

InduBond® 230N

Inductive Bonding Machine

Double Drawer
Machine!!



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InduBond®, High Accuracy Pin Registration Machine For Pin Less Lamination

- > Double drawer machine.
- > Inductive bonding spots to hold the layer to layer registration.
- > High precision layer to layer Pin registration.
- > The bonding spots withstand the movements of the inner layers during the hot press cycle.
- > It assures the best linear movements of the multilayer stack-up caused by thermal dilatations/shrinkage during lamination.
- > It reduces the internal mechanical stress of the multilayer stack-up thereby reducing the warping effects.
- > Constant and precise thickness over the entire surface. The flat bonding spots allow maximum and uniform pressure during the press cycle.
- > Guarantee press plates long life and reduce cost of tooling plates, pins, bushings.. (No more hard tooling plates!)

General Description

InduBond® is a new generation of the inductive bonding machines by Chemplate for layer to layer pin registration and bonding the stack-up of inner layers and prepregs of a multilayer printed circuit. This process allows to laminate the multilayer boards without the needs of the pins and hard tooling plates.

The process allows repeatability and reliability obtaining high registration precision between the inner layers (Tooling template accuracy <10 microns). The multilayer stack, previously mounted on a tooling template with high-precision mechanical pins, is bonded by **InduBond®** technology using 4 **InduBond®** heads (optional, 6 heads), that uniformly press and heat the bonding spots in all the inner layers until the prepreg resin is fused and cured, thereby guaranteeing the bonding of multilayer stacks of up to 10-mm thick. (higher under request)

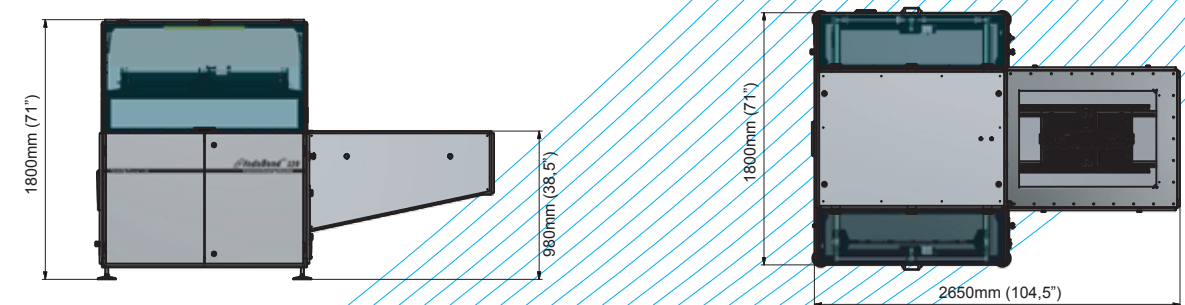
The tooling plate is customized, could be 2 round pins, 3 round pins, multiple round pins, 3-4 slot pins or a combination; the tooling templates are light and removable (not fixed to the machine). This allows flexibility, so you can have different tooling plates if needed. The resulting bonding spots are flat, without over-thickness. They are capable of withstanding the dilations and shrinkage of the hot press cycles, thereby providing the best possible linear movement of all layers in a multilayer stack-up, reducing the internal stress that cause warping and deformations and moreover, reducing the distortions and misalignments between inner layers.



Procedure Description

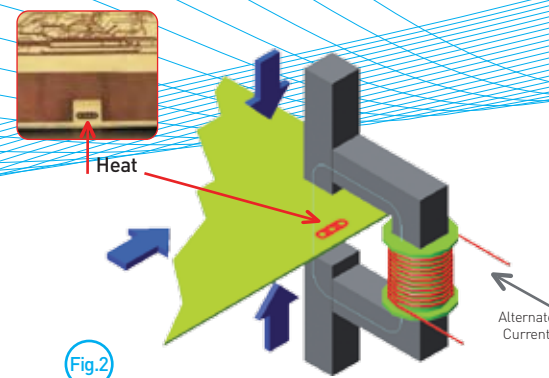
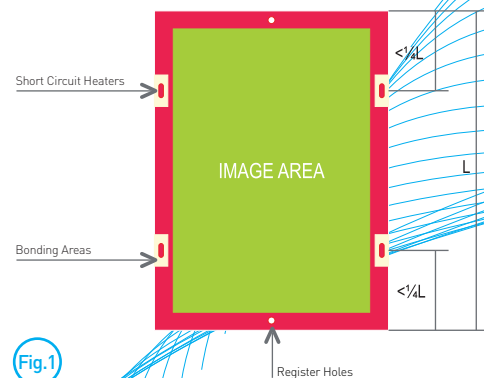
1. Place the internal core #1 on the pins over the Tooling Template.
2. Put on the prepreg sheets required for the stack-up.
3. Repeat step 1 and 2 until the multilayer stack-up is completed.
4. Once the stack-up is complete, the operator must confirm by 2 buttons.
5. The machine automatically move the tooling template with the multilayer stack-up to the bonding zone.
6. The second tooling plate is moved out simultaneously.
7. The plate is pushed up to be pressed before bonded to guarantee panel flatness.
8. The heads move to programed position for bonding
9. The Inductive Bonding Heads (**InduBond®**) close the electrodes, and the bonding cycle begins.
10. Once the Bonding cycle has ended, the machine swap the drawers tooling template, so while the next one is being bonded, operator repeat process to build up next panel
(The typical bonding time for an 8-layer stack-up is approximately 45-60 Sec.)

Machine Layout



Technical Requirements

- A high precision tooling template with mechanical pins is used for the lay-up and registration.
- The inner layers must first be prepared with the corresponding registration holes [See Figure 1]. These holes are generally drilled or punched post etch.
- The prepreg must also have holes for the pins. These holes do not have to be precise, and they can be 1 or 2mm larger than those of the inner layers.
- The inner layers must have heating circuits etched in the reserve zones on both top and bottom sides. [See Figure 2]



Standard Composition

- The standard composition includes:
- Inductive Bonding Machine (**InduBond® 230N**)
 - 4 Inductive Bonding Heads and controls. Optional 6 heads
 - Dedicated tooling templates (according customer requirements).
 - Instructions book.
 - Technical data to prepare the inner layers.
 - Installation and training.
 - Technical support.

Optional

- Some options are available:
- 2 Additional Inductive Bonding Heads and control. (Recommended for panel, 610 - 762mm [24 - 30"])

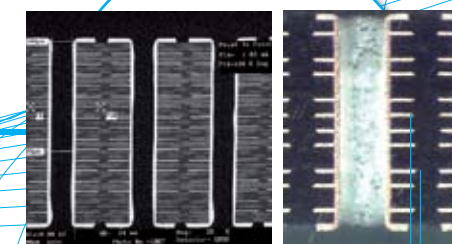


Technical Data

- Weight: 900Kg.
- Max. Inner Layer Size: L.750 x W.650mm (30x25")
- Min. Inner Layer Size: L.250 x W.250mm (10x10")
- Max. Bonding Thickness: Up to 10mm (higher under request)
- Installed Power: 3Kw (400 Volt - 3ph+N+G - 50Hz)
- Air Pressure: 6 bar (90 psi)
- Suction Hole: 80mm diameter (3,15")
- Suction Flow: Min. 160 l/s

Alignment Accuracy

Cross section of typical registration results on high layer account.



14um