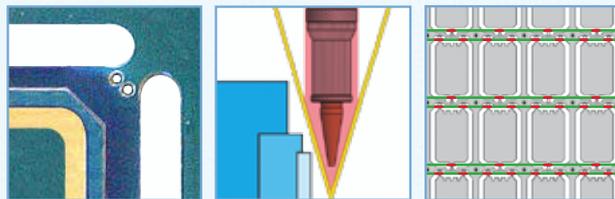


edition 3.0 

## Innovation & Quality Design for Laser Depaneling



neocut-Plus

## > GENERAL

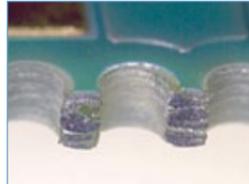
The **depaneling laser** ensures the maximum flexibility for those who need to design an electronic board. It can, in fact, separate multiplates with components under the PCB junctions (connectors, flats, etc.) and allows the handling of the depaneling without any particular mechanical needs, thanks to its special characteristic of not interacting mechanically with the PCBs.

Nevertheless, it could be useful, with the aim of optimizing the cycle times and reducing the development costs of the application, to follow guidelines shown in this document; where possible, during the development of the PCB.

## > KEY RULES

01. Distances and dimensions of the components close to the edge
02. Design and geometry of the multiplates
03. Position of the PCB Junctions
04. Typology of the PCB Junctions

## > THICKNESS AND TYPOLOGY OF THE MATERIAL



PROFILE OF LASER CUTTING OF FR4 BY 1.6MM

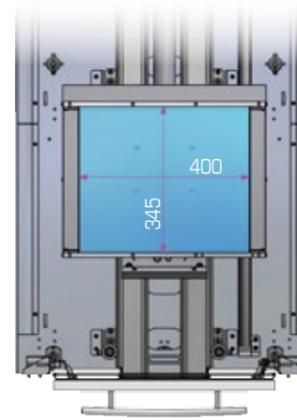
The **depaneling laser** even separates important thicknesses (more than 2mm). Nevertheless, it would be better to reduce the thickness of the PCB to the minimum in order to reduce significantly the cycle times and increase the quality of the cut. As shown in the photo, the best results for FR4 boards is achieved with thicknesses of less than 1.6mm.

The material chosen (FR4 or CEM) can influence the final quality of the cut. The **Osai A.S.** laboratories can carry out practical tests on request, to assess the characteristics of the material chosen.

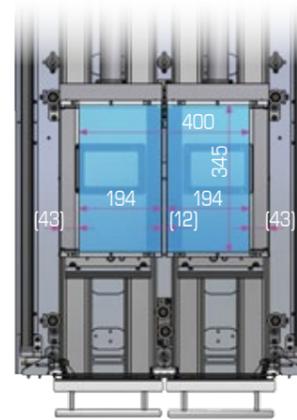


## 02. DESIGN AND GEOMETRY OF THE MULTIPLATES

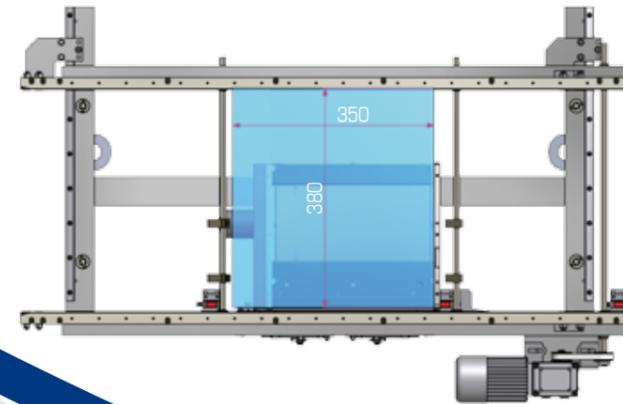
Total working area with single door system (cutting area of 400x345)



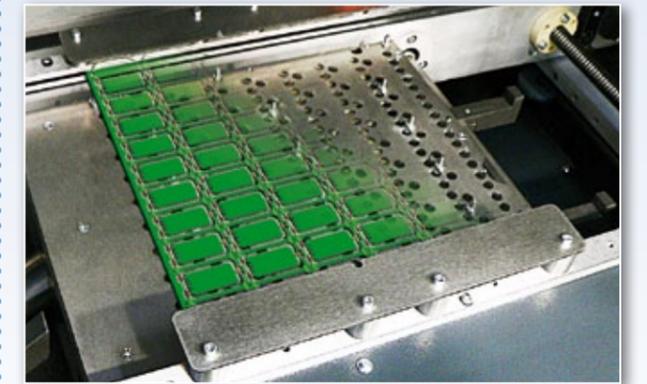
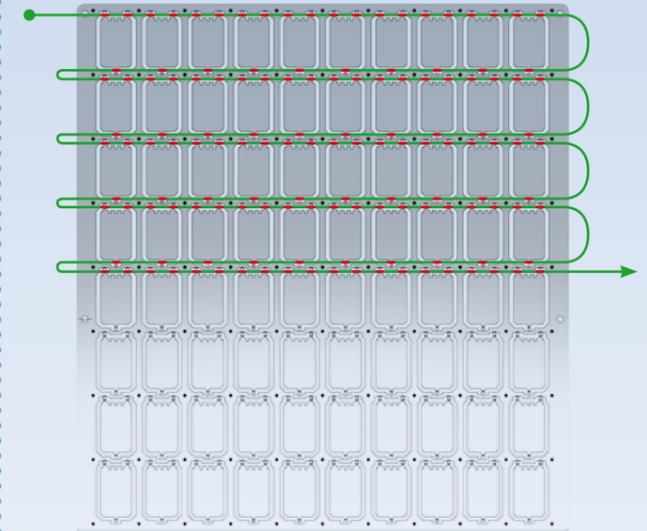
Total working area with double door system (cutting area of 194x345)



Total working area with linear system



## 03. POSITION OF PCB JUNCTIONS

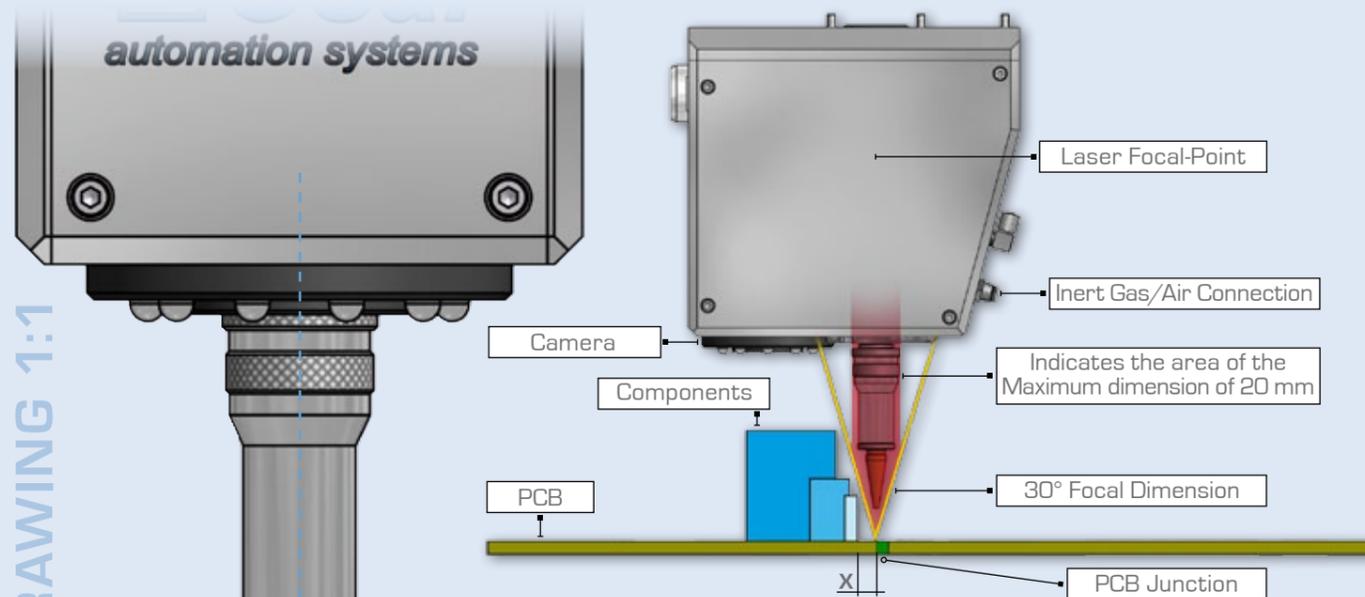


CENTERING AND CLAMPING PLATE OF THE BOARD, WHICH IS SPECIFIC TO THE PRODUCT TO BE MACHINED. THE CENTERING PINS HAVE, IN FACT, THE FUNCTION OF CENTERING THE BOARD AND/OR THE BLISTER AND THE CONTRAST PUNCHES; TO LIFT, IN THE CASE OF BLISTERS, THE BOARD AND PREPARE IT FOR CUTTING.

A CUTTING BOX IS INSTALLED AT THE BASE FOR COLLECTING THE DUST AND DETRITUS THAT RESULTS FROM THE CUTTING.

## 01. DISTANCES AND DIMENSIONS OF THE COMPONENTS CLOSE TO THE EDGE

The possibility of carrying out the depaneling on both sides ensures the maximum freedom of the design. In the case of a linear system, it may be useful to take into account the dimensions of the focal-point, with the aim of not having to overturn the board.



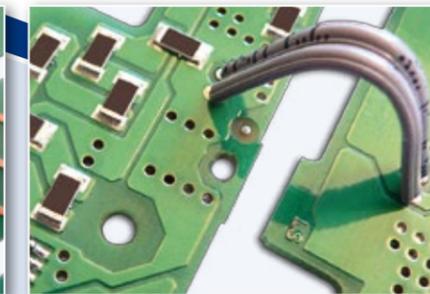
DISTANCE **X** IS TO BE CALCULATED BY USING THE FOCAL ANGLE OF 30° RESTING ON THE PCB PLANE. THE POINT WHERE THE CONE BECOMES A CYLINDER DETERMINES THE MAXIMUM DISTANCE REQUIRED FOR COMPONENTS HIGHER THAN 1CM.

SCALE DRAWING 1:1

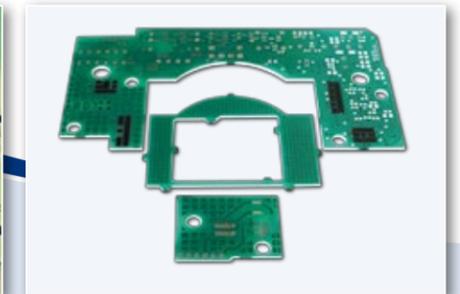
## SOLVING PRACTICAL CASES



PROBLEM: CONNECTOR UNDER THE PCB JUNCTION  
SOLUTION: LASER PRE-CUTTING OF THE PCB JUNCTION



PROBLEM: V-CUT ABOVE THE FLAT  
SOLUTION: LASER PRE-CUTTING OF THE V-CUT



PROBLEM: PARTICULAR PCB SHAPES  
SOLUTION: SIMPLE CUTTING PLAN

## 04. TYPOLOGY AND THE SHAPES OF THE CUTTING POINTS

The best cutting points, in order of priority, are the following:





### **Contact Osai to verify on-line the designed PCB**

To have a secure and free support; it is possible to e-mail the PCB CAD file for verification to the following address  
**[application-support@osai-as.it](mailto:application-support@osai-as.it)**

The service answers quickly, pointing out possible problems and/or improvements

**OSAI A.S. S.p.A.** - Via Cartiera, 4 - 10010 Parella (TO) - ITALY  
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