



ADVANCED CHEMICAL ETCHING LTD

# AUTOMOTIVE



## F1 AND AUTOMOTIVE

Through our controlled photochemical etching process, Advanced Chemical Etching Ltd (ACE) has helped drive the evolution of the F1 and Automotive industry, supplying bespoke, precise and superior quality components to our industry partners and collaborating on the development of the next generation of vehicles.

No other manufacturer can offer the level of accuracy and consistency that ACE does.

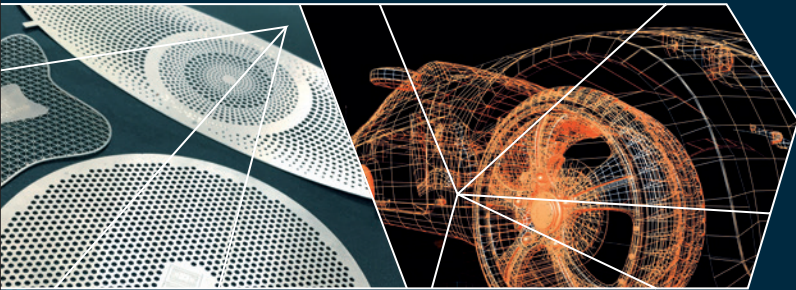
### DELIVERING THE HIGHEST LEVEL OF QUALITY

Our expertise and *high focus on detail* means that every component we supply – from the first etching to the last, will be the same, with *tolerances* to  $> \pm 0.025\text{mm}$ . Our facility is equipped to offer a *rapid turnaround, inexpensive etched prototyping solution*, and we liaise with the customer to develop *a product that meets specification every time*.

ACE offers a product development process that satisfies every niche of sector demand, from *Formulae 1, Automotive and electric vehicle components* through to *premium and performance vehicle applications*. We use a range of metals including *Stainless Steel, Aluminium, Copper and Titanium*, and employ a *burr-free, heat-free* process, preserving the mechanical performance of the metal and removing the risk of distortion.

Our constant drive to improve means that we can offer our clients the *highest level of quality and product safety*. We employ a rigorous quality assessment process through *FMEA, SPC, MSA and PPAP*, satisfying customers' *APQP* requirements.

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

- » Busbars for Electric Vehicles lighting circuits | power components | fuel circuits
- » Precision shims & gaskets
- » Speaker grilles
- » Tread plates
- » Fuel injector flexures
- » ABS flexures
- » Leadframes for electronic packages
- » Actuators
- » Contacts/terminals
- » Motor Laminations
- » RFI Shielding
- » PEM (Proton Exchange Membrane) Fuel Cells
- » Diaphragm springs for fuel management systems
- » Diaphragm springs
- » Shims for aerodynamic spoilers
- » Kinetic Energy Recovery System Components

## METALS

- » Steel (all grades and hardness)
- » Stainless steel (all grades and hardness)
- » Aluminium alloys
- » Copper alloys
- » Nickel alloys
- » Titanium alloys

A PROCESS OF INNOVATION

# ACE CORE CAPABILITIES OVERVIEW

Photo Chemical Etching (net shape)	Technical Information
<ul style="list-style-type: none"> <li>⬢ Low-cost digital tooling, (no hard tooling for etched parts)</li> <li>⬢ Burr-and stress-free, flat etched parts</li> <li>⬢ Unlimited complexity (etching is not a profiling process, so complexity doesn't equal high cost)</li> <li>⬢ Lead-times in days</li> </ul>	<p>Metals ..... <b>Almost all Metals</b></p> <p>Thickness ..... <b>0.005mm – 2.5mm</b></p> <p>Component size..... <b>575mm x 1475mm (max)</b></p> <p>Tolerances ..... <b>&gt; ±0.025mm</b></p> <p>Volumes ..... <b>One to Millions</b></p> <p>Min feature ..... <b>&gt;0.07mm</b></p> <p>Forming, machining &amp; assembly ..... <b>In House</b></p>

Aluminium Etching (net shape)	Technical Information
<ul style="list-style-type: none"> <li>⬢ Proprietary process for etching aluminium</li> <li>⬢ Clean, smooth edges</li> <li>⬢ No expensive hard tooling</li> <li>⬢ Low-cost design iterations – fast turnaround</li> <li>⬢ Burr-and stress-free – metal properties unaffected</li> <li>⬢ 100% tighter tolerances than the industry standard</li> <li>⬢ Serial production capacity</li> </ul>	<p>Metals ..... <b>All grades</b></p> <p>Thickness ..... <b>0.025mm – 2.5mm</b></p> <p>Component size..... <b>575mm x 1475mm (max)</b></p> <p>Tolerances ..... <b>&gt; ±0.025mm</b></p> <p>Volumes ..... <b>One to Millions</b></p> <p>Min feature ..... <b>&gt;0.07mm</b></p> <p>Forming, machining &amp; assembly ..... <b>In House</b></p>

Titanium Etching (net shape)	Technical Information
<ul style="list-style-type: none"> <li>⬢ Lead-times in days</li> <li>⬢ Unlimited complexity (pay for the first hole only)</li> <li>⬢ No hard tooling</li> <li>⬢ Low-cost set up and design iterations</li> <li>⬢ Burr-and stress-free components</li> <li>⬢ Accuracy to ±25 microns</li> <li>⬢ Fine lines as low as 70 microns</li> </ul>	<p>Metals..... <b>All grades</b></p> <p>Thickness..... <b>0.025mm – 1.0mm</b></p> <p>Component size ..... <b>300mm x 500mm (max)</b></p> <p>Tolerances ..... <b>&gt; ±0.025mm</b></p> <p>Volumes..... <b>One to Millions</b></p> <p>Min feature ..... <b>&gt;0.07mm</b></p> <p>Forming, machining &amp; assembly..... <b>In House</b></p>