | 0.388   | 36                  | 2402                           | 1968    | 1335            | 1186    |
| 2500*                                                      | 26.0                                  | 158.6                                   | 0.242                         | 0.011+j0.167                                       | 0.011+j0.124 | 0.159+j0.385                      | 0.159+j0.471 | 0.514                 | 0.377   | 34                  | 2542                           | 2074    | 1369            | 1226    |

## 8. 220/400 (420)kV

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 630                                                        | 32.0                                  | 135.8                                   | 0.132                         | 0.038+j0.211                                       | 0.039+j0.158 | 0.186+j0.428                      | 0.187+j0.534 | 0.659                 | 0.491   | 56                  | 1213                           | 1072    | 804             | 740     |
| 800                                                        | 31.0                                  | 137.8                                   | 0.144                         | 0.031+j0.203                                       | 0.031+j0.151 | 0.179+j0.421                      | 0.179+j0.524 | 0.634                 | 0.469   | 52                  | 1383                           | 1206    | 893             | 815     |
| 800*                                                       | 31.0                                  | 140.1                                   | 0.149                         | 0.029+j0.203                                       | 0.029+j0.152 | 0.177+j0.421                      | 0.177+j0.522 | 0.626                 | 0.465   | 51                  | 1443                           | 1261    | 923             | 845     |
| 1000*                                                      | 30.0                                  | 143.4                                   | 0.163                         | 0.023+j0.196                                       | 0.023+j0.147 | 0.171+j0.414                      | 0.171+j0.512 | 0.604                 | 0.448   | 48                  | 1638                           | 1413    | 1018            | 926     |
| 1200*                                                      | 29.0                                  | 145.0                                   | 0.176                         | 0.020+j0.190                                       | 0.020+j0.142 | 0.168+j0.408                      | 0.168+j0.505 | 0.587                 | 0.432   | 45                  | 1788                           | 1526    | 1085            | 981     |
| 1400*                                                      | 29.0                                  | 148.5                                   | 0.185                         | 0.017+j0.186                                       | 0.018+j0.138 | 0.165+j0.403                      | 0.166+j0.497 | 0.571                 | 0.422   | 43                  | 1938                           | 1641    | 1148            | 1036    |
| 1600*                                                      | 28.0                                  | 150.8                                   | 0.197                         | 0.016+j0.181                                       | 0.016+j0.135 | 0.163+j0.399                      | 0.164+j0.491 | 0.558                 | 0.412   | 41                  | 2071                           | 1738    | 1201            | 1081    |
| 1800*                                                      | 28.0                                  | 153.6                                   | 0.205                         | 0.014+j0.178                                       | 0.014+j0.133 | 0.162+j0.395                      | 0.162+j0.485 | 0.547                 | 0.404   | 39                  | 2183                           | 1822    | 1241            | 1118    |
| 2000*                                                      | 28.0                                  | 156.8                                   | 0.212                         | 0.013+j0.174                                       | 0.013+j0.131 | 0.161+j0.392                      | 0.161+j0.479 | 0.536                 | 0.397   | 38                  | 2296                           | 1906    | 1280            | 1155    |
| 2200*                                                      | 28.0                                  | 157.9                                   | 0.215                         | 0.012+j0.171                                       | 0.012+j0.128 | 0.160+j0.389                      | 0.160+j0.475 | 0.532                 | 0.395   | 37                  | 2367                           | 1958    | 1307            | 1178    |
| 2500*                                                      | 28.0                                  | 163.6                                   | 0.229                         | 0.011+j0.167                                       | 0.011+j0.126 | 0.159+j0.385                      | 0.159+j0.467 | 0.514                 | 0.383   | 36                  | 2504                           | 2064    | 1339            | 1218    |

Technical Parameter for Power Cable with Lead Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 500                                                        | 30.0                                  | 116.7                                   | 0.128                         | 0.048+j0.218                                       | 0.049+j0.156 | 0.196+j0.436                      | 0.197+j0.560 | 0.683                 | 0.485   | 54                  | 1108                           | 997     | 757             | 708     |
| 630                                                        | 30.0                                  | 120.1                                   | 0.137                         | 0.038+j0.211                                       | 0.039+j0.15  | 0.186+j0.428                      | 0.187+j0.549 | 0.659                 | 0.467   | 51                  | 1279                           | 1144    | 858             | 800     |
| 800                                                        | 30.0                                  | 124.1                                   | 0.147                         | 0.031+j0.203                                       | 0.032+j0.145 | 0.179+j0.421                      | 0.179+j0.537 | 0.634                 | 0.448   | 47                  | 1470                           | 1301    | 964             | 893     |
| 800*                                                       | 30.0                                  | 126.4                                   | 0.153                         | 0.029+j0.203                                       | 0.029+j0.146 | 0.177+j0.421                      | 0.177+j0.535 | 0.626                 | 0.445   | 47                  | 1537                           | 1369    | 1003            | 936     |
| 1000*                                                      | 29.0                                  | 128.7                                   | 0.167                         | 0.023+j0.196                                       | 0.023+j0.140 | 0.171+j0.414                      | 0.171+j0.526 | 0.604                 | 0.426   | 44                  | 1765                           | 1558    | 1126            | 1045    |
| 1200*                                                      | 28.0                                  | 130.5                                   | 0.180                         | 0.020+j0.190                                       | 0.020+j0.135 | 0.168+j0.408                      | 0.168+j0.518 | 0.587                 | 0.411   | 41                  | 1935                           | 1698    | 1212            | 1122    |
| 1400*                                                      | 28.0                                  | 134.0                                   | 0.189                         | 0.017+j0.186                                       | 0.018+j0.132 | 0.165+j0.403                      | 0.166+j0.510 | 0.571                 | 0.401   | 39                  | 2116                           | 1844    | 1303            | 1201    |
| 1600*                                                      | 27.0                                  | 135.3                                   | 0.203                         | 0.016+j0.181                                       | 0.016+j0.128 | 0.163+j0.399                      | 0.164+j0.505 | 0.558                 | 0.390   | 36                  | 2286                           | 1974    | 1382            | 1266    |
| 1800*                                                      | 27.0                                  | 138.3                                   | 0.211                         | 0.014+j0.178                                       | 0.014+j0.126 | 0.162+j0.395                      | 0.162+j0.498 | 0.547                 | 0.383   | 35                  | 2429                           | 2086    | 1448            | 1324    |
| 2000*                                                      | 26.0                                  | 139.3                                   | 0.224                         | 0.013+j0.174                                       | 0.013+j0.123 | 0.161+j0.392                      | 0.161+j0.494 | 0.536                 | 0.374   | 33                  | 2574                           | 2196    | 1512            | 1378    |
| 2200*                                                      | 26.0                                  | 140.4                                   | 0.227                         | 0.012+j0.171                                       | 0.012+j0.121 | 0.160+j0.389                      | 0.160+j0.490 | 0.532                 | 0.371   | 32                  | 2666                           | 2265    | 1554            | 1412    |
| 2500*                                                      | 26.0                                  | 146.1                                   | 0.242                         | 0.011+j0.167                                       | 0.011+j0.119 | 0.159+j0.385                      | 0.159+j0.481 | 0.514                 | 0.361   | 31                  | 2852                           | 2403    | 1619            | 1470    |

Technical Parameter for Power Cable with Lead Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance<br>(Ω/km) |              | Zero Sequence Impedance<br>(Ω/km) |              | Inductance<br>(mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|----------------------------------------------------|--------------|-----------------------------------|--------------|-----------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               |                                                    |              |                                   |              |                       |         |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               | Flat                                               | Trefoil      | Flat                              | Trefoil      | Flat                  | Trefoil |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 630                                                        | 32.0                                  | 125.1                                   | 0.132                         | 0.038+j0.211                                       | 0.039+j0.153 | 0.186+j0.428                      | 0.187+j0.544 | 0.659                 | 0.475   | 52                  | 1253                           | 1126    | 839             | 787     |
| 800                                                        | 31.0                                  | 127.1                                   | 0.144                         | 0.031+j0.203                                       | 0.031+j0.146 | 0.179+j0.421                      | 0.179+j0.534 | 0.634                 | 0.453   | 48                  | 1437                           | 1280    | 940             | 877     |
| 800*                                                       | 31.0                                  | 129.4                                   | 0.149                         | 0.029+j0.203                                       | 0.029+j0.147 | 0.177+j0.421                      | 0.177+j0.532 | 0.626                 | 0.449   | 47                  | 1503                           | 1344    | 977             | 917     |
| 1000*                                                      | 30.0                                  | 131.7                                   | 0.163                         | 0.023+j0.196                                       | 0.023+j0.142 | 0.171+j0.414                      | 0.171+j0.523 | 0.604                 | 0.431   | 44                  | 1722                           | 1527    | 1093            | 1020    |
| 1200*                                                      | 29.0                                  | 133.5                                   | 0.176                         | 0.020+j0.190                                       | 0.020+j0.137 | 0.168+j0.408                      | 0.168+j0.516 | 0.587                 | 0.416   | 41                  | 1892                           | 1664    | 1176            | 1093    |
| 1400*                                                      | 29.0                                  | 137.0                                   | 0.185                         | 0.017+j0.186                                       | 0.018+j0.133 | 0.165+j0.403                      | 0.166+j0.507 | 0.571                 | 0.405   | 39                  | 2067                           | 1807    | 1262            | 1170    |
| 1600*                                                      | 28.0                                  | 138.3                                   | 0.197                         | 0.016+j0.181                                       | 0.016+j0.130 | 0.163+j0.399                      | 0.164+j0.502 | 0.558                 | 0.394   | 37                  | 2229                           | 1932    | 1335            | 1231    |
| 1800*                                                      | 28.0                                  | 141.3                                   | 0.205                         | 0.014+j0.178                                       | 0.014+j0.127 | 0.162+j0.395                      | 0.162+j0.496 | 0.547                 | 0.387   | 36                  | 2367                           | 2041    | 1396            | 1285    |
| 2000*                                                      | 28.0                                  | 144.3                                   | 0.212                         | 0.013+j0.174                                       | 0.013+j0.125 | 0.161+j0.392                      | 0.161+j0.490 | 0.536                 | 0.381   | 34                  | 2505                           | 2148    | 1454            | 1336    |
| 2200*                                                      | 28.0                                  | 145.4                                   | 0.215                         | 0.012+j0.171                                       | 0.012+j0.123 | 0.160+j0.389                      | 0.160+j0.486 | 0.532                 | 0.378   | 33                  | 2594                           | 2216    | 1495            | 1372    |
| 2500*                                                      | 28.0                                  | 151.1                                   | 0.229                         | 0.011+j0.167                                       | 0.011+j0.121 | 0.159+j0.385                      | 0.159+j0.477 | 0.514                 | 0.367   | 32                  | 2770                           | 2350    | 1551            | 1425    |

# Technical Parameter

## 9. 290/500 (550)kV

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br>μF/km | Positive and Negative Sequence Impedance (Ω/km) |              | Zero Sequence Impedance (Ω/km) |              | Inductance (mH/km) |         | Wave Impedance<br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-------------------------------|-------------------------------------------------|--------------|--------------------------------|--------------|--------------------|---------|---------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                               | Flat                                            | Trefoil      | Flat                           | Trefoil      | Flat               | Trefoil |                     | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                               |                                                 |              |                                |              |                    |         |                     | Flat                           | Trefoil | Flat            | Trefoil |
| 800                                                        | 34.0                                  | 143.8                                   | 0.136                         | 0.031+j0.203                                    | 0.031+j0.154 | 0.179+j0.421                   | 0.179+j0.519 | 0.634              | 0.478   | 53                  | 1360                           | 1192    | 866             | 796     |
| 800*                                                       | 34.0                                  | 146.1                                   | 0.141                         | 0.029+j0.203                                    | 0.029+j0.155 | 0.177+j0.421                   | 0.177+j0.517 | 0.626              | 0.473   | 53                  | 1418                           | 1245    | 894             | 825     |
| 1000*                                                      | 33.0                                  | 149.4                                   | 0.153                         | 0.023+j0.196                                    | 0.023+j0.149 | 0.171+j0.414                   | 0.171+j0.507 | 0.604              | 0.456   | 50                  | 1607                           | 1395    | 984             | 903     |
| 1200*                                                      | 33.0                                  | 153.0                                   | 0.161                         | 0.020+j0.190                                    | 0.020+j0.145 | 0.168+j0.408                   | 0.168+j0.498 | 0.587              | 0.443   | 47                  | 1747                           | 1506    | 1043            | 956     |
| 1400*                                                      | 32.0                                  | 154.5                                   | 0.172                         | 0.017+j0.186                                    | 0.018+j0.141 | 0.165+j0.403                   | 0.165+j0.492 | 0.571              | 0.429   | 44                  | 1899                           | 1620    | 1104            | 1008    |
| 1600*                                                      | 32.0                                  | 158.8                                   | 0.180                         | 0.016+j0.181                                    | 0.016+j0.138 | 0.163+j0.399                   | 0.164+j0.485 | 0.558              | 0.422   | 43                  | 2021                           | 1716    | 1149            | 1052    |
| 1800*                                                      | 31.0                                  | 159.6                                   | 0.191                         | 0.014+j0.178                                    | 0.014+j0.135 | 0.162+j0.395                   | 0.162+j0.480 | 0.547              | 0.411   | 41                  | 2137                           | 1799    | 1189            | 1085    |
| 2000*                                                      | 31.0                                  | 162.8                                   | 0.197                         | 0.013+j0.174                                    | 0.013+j0.133 | 0.161+j0.392                   | 0.161+j0.475 | 0.536              | 0.405   | 40                  | 2247                           | 1883    | 1224            | 1121    |
| 2200*                                                      | 31.0                                  | 163.9                                   | 0.200                         | 0.012+j0.171                                    | 0.012+j0.130 | 0.160+j0.389                   | 0.160+j0.471 | 0.532              | 0.402   | 38                  | 2315                           | 1934    | 1249            | 1143    |
| 2500*                                                      | 31.0                                  | 169.6                                   | 0.213                         | 0.011+j0.167                                    | 0.011+j0.129 | 0.159+j0.385                   | 0.159+j0.462 | 0.514              | 0.390   | 37                  | 2449                           | 2040    | 1277            | 1181    |

Technical Parameter for Power Cable with Corrugated Aluminum Sheath

| Nominal Cross-section of Copper Conduct<br>mm <sup>2</sup> | Nominal Thickness of Insulation<br>mm | Approx. Overall Diameter of Cable<br>mm | Designed Capacitance<br><br>μF/km | Positive and Negative Sequence Impedance (Ω/km) |              | Zero Sequence Impedance (Ω/km) |              | Inductance (mH/km) |         | Wave Impedance<br><br>Ω | Reference Current Capacity (A) |         |                 |         |
|------------------------------------------------------------|---------------------------------------|-----------------------------------------|-----------------------------------|-------------------------------------------------|--------------|--------------------------------|--------------|--------------------|---------|-------------------------|--------------------------------|---------|-----------------|---------|
|                                                            |                                       |                                         |                                   | Flat                                            | Trefoil      | Flat                           | Trefoil      | Flat               | Trefoil |                         | In Air                         |         | Directly Buried |         |
|                                                            |                                       |                                         |                                   |                                                 |              |                                |              |                    |         |                         | Flat                           | Trefoil | Flat            | Trefoil |
| 800                                                        | 34.0                                  | 133.1                                   | 0.136                             | 0.031+j0.203                                    | 0.031+j0.149 | 0.179+j0.421                   | 0.179+j0.529 | 0.634              | 0.462   | 50                      | 1412                           | 1262    | 914             | 857     |
| 800*                                                       | 34.0                                  | 135.4                                   | 0.141                             | 0.029+j0.203                                    | 0.029+j0.15  | 0.177+j0.421                   | 0.177+j0.526 | 0.626              | 0.458   | 49                      | 1476                           | 1325    | 949             | 894     |
| 1000*                                                      | 33.0                                  | 137.7                                   | 0.153                             | 0.023+j0.196                                    | 0.023+j0.144 | 0.171+j0.414                   | 0.171+j0.517 | 0.604              | 0.440   | 46                      | 1690                           | 1504    | 1059            | 993     |
| 1200*                                                      | 33.0                                  | 141.5                                   | 0.161                             | 0.020+j0.190                                    | 0.020+j0.140 | 0.168+j0.408                   | 0.168+j0.508 | 0.587              | 0.428   | 44                      | 1849                           | 1636    | 1136            | 1063    |
| 1400*                                                      | 32.0                                  | 143.0                                   | 0.172                             | 0.017+j0.186                                    | 0.018+j0.136 | 0.165+j0.403                   | 0.166+j0.502 | 0.571              | 0.414   | 41                      | 2025                           | 1778    | 1218            | 1135    |
| 1600*                                                      | 32.0                                  | 146.3                                   | 0.180                             | 0.016+j0.181                                    | 0.016+j0.133 | 0.163+j0.399                   | 0.164+j0.495 | 0.558              | 0.406   | 40                      | 2174                           | 1898    | 1284            | 1195    |
| 1800*                                                      | 31.0                                  | 147.3                                   | 0.191                             | 0.014+j0.178                                    | 0.014+j0.130 | 0.162+j0.395                   | 0.162+j0.490 | 0.547              | 0.395   | 38                      | 2316                           | 2008    | 1342            | 1244    |
| 2000*                                                      | 31.0                                  | 150.3                                   | 0.197                             | 0.013+j0.174                                    | 0.013+j0.128 | 0.161+j0.392                   | 0.161+j0.485 | 0.536              | 0.389   | 36                      | 2449                           | 2112    | 1396            | 1292    |
| 2200*                                                      | 31.0                                  | 151.4                                   | 0.200                             | 0.012+j0.171                                    | 0.012+j0.126 | 0.160+j0.389                   | 0.160+j0.481 | 0.532              | 0.386   | 35                      | 2536                           | 2180    | 1434            | 1326    |
| 2500*                                                      | 31.0                                  | 157.1                                   | 0.213                             | 0.011+j0.167                                    | 0.011+j0.124 | 0.159+j0.385                   | 0.159+j0.472 | 0.514              | 0.375   | 34                      | 2705                           | 2311    | 1483            | 1376    |

Note: “\*”means milliken conductor.

Correction Factor of the Current Carrying Capacity at Different Ambient Temperature

| Ambient temperature (°C) |         | 0    | 5    | 10   | 15   | 20   | 25   | 30   | 35   | 40   |
|--------------------------|---------|------|------|------|------|------|------|------|------|------|
| Correction Factor        | In Air  | 1.34 | 1.30 | 1.27 | 1.22 | 1.18 | 1.14 | 1.10 | 1.05 | 1.00 |
|                          | In Soil | 1.18 | 1.14 | 1.11 | 1.07 | 1.04 | 1.00 | 0.96 | 0.92 | 0.88 |

Correction Factor of the Current Carrying Capacity at Different Soil Thermal Resistivity:

| Soil Thermal Resistivity (°C·m/W)              | 0.8  | 1.0  | 1.2  | 1.5  | 1.8  | 2.0  | 2.5  | 3.0  |
|------------------------------------------------|------|------|------|------|------|------|------|------|
| Correction Factor of Current Carrying Capacity | 1.07 | 1.06 | 1.00 | 0.92 | 0.86 | 0.83 | 0.75 | 0.70 |

Correction Factor of the Current Carrying Capacity at Different Laying Depth:

| Laying Depth (m)  | 0.5  | 0.7  | 0.9  | 1.0  | 1.2  | 1.5  |
|-------------------|------|------|------|------|------|------|
| Correction Factor | 1.09 | 1.05 | 1.01 | 1.00 | 0.98 | 0.95 |

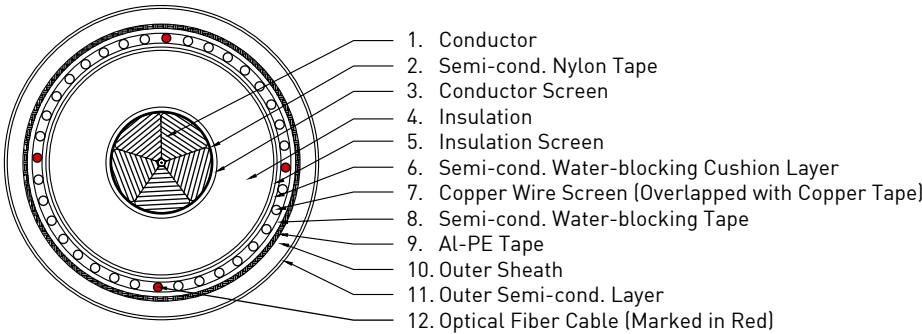
Calculation conditions for above products:

- Conductor operation temperature 90°C 50Hz;
- Soil temperature 25°C, depth: 1000mm, soil thermal resistivity 1.2°C·m/W;
- Ambient temperature 40°C;
- Single circuit, flat installation: s=250mm; trefoil installation, s= overall diameter of cable;
- Type of earthing: single point bonding or both points cross-bonding.

## 5. Structures and Technical Characteristics of Other Cables

### 1). IEC Standard

#### (1) XLPE Cable with Copper Wire Screen



#### (2) Technical Characteristics

XLPE cable with copper wire screen is much flexible for laying and installation in tunnel and pipeline, with the advantages of small size of overall diameter, large short circuit current carrying capacity and flexible cable cores. Moreover, the optical fiber cable which is inserted in the process of copper wire screen and distributed in the gap of copper wires. Optical fiber can be used as temperature-sensing element and also for communication and remote control.

#### (3) Major Technical Parameters (220kV and below Cable)

- Partial Discharge Test: No detectable discharge exceeding to the declared sensitivity (5 pC or better) at 1.5 U<sub>0</sub>.
- Power Frequency Voltage Test: No breakdown of the insulation or flashover at 2.5U<sub>0</sub> for 30min.
- Non-metal Sheath DC Voltage Test: No breakdown at DC voltage 25kV for 1min.
- DC Resistance Measurement of Copper Wire Screen at 20°C: The measured value shall comply with the specification of IEC 60228:2004.

# Technical Parameter

| Type        |               | Cable                                                                          |
|-------------|---------------|--------------------------------------------------------------------------------|
| Copper Core | Aluminum Core |                                                                                |
| YJSAY       | YJLSAY        | XLPE Insulated Copper Wire Screened Al-PE (Cu-PE) Tape PE Sheath Power Cable   |
| YJSAV       | YJLSAV        | XLPE Insulated Copper Wire Screened Al-PE (Cu-PVC) Tape PVC Sheath Power Cable |

Type and specification for this product (rated voltage, Nos of core, conductor nominal cross section, nominal cross section of copper wire screen).  
e.g.: Rated voltage 64/110kV, single core, nominal cross section of copper conductor 800 mm<sup>2</sup> and copper wire screen 150 mm<sup>2</sup>, XLPE insulated copper wire screen Al-PE tape PE sheath power cable is represented as: Cu/XLPE/CWS/Al-PE/PE 64/110kV 1×800/150mm<sup>2</sup>.

## 2). Structure and Technical Characteristics of Intelligent XLPE Cable

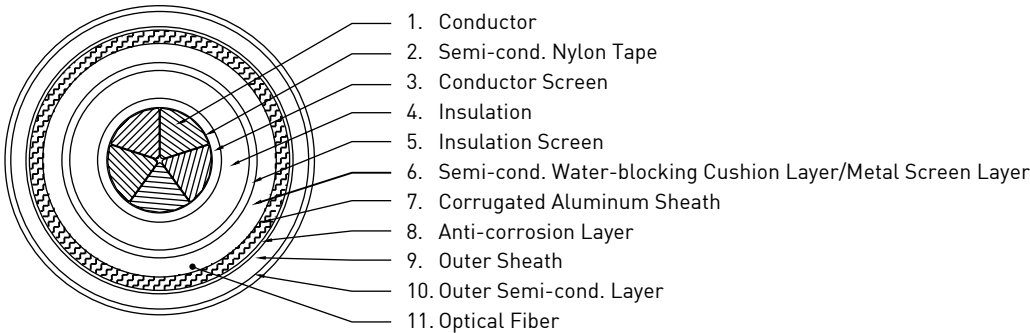
### (1) XLPE Cable with Copper Wire Screen

Integrated intelligent high voltage XLPE cable can online monitor the operation parameters during the operation of high voltage cable. It can online real-time monitor cable actual operation temperature and then realize online temperature measurement and control, online fault location and improve the operation load of cable system. Besides, it also can accomplish online monitoring of partial discharge, current carrying capacity and outer sheath condition. It can provide important specification judging evidence for cable safety operation and more load operation, ensure the cable safety operation, extend cable service life, develop the cable transmission capability to the deepest extent, reduce the operation cost, meet the requirement of customers' safety and economy, and then decrease the replace frequency, reach energy saving and consumption reducing, increase utilization of transmission energy, achieve the best effect of transmission performance of XLPE cable, and have great economic benefit and social benefit.

### (2) Structure Characteristic

On basis of digestion and absorption of overseas advanced technology, we define the structure of intelligent XLPE cable according to the temperature-sensing effect of distributed optical fiber temperature sensor and develop this new product based on this idea.

### (3) Cable Structure



### (4) Technical Specification

- a. Conductor property conforms to the requirement of IEC 60228:2004;
- b. Optical Fiber Continuity Test: Measured length accords with actual length, i.e. optical fiber is continuity;
- c. Optical Fiber Temperature Measurement Test: Optical fiber temperature-sensing difference shall be within  $\pm 1^{\circ}\text{C}$ ;
- d. Partial Discharge Test: No detectable discharge exceeding to the declared sensitivity (5 pC or better) at 1.5  $U_0$ ;
- e. Power Frequency Voltage Test: No breakdown of the insulation at 2.5 $U_0$  for 30min;
- f. Voltage Test of Non-Metal Sheath: No breakdown of the outer sheath at DC voltage 25kV for 1min;
- g. This product is capable of current carrying capacity monitoring, partial discharge measurement location and outer sheath condition analysis all through online system.

