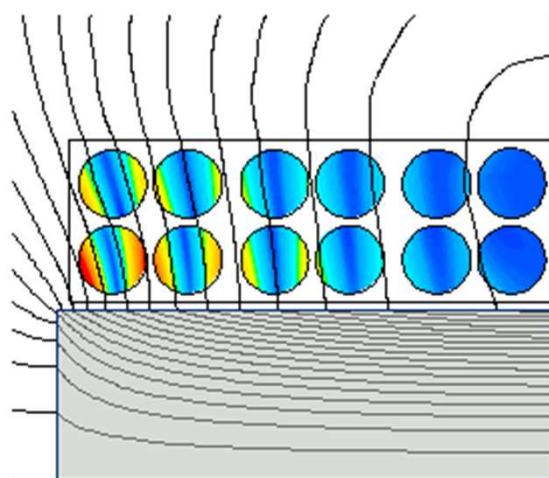


New Technologies

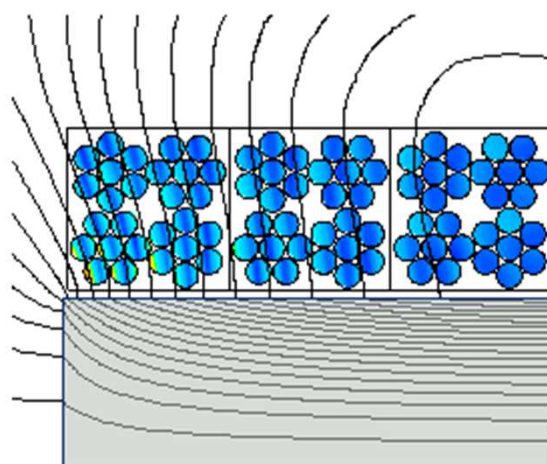
Aluminium Litz Wire



Current Density



0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0



LIGHT SOLUTION FOR
HIGH FREQUENCIES

Aluminium Litz Wire

Design / Research and Develop Department

Francesco Magagna, Davide Peroni

Copyright © 2017 De Angeli Prodotti S.r.l.

Intellectual Property of De Angeli Prodotti S.r.l., it is forbidden reproduction and diffusion of this document.

ABSTRACT

In 2016 De Angeli Prodotti started to research and develop a new product called Aluminium Litz Wire. De Angeli Prodotti is an aluminium magnet wire world leading company, and, following its tradition, the key of this project is substituting copper with aluminium. The main advantages are lower weights and costs without losing product performances.

INTRODUCTION

In the field of high frequencies, the conductors are subjected to skin and proximity effect: the result is a change on the current distribution that imply an higher losses due to Joule effect.

The common method, used to solve this problem, is build the conductor in multiple fine enamelled copper wire, in order to redistribute the current and so exploit the overall conductor section. As in all conductors, it's important to keep low the electrical resistance: aluminium is a good electrical conductor and, if the cable section is opportunely designed, it can be competitive with copper. De Angeli Prodotti, in collaboration with a spin off of Università degli Studi di Padova, is developing the Aluminium Litz Wire in order to obtain the best solution in terms of efficiency, weight and costs. Up today, some tests that compare different kind of inductors, in copper and aluminium, shown interesting results.

ENGINEERING

De Angeli Prodotti is developing a new conductor looking towards a new solution: an high number of fine aluminium magnet wire are produced on enamelling department. After that phase, they are stranded using particular machines that allow to maintain unchanged the electrical insulation and guarantee the best performances.

ADVANTAGES

In an high number of application, Aluminium Litz Wire allow to work with high frequencies replacing copper litz wire and so reducing costs and weight without losing on overall efficiency.



Figure 1. De Angeli Prodotti Aluminium Litz Wire used on comparative tests

The best know how gained on the field of wire enamelling and overhead line stranding permit to guarantee the best product quality and be competitive on the market.

CONCLUSIONS

De Angeli Prodotti is developing an innovative Aluminium Litz Wire in collaboration with a spin off of Università degli Studi di Padova. Comparative tests at high frequencies are showing good results meaning that aluminium will be the future!

CONTACTS

Visit our web site for more information.
www.deangeliprodotti.com