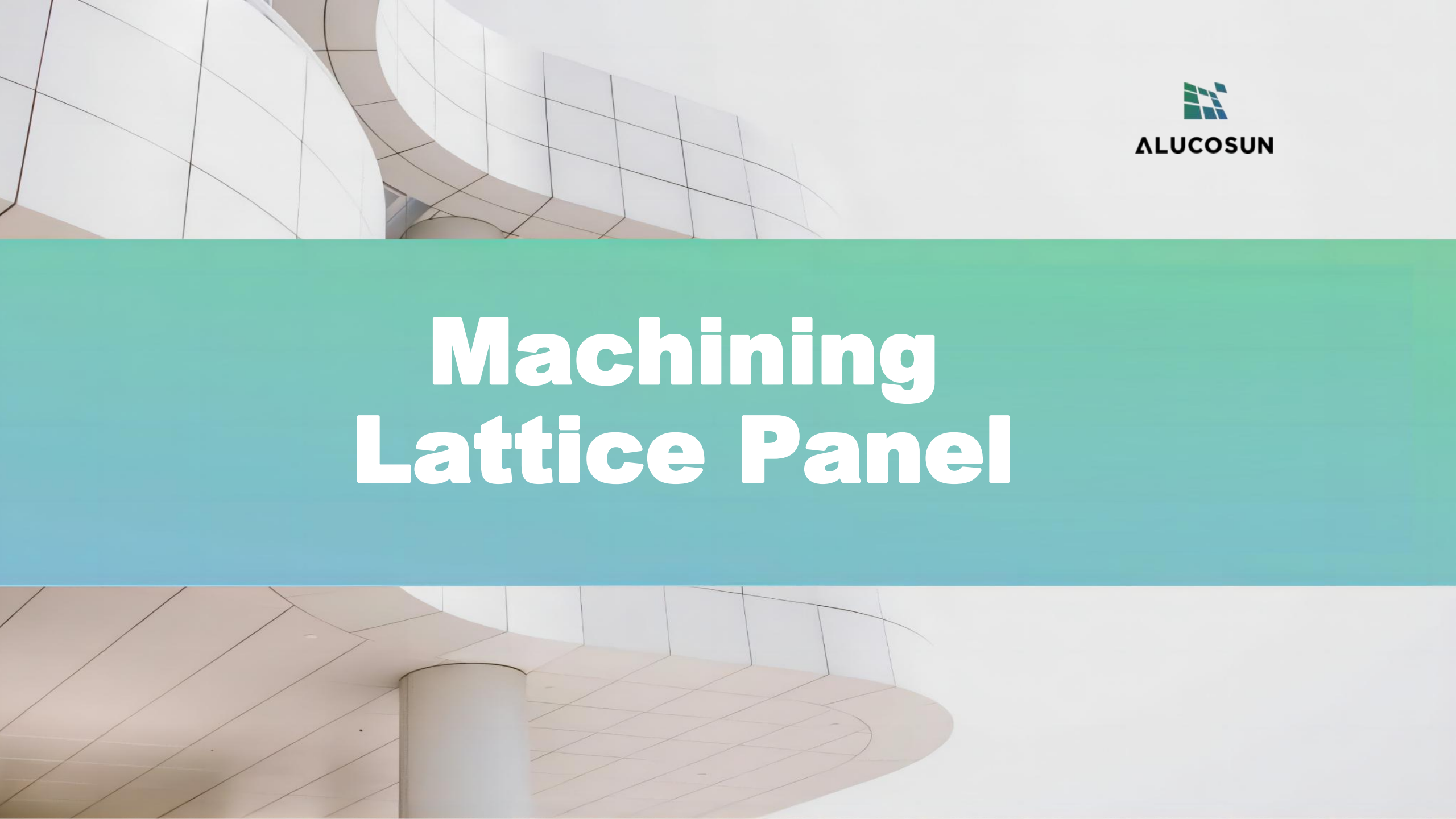
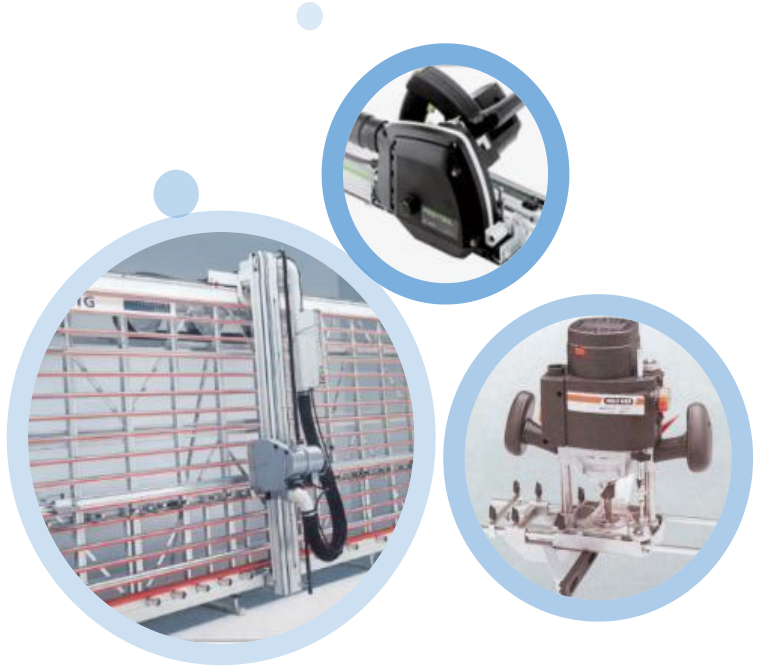


ALUCOSUN

Machining Lattice Panel

TOOLS USED

The main feature of Lattice PaneL panels is that they can be easily cold-formed using simple techniques. Processors can create panels of various sizes and shapes using straightforward grooving and bending techniques. When grooving, a circular saw or milling cutter is used to create V-shaped or rectangular grooves along the bending line on the back of the panel, leaving a portion of the polyethylene core layer intact. After grooving, bending can be done by hand without the need for any equipment. The corner radius of the bent panel depends on the shape and depth of the groove.



The compelling advantages of this technique include:

- Simple and easy processing technology;
- Bending can be done both in the workshop and on-site;
- Allows for different design shapes;
- The shape of the panel is not affected by the size of the processing equipment;

Specific details on feeds and speeds

	TOOLING	FEEDS/SPEEDS	COMMENTS
CNC ROUTER	Available from most tooling supplie with 3mm flat. Available from most tooling suppliers.	RPM: 18000 Feed: 8-12m/min	Recommended to curve the flat on the groover slightly
FESTOOL	Standard Festool 90° grooving blade. Use Dibond 4 depth gauge roller.	Speed: 10-15m/min	Groove on a fat even surface to ensure depth accuracy.

Groove And Bend

- Grooving Lattice PaneL is a simple and easy process - very similar to grooving traditional ACP such as ACP. Traditionally solid core ACP is grooved leaving approximately 0.3mm of core material remaining. The special profiled core of Lattice PaneL is slightly more exacting on the groove depth but does not present any issues
- For a CNC Router, the perfect depth is just brushing the rear of the aluminium face skin. The tooling is the same as that for ACP – a 90 degree V-Groover with a 3mm flat. As depicted in the diagram below, for best results the flat should be adjusted to a slight curve. This is simply done with a linisher or bench grinder. Of course, this tool still works just as well for ACP .Alternatively, a 135 degree V-groover can be used for better swarf removal. If the CNC has a ‘floating head’ , it is recommended this be used for easier groove depth control.
- When using a Festool or Wallsaw, the grooving blade should remove all the aluminium of the core and be touching the adhesive layer on the rear of the face skin. It is important that the tooling be kept sharp as blunt tooling increases heat and pressure on the panel, which in turn can reduce groove quality.
- The aluminum surface of the 3DPANEL is 0.7mm thick. This thickness allows the groove depth to penetrate through the aluminum surface to the back, which not only ensures the strength of the groove corners but also creates a smooth curve when bending, rather than a sharp angle. Therefore, this thickness strikes a balance between smooth bending and structural strength. However, if the groove depth is too deep during operation and cuts into the aluminum surface, potentially compromising structural strength, the following remedial measures can be taken:
    - 1. Attach an "L"-shaped angle steel to the back of the bending area to increase the strength at the bend and make the panel more stable.
    - 2. For box-type panels (those with an external frame), attach a "Z"-shaped angle steel to the back of the bending groove to further enhance the support and stability of the panel after bending.

    These measures effectively compensate for the structural strength issues caused by excessive groove depth, ensuring the panel maintains adequate strength after bending.

Special Remarks

1. If we do not undermine the surface of the aluminum when grooving, the bending force will be uniform when the aluminum skin, aluminum will naturally form a curved 90 °bending angle. In this case any kind of paint will not crack

2. However, it is required to remove all the middle core material, otherwise the Angle surface will appear uneven after bending.

3. When grooving the back side of the Lattice PaneL, if the groove cuts too deeply into the back of the aluminum skin, it may lead to uneven stress distribution during bending. This can result in a 90-degree bend occurring around the grooved side as the center line. In such cases, some paint coatings may lack sufficient elongation properties, leading to cracks in the paint.