

Wafer Debonding Tool

Single wafer debonding

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The Debonder tool separates silicon wafers (or substrates) from their bonded support, necessary for lapping operations (thickness reduction).

This Debonder tool is in semi-automatic version; this means it has no cassette-to-cassette configuration. In case the customer requires the cassette-to-cassette configuration, we can add it.

DESCRIPTION

The Debonder structure is supported by a frame in Al anodised profile; indicative dimensions:

1500x1000x1900 mm h

The module is equipped with pivoting casters including level controls for correct positioning.

The Debonder tool includes:

- Motorised translation system with vacuum (rotational head, programmable by PLC)
- Side support for correct sapphire hold, after debonding operations
- GaAs storage + sapphire (Load) on the right side
- Station for wafers / substrates hold, after debonding
- Station for carrier storage and car-



Tool controls all mechanical parts, the heating system, the vacuum system, using a PLC Omron.

Touch Screen Omron for visualization of the Debonder functioning in real time.

Specific control units for motors and manipulator axis.

Emergency push button and semaphore.

Front-end Debonding

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FLOW CHART

Typical flow chart of the Debonder tool:

Deposition of the double face wafer (GaAs—sapphire) / substrate in load position; the translation system transfers it towards the heating station (process area).

The chuck in the upper section moves towards the mobile chuck (lower section). Both chucks are heated (set temperature) and have vacuum system. At this point the debonding operation starts (set temperature, programmable time). At debonding process end, the lower chuck moves linearly, at reduced speediness (programmable).

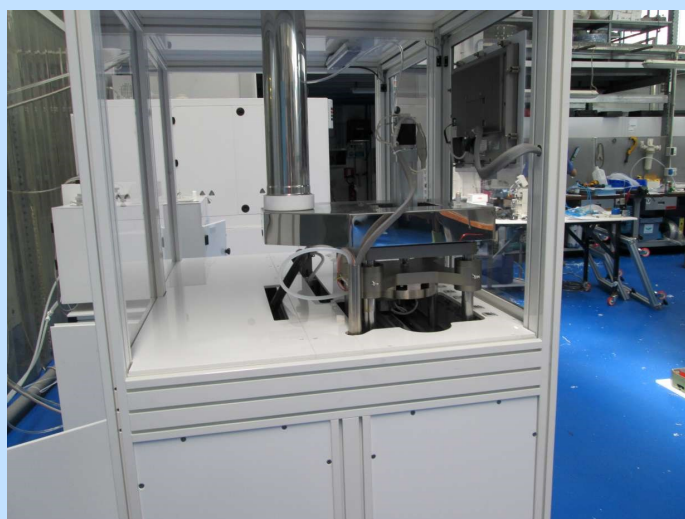
When separation is accomplished, the translation system can move at different speediness (programmable), till reaching the Unload station. Here a specific manipulator, with a chuck (operating at air or N₂), holds the wafer / substrate *without coming in direct touch with it*, and then deposits it into the specific carrier in PTFE.

At this point chuck and translator goes back to the original position (load station), stopping in correspondence of UP/DW support; the sapphire support is removed.

The translator transfers the wafer/ substrate on the specific supports of the separated parts.



Front view (Debonder tool)

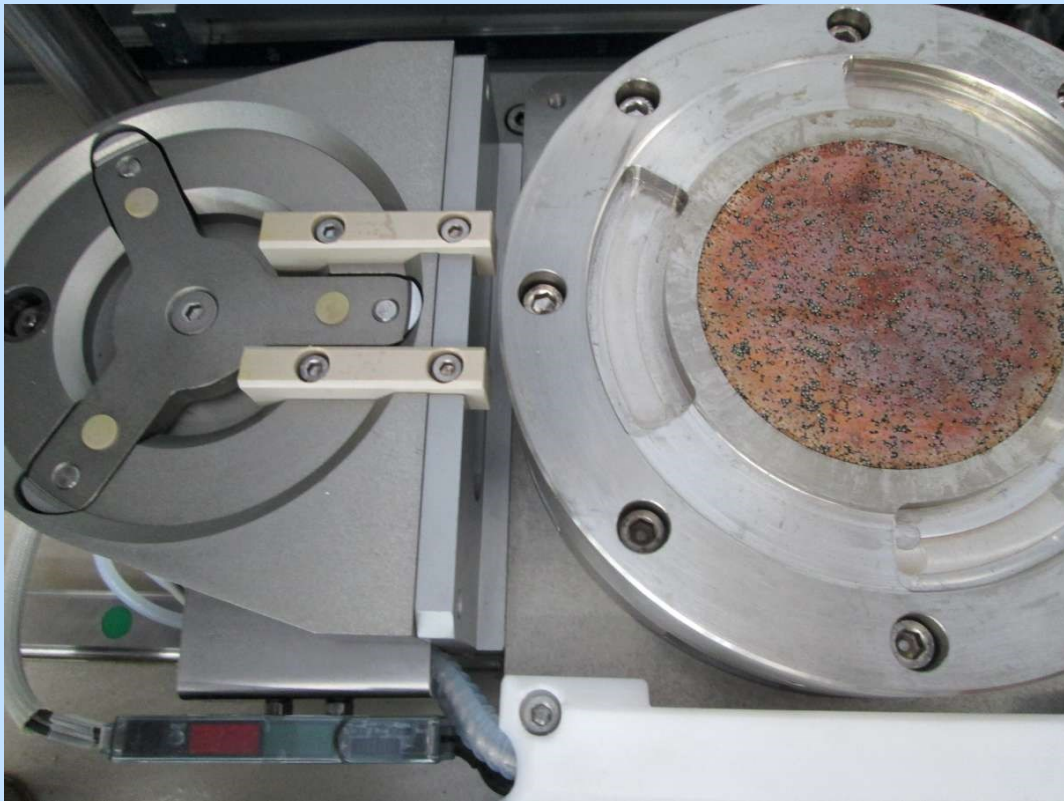


Heated Chamber



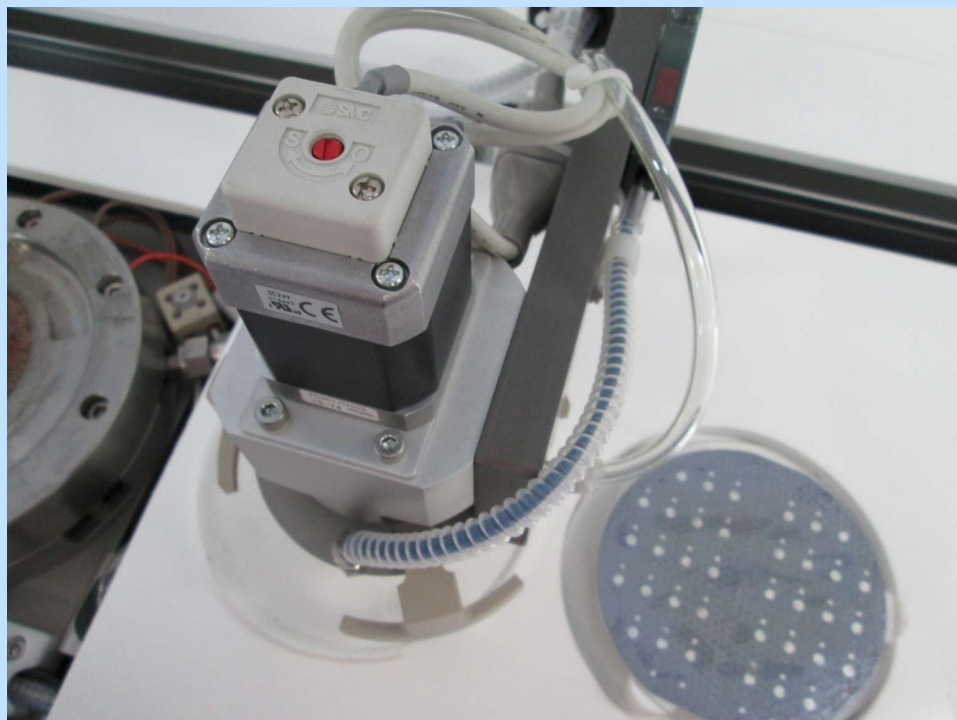
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Support for sapphire/silicon
hold after separation

Chuck in DW position

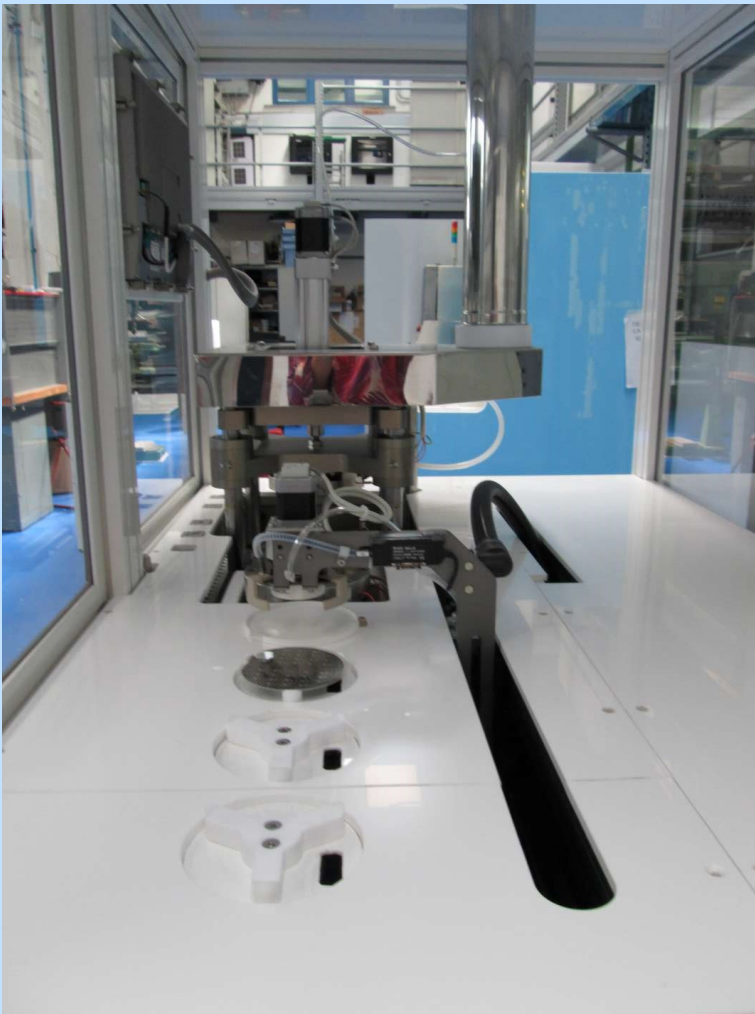


Manipulator with chuck system



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View of debonder tool and exhaust system



View of debonder tool workplan



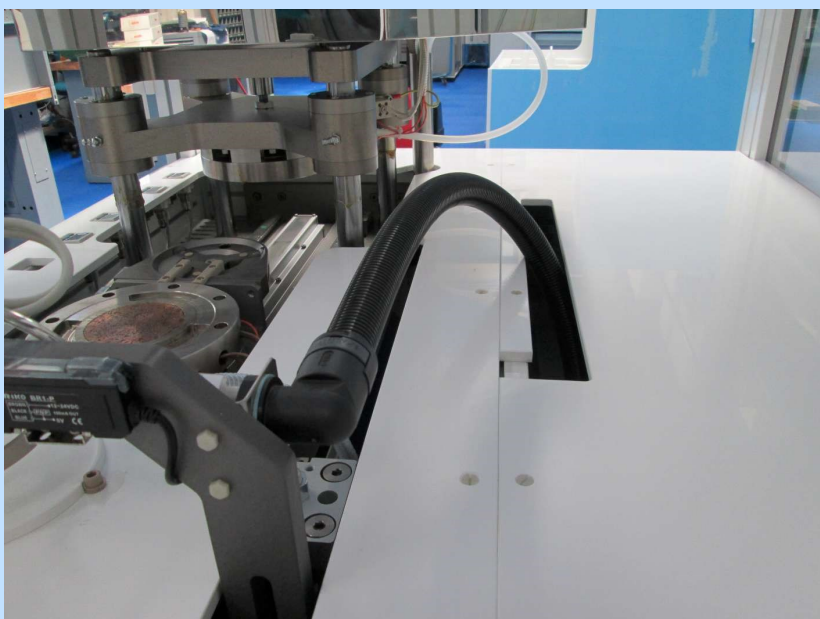
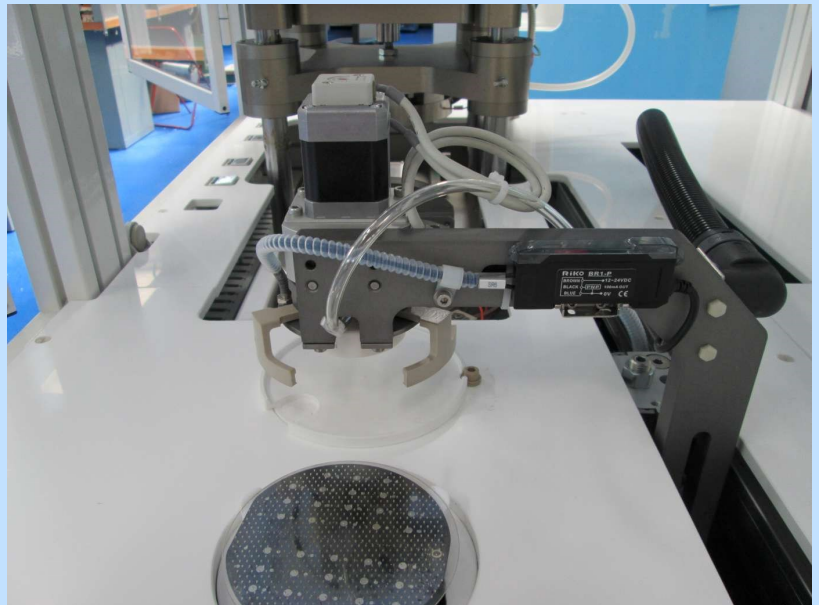
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Electrical control

Manipulator for
wafer and support
hold

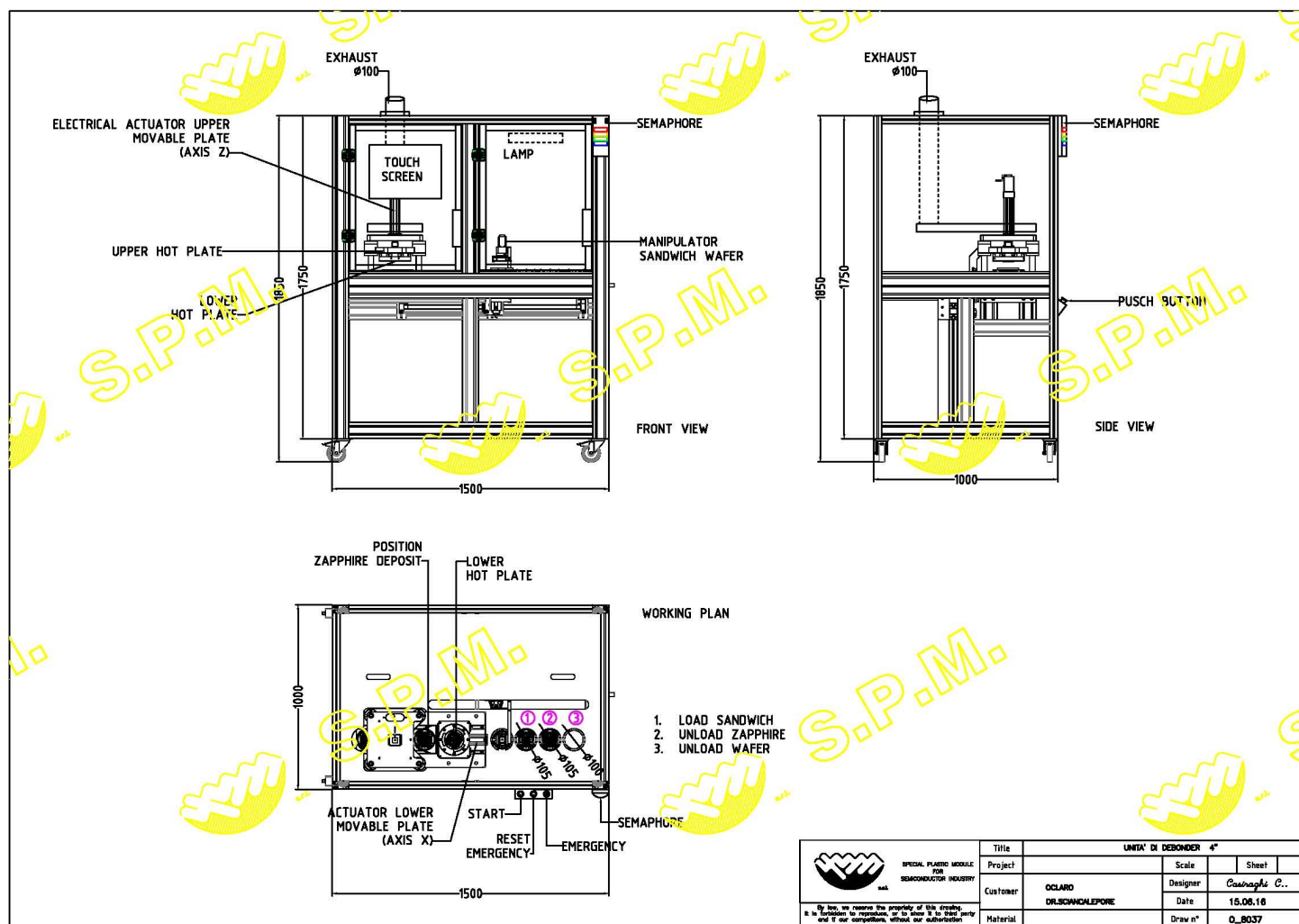


Heated chamber view



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For further information don't hesitate to contact us!



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