

# New Technologies

## <u>All Aluminium Alloy Conductors</u> Super High Conductivity (AAAC SHC)





# CONDUCTIVITY AT ITS BEST



## <u>All Aluminium Alloy Conductors</u> <u>Super High Conductivity (AAAC SHC)</u>

**Design / Research and Develop Department** 

INTRODUCTION

Aluminium alloy is already used by long time as material for overhead lines but the current technologies allow an improvement of conductivity.

The improvement of electrical conductivity of aluminium alloys is one of the main possible developments to obtain efficient, light and corrosion resistant conductors for low line losses.

Nowadays, AAAC SHC are on the edge of technology for overhead lines in terms of energy efficiency.

## ENGINEERING

An accurate study of aluminium alloys properties and microstructures has permitted to develop a material with a higher electrical conductivity compared to the traditional aluminium alloy used for conductors (AAAC), maintaining the same tensile strength.



Tensile strenght (MPa)

Comparison between traditional alloys (blue area) and AAAC SHC

Davide Peroni, Debora Mimo, Julie Prieur

	Minimum Tensile Strenght of Wire (MPa)	Maximum Resistivity of Wire (Ohm.mm²/m)
<u>ASTER 570</u> <u>AL 4</u>	325	0.0329
ASTER 570 SHC	325	0.0305
<u>Delta</u>	=	-7.3%

Comparison between ASTER 570 AL 4 and ASTER 570 SHC

The enhanced electrical conductivity allows an **energy losses reduction more than 7%**. Furthermore, De Angeli Prodotti and TCH De Angeli innovative production process gives the possibility to obtain extremely high conductivity for different requirements of tensile strength, in order to satisfy all the costumer's requirements.

#### **ADVANTAGES**

**The line losses are reduced:** more conductive aluminium alloy reduces line losses up to 7% compared to conventional AAAC conductors of the same size and weight;

**Easy installation or substitution:** AAAC SHC conductors have the same section as the traditional one, so the substitution of the old lines can be performed without any problem. The new conductor can be installed exactly in the same way; **Less power generation and reduced CO<sub>2</sub> emission**: lower line losses means less power generation and less  $CO_2$  emissions to serve the same load;

### CONCLUSIONS

New aluminium alloy conductors developed by De Angeli Prodotti and TCH De Angeli give very important advantages compared to the traditional one, the installation of this new product assures an important decrease in energy losses.