

# InduBond® RFX

## Inductive Bonding Machine

> **NEW** <



**InduBond®, High Accuracy  
Flex, Flex-Rigid, Rigid PCB's  
Pin Registration Machine for  
Pin Less Lamination**

- > Ideal for Flex, Rigid-Flex Technology.
- > High precision layer to layer Pin registration.
- > Inductive Bonding Technology (InduBond®) to assure best registration.
- > The bonding spots withstand the movements of the inner layers during the hot press cycle.
- > Four bonding heads working simultaneously and independent with X/Y movement to place bonding locations for fixing the registration prior to lamination in any location of the PCB.
- > Bonding locations are loaded directly from the Gerber files.
- > All laminates materials can be bonded (FR4, Htg FR4, Rogers, Polyamide...).
- > Cost reduction in tool pins, bushings and tooling plates due to Pin less Lamination Process.
- > Tooling templates are removable and can be placed on table tops for more lay-up capacity or automation. (Ideal for sequential build-up)

## General Description

**InduBond® RFX** is the new system process and equipment that has been developed to improve the crucial factors associate with fabrication of complex multi layer PCBs rigid, rigid-flex and flex. This new generation of the **InduBond®** bonding machines can bond multiple number of bonding points in any location of the multi layer stack-up for best registration.

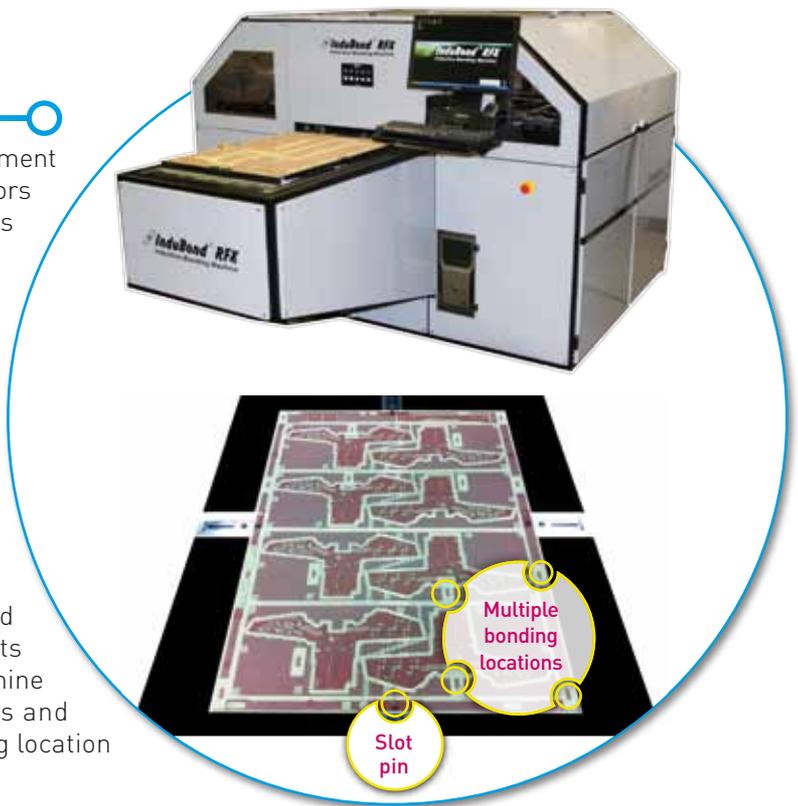
The bonding points could be placed anywhere along the edges or inside the real state or circuit image area. Those bonding spots works as virtual pins to help the scale constrain, similar as multiple tooling pins around of single PCB.

This machine is ideal for rigid, Rigid-Flex or Flex multi layer panels and can bond all the new laminated materials that you actually press. The bonding points can be place anywhere in the CAD design, the machine is capable to read and decode the Gerber file jobs and automatically know the coordinates of each bonding location on the panel.

Four bonding heads with independent movement in X and Y axis allow to access to any location and provide fast speed for complex rigid-flex panels that require many bonding locations for best registration.

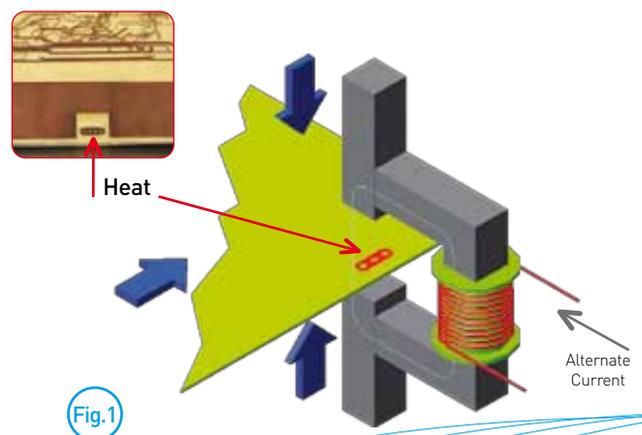
The high accurate tooling template can be customize with 3 or 4 slot pins, round pins or a combination, they are light and removable from the machine, the stack-up can be lay-up at the machine or in a separate lay-up tables for more production. The automation for load and unload templates are also possible. All the improvements of our very well know **InduBond®** patented technology where realize:

- Less flexible layers dimensional distortion for better scale constrain.
- Better final thickness stability over the panel.
- Better panel planarity or less warpage
- Better press distribution and topography.
- The welded stack-up multilayer can be X-Ray to check before and after lamination.



## 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. 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 2 mm 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 1).  
And can be placed anywhere along the short, large edges of the galvanic frame or inside the image area.



# Technical Data

## Process Specifications:

Max. Inner Layer Size: L.750 x W.650 mm (30x25")  
Min. Inner Layer Size: L.304.8 x W.304.8 mm (12x12")  
Max. Bonding Thickness: Up to 10 mm  
Min. Bonding thickness: No limit  
Min. Layer thickness: 25µm (1 mil)  
Max. Bonding temperature: 350°C (662°F)

## Electrical Connection:

3ph+N+G 400VAC 50Hz  
Installed Power 6000W  
Peak Current 11A  
Main wires section 4 mm<sup>2</sup>  
External protection 16A

## Air pressure Connection

Max. pressure 10bar  
Working pressure 6bar  
Inlet plug size Ø8 mm  
Air Consumption <2000 liters/hour

## Water cooling connection

Inlet plug size Ø12 mm  
Outlet plug size Ø12 mm  
Min. Input Temp. 10°C  
Max. Input Temp. 18°C  
Min. Flow rate 100 liter/hour  
Internal chiller through by-pass

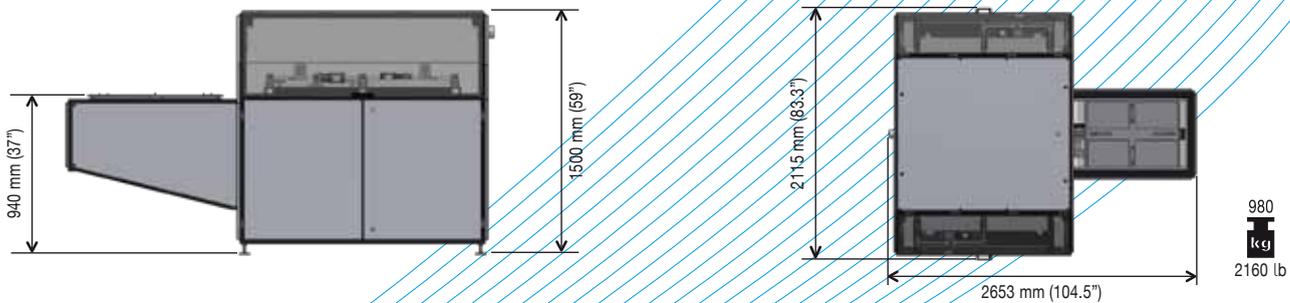
## Suction connection

Outlet pipe size Ø80 mm  
Min. Flow 150 liters/hour  
Max. Flow 250 liters/hour

## External noise

<65db at the operator place

# Machine Layout



# Standard Composition

The standard composition includes:

- Inductive Bonding Machine (InduBond® RFX)
- 4 moveable, independent Inductive Bonding Heads and controls.
- 2 Dedicated tooling template (according customer requirements).
- PC, windows 7 Pro, 19" TFT.
- Instructions book.
- Technical data and guide to prepare the inner layers.
- Installation and training.
- Technical support.

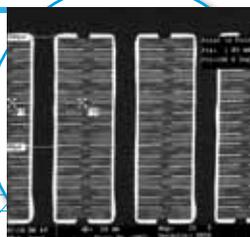
# Optional

Some options are available:

- Traceability control system to store process data in data base.
- Bar Code or QR reader to automatically call job parameters.
- Internal close loop chiller.

# Alignment Accuracy

Cross section of typical registration results on high layer account.



Software detail.



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Distributor Tag.



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