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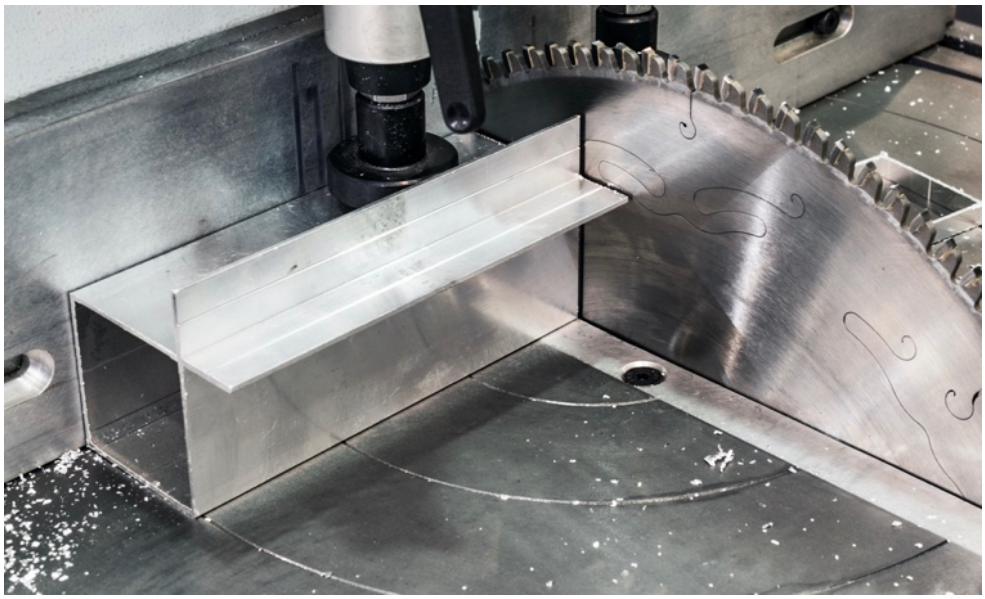
Fabrication Corner

Cutting – the Basics



A growing number of new applications now use aluminium in metal fabrication due to its high strength-to-weight ratio and superior corrosion resistance.

Most fabrication shops are on top of their cutting (and drilling and machining) operations and have the right machines, tools, lubricants and chip or swarf extraction systems. Skilled operators know the basics and operations have become standardised. But when they need to make a new product with a different alloy or thickness or temper, the cutting operation may not work right first time.

For all the benefits that aluminium offers fabricators, it can also bring challenges: it can be one of the more difficult materials to cut, grind and finish efficiently because it has a **lower melting point** than other metals. The heat and friction that build up during these processes quickly melts the aluminium, causing it to stick and accumulate on the tool or blade.

Typically, there are three problem areas:

1. **Aluminium is not to specification** - less likely but worth checking first if there is a problem. Always check the test certificate of the sheet or extrusion and ensure it is what was specified in terms of alloy, temper and mechanical properties.

2. **The wrong tool** – high speed machining can cause adhesion to the tool of chips and the build-up blunts the tool and creates even more heat from friction. Speed and cutting depth are key variables (with the right chip extraction and lubrication being essential) – run some trials to optimise.

3. **Sub-optimal tool geometry** – the blade or tool is not right for this job. Get in the tool supplier and talk it through with an expert in aluminium cutting.