

1. General info

- Fully automated equipment for trimming, double sided bevelling of slot holes and edge routing for printed circuit boards.
- Total floorspace : l 3000 x w 2800 x h 220 mm.
- Fully automated panel handling by 6 -axes Kuka industrial robot.
- System includes : Kuka robot, trimming (cutting)shear, vacuumtable, double sided slot beveling unit, routing unit, surrounding cabinet, software, instruction and safety manual.
- High speed routing spindle, 30000 – 40000 rpm, depending on outcome tests.
- Panel alignment by 2 CCD cameras.
- Surrounding cabinet :
 - Stainless steel up to 1.20 mtr. height, all girders in stainless steel.
 - 'Blechstahl' 1 mtr. high powdercoated, RAL color 6016.
 - Cabinet is completely closed, also the top.
 - Remaining 100 cm. height and cabinet roof in Perspex.
- Almost dust free production by use of optimized exhaust system

2. Capabilities

- ☑ Output : 1500 panels / 24 h
- ☑ Capability panel thickness : 0.5 mm – 8 mm
- ☑ Capability dimensions handling :
 - 406 mm x 355 mm
 - 457 mm x 305 mm
 - 610 mm x 457 mm
 - 610 mm x 508 mm
 - 712 mm x 559 mm
- ☑ Tolerance on dimensions : + 0.15 mm / - 0.15 mm
- ☑ Rounded panel corners : radius 5 mm.
- ☑ Equipment will be able to handle all kind of base materials and combination of base materials (FR4 / 5 , Polyamides, Teflon, Metal cores, Flex materials etc).
- ☑ Produced panels will be free of burrs or damaging.

3. Software / hardware

- ☑ Siemens PLC S-7
- ☑ Touch screen operation selection
- ☑ Automatic broken / defected tool detection
- ☑ Easy tool change routing tool
- ☑ Possibility for deactivation of each sub process (for example edge bevelling panels > 0.5 mm) in the menu.
- ☑ ASS Luippold will provide complete backup copy of equipment software.
- ☑ Operating menu (touchscreen)

4. Loading / unloading

- ☑ Loading : panels will be horizontal stacked after multiplayer pressing. This trolley will be starting point for processing Robocut.
- ☑ Unloading on transport conveyor existing brushing machine for direct feed in without operator handling.
- ☑ Container / trolley with cutted foil / resin residuals will be easy removable

5. Spare / wear parts / service

- ☑ Calamity ASS technical service within 24 hours.
- ☑ Preference for supplier vacuum pump : Busch

6. Safety

- ☑ Double safety loop (mechanical as well as by software), machine won't be accessible during production.
- ☑ Only accessibility for maintenance if robot is shut down.
- ☑ Preferable safety layout is door detection and / or laser curtain
- ☑ Acoustic and visual alarm when production stops
- ☑ Complete 'Robocut' equipment (with all different sub processes) will be CE certified.

-4-

7. Documents

- ☑ CE certificate

- Maintenance manual

- Technical and electrical plans of all equipment.

11. Remaining

- **Start of equipment construction after approval technical plan / drawing by**

- Pre- acceptance of the equipment will take place with production panels at Keltern.