



# The Metals Consultancy Company Ltd

18 Gledhow Park Drive, Chapel Allerton, LEEDS, LS7 4JT, United Kingdom

Telephone +44 (0)113 262 47 59 Fax +44 (0) 870 125 04 60 Mob +44(0) 7860 511 703

Email [bob@tmcccl.co.uk](mailto:bob@tmcccl.co.uk) Website [www.tmcccl.co.uk](http://www.tmcccl.co.uk)

Registered in England number 4256681 VAT number 734 5195 27

## **An investigation into the controlled atmosphere brazing of "cold plate" assemblies for the electronics industry.**

The dissipation of heat from electronic components such as microprocessors, inverters, resistors etc, can sometimes be achieved by attaching the components to heat sinks made from extruded sections with fins for natural or forced convection by air.

Greater cooling requirements often need to be achieved by attaching components to a plate assembly with channels through which cooled liquid is pumped, often at very high pressures.

These "cold plates" are often built up from several layers of aluminium sheet of various thicknesses. The joints between the layers must be free from porosity and cavities and also offer excellent thermal conductivity.

The channels formed in the inner plates of the assembly should not become blocked by the flow of excess braze alloy into them, as this could restrict the flow of coolant.

This paper is an initial investigation into the effect of different thicknesses and compositions of cladding alloy, in the form of clad sheets or brazing foil, on the integrity of the joints between sheets and the flow of excess filler into the channels.

### Authors

Dr David Warrington and Bob Ward  
The Metals Consultancy Company Ltd – TMCCCL  
Leeds, UK

### Presenter

Dr David Warrington