

Sector focus

Defence



Goodfellow
Your global supplier for materials

Wire provided by Goodfellow has been applied in the development of technical devices for the Defence sector.

The components of these electrical devices are used by the army in a number of countries around Europe for different tactical applications. The quantities of the materials used were a few kilometres of wire.

Challenge

The challenges on this particular project were mainly geared around supplying the materials on time and ensuring quality documents arrived with the client in an efficient manner.

The main focus within the defence sector is to use higher quality materials rather than mediocre materials as a way of ensuring durability and long-term cost effectiveness.



Solution

Goodfellow undertook an extensive array of tests on new products in order to guide the client towards material selection for specialised projects within the defence industry. The type of wire used was Niobium – Titanium. This material is an alloy of niobium and titanium, used in industrial applications as a type II superconductor wire for superconducting magnets, normally as Nb-Ti fibres in an aluminium or copper matrix. Its critical temperature is about 10 kelvin. The addition of niobium to a binary-titanium alloy results in increased strength at temperatures up to 500°C.

This particular wire was used as it is a really effective conductor. It has become the material of choice for superconducting magnets because of its mechanical properties. To make magnet wire, Niobium-Titanium is formed into filaments that are finer than human hair and embedded in a matrix of solid copper. The filaments can be advantageous because current flows only within a skin depth of the surface of a superconductor. The solid copper forms a solid mechanical structure which will also carry the current if the superconducting phase is lost.