



Litz Wires

Designed for your challenges

THE INNOVATION LEADERS

De Angeli Prodotti means **innovation** since decades in the world of winding wires. Pioneering, innovative and tailor-made **solutions** meet the ultimate production technologies, giving solid answers to the challenges of energy, industry, e-mobility, through a skilled team of experts which will help you through your whole experience.

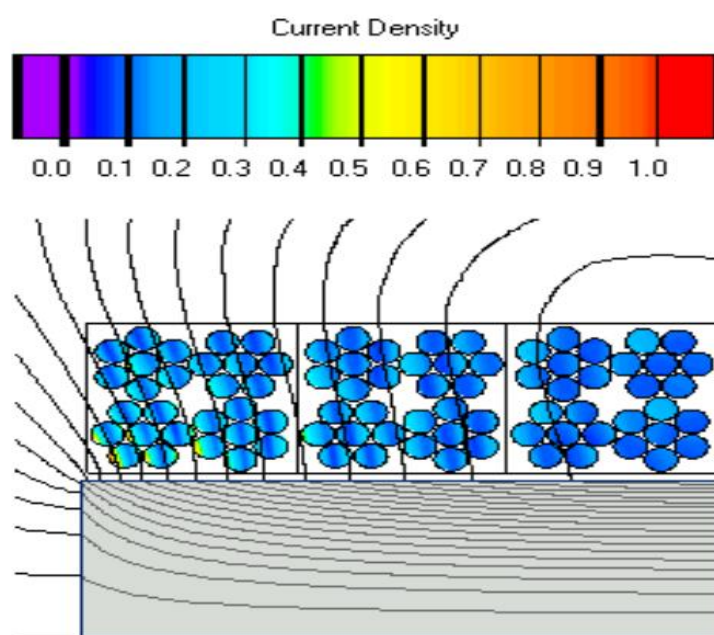
THE FUTURE OF ENERGY

Sometimes is passing through small revolutions: invisible and apparently simple, sometimes reckless and much more complex. In all cases the **LITZ WIRE** plays a fundamental role, to make possible what is not with a traditional conductor. The intertwining of hundreds or thousands of elementary conductors **lowers the losses** in the transmission of alternating current, eliminating the skin effect and making possible solutions where required power is high and given space is low.



The SKIN EFFECT

Both the magnetic flux and the number of turns are inversely proportional to the frequency. Higher frequencies allow a significant reduction of the transformer size. A **reduced winding diameter** and a lower number of turns also mean a shorter conductor's length, hence a lower electrical resistance.



| Individual wire | Material | Spec. Resistance [Ωmm ² /m] | Density [kg/m ³] | Diameter [mm] |
|-----------------|----------|--|------------------------------|---------------|
| | Copper | 0,0171 | 8890 | ≥ 0,1 |
| Aluminium | 0,0278 | 2700 | ≥ 0,3 | |

| Insulation type for the individual wires | Name | Enamel type | Thermal class [°C] | Solderability |
|--|------------------|-------------|--------------------|---------------|
| | Solvest F | PU | 155 | yes |
| | Solvest H | PU | 180 | yes |
| | Thervest/Adhexal | PEI+PAI | 200 | - |

Enamel build: Grade 1, Grade 2, Grade3

| External insulation tape | Type | Thickness [μm] |
|--------------------------|-------------|----------------|
| | Nomex T410 | 50 |
| | Polyester | 23 |
| | Polyimide | 38 |
| | Conductofol | 90 |
| Mica-glass | 100 | |

Silicone extrusion after taping is possible

| Shape | Round | Rectangular W/T up to 1,8:1 |
|-------|-----------------------------------|-----------------------------|
| | Section up to 330 mm ² | |

Fill factor up to 80%, measured considering the total cross section of the enameled wire

| Frequency | Diameter for elemental conductor (copper) |
|-----------|---|
| 1 kHz | |
| 10 kHz | 0,66 mm |
| 50 kHz | 0,30 mm |
| 100 kHz | 0,21 mm |
| 500 kHz | 0,100 mm |

