



ADVANCED CHEMICAL ETCHING LTD

# TECHNOLOGY



## ELECTRIC VEHICLES

*ACE, one of the largest specialist metal component manufacturers in Europe, innovating and developing a number of manufacturing processes to meet the needs of EV (Electric Vehicle) systems.*

*Typical components for this application include bus bars from Copper or Aluminium, cooling and heat exchanger plates, manufactured using a unique chemical etching process within ACE's state of the art facility in Telford.*

### CHEMICAL ETCHING FOR ELECTRIC VEHICLES

*EV battery systems* comprise of modular cells which can be utilised in varying multiples depending on the output required.

Each of these modular cells needs to have an electro-mechanical interconnect between each other known commonly as a bus bar.

*The bus bar needs to maintain the inherent thickness to be able to conduct the necessary current output.*

However, upon contact with the cells, the bus bar needs to be permanently fixed to the cell contacts.

This is when thickness can become a problem. Usual methods of fixing, like laser welding, require heat and thus the heat required to penetrate the full thickness is so much that further damage occurs within the cell.

Utilising etching can *remove metal locally* to provide the required thickness at the point of contact with the cell but still maintain maximum cross-sectional area across the remainder of the bus bar to address the current conduction requirements.

Not only does etching offer the benefits detailed above, but as material is removed it also *offers the added benefit of weight reduction* which again is a *key critical element for EV designers to increase the range of future vehicles.*

*Contact ACE today on +44 (0)1952 416 666 to find out what we could produce for you – whether it's 1s or millions.*



## TYPICAL ETCHED COMPONENTS

- » Cooling plates
- » Bus bars
- » Heat exchanger plates
- » Heat shields
- » Vehicle audio components
- » Enclosures
- » Internal decorative components
- » Battery contacts
- » Battery interconnects

**A PROCESS OF INNOVATION**



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# SECONDARY OPERATIONS

## WORKING WITH YOU

ACE can perform a number of *added value services* that are required when *manufacturing certain EV components* including *metal forming, plating* and *heat-treating*.

## METAL FORMING

Advanced Chemical Etching can undertake *any forming operations* that are *required by our clients*, whether it is a *simple form* through to a *full assembly*.

Thanks to a team of *highly skilled staff* and *quality manufacturing*, our capabilities can range from a *basic single form* to an *intricate highly formed multi-pin connector*.

## PLATING

Many parts require *additional surface finishing* and parts can be *supplied plated in the sheet* or *as loose parts*.

This could be *gold, silver, tin, nickel, anodising* and *passivation*. We can offer certificated lab reports to confirm plating thicknesses.

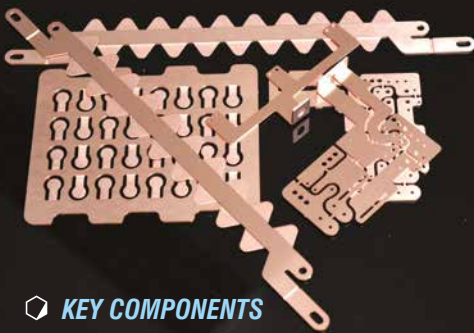
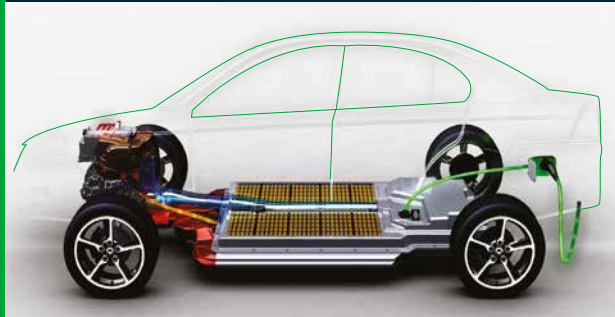
## HEAT TREATING

ACE is able to offer *heat treatment* as an additional service when manufacturing metal components.

*Heat treating of metal components* is used to modify the mechanical properties of the metal or metal alloy, *imparting benefits to the performance* of the component through alteration of the chemical structure, such as *increased strength, temperature resistance* and *hardness*.

## SERVICES AVAILABLE

- » Metal Prototypes
- » Spot Welding
- » Sheet Metal Forming
- » Tapping
- » Toolmaking
- » Assembly
- » Wire Erosion
- » Precision Forming
- » Tape & Reel Packaging
- » Soldering
- » Welding
- » Deep Drawn Components
- » Overmoulding
- » Aerospace Components



KEY COMPONENTS



ACE – MAKING THE DIFFERENCE IN *INNOVATION, TECHNOLOGY* AND *MANUFACTURING*  
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