Request for quote and specifications of Fully Automatic Wire Bonder

- The GEECI (Gallium Nitride Ecosystem Enabling Centre and Incubator) at SID-Indian Institute of Science is seeking bids from qualified industries for **Fully Automatic Wire Bonder**.
- Companies need to submit two bids, a technical bid and a commercial bid, in two separate sealed envelopes. The bids should be submitted no later than 21 days from the date of posting of this tender, as listed on the website date/time stamp and by 5 pm on the 21st day or next weekday in case the 21st day falls on a weekend or a national holiday.
- Both technical and commercial bids should be addressed to “The Chief Executive, SID, IISc, Bangalore 560012.”
- The envelopes should be addressed to “Prof. Srinivasan Raghavan, CeNSE, IISc, Bangalore, 560012” and submitted to the office at CeNSE, IISc in Room No. GF 15 between 9 am and 5 pm.
- All questions regarding this tender should be addressed to Prof. Srinivasan Raghavan at the email address sraghavan@iisc.ac.in
- Post such submission all vendors should send an email to sraghavan@iisc.ac.in with the subject line: “GEECI_Bidder’s name_Tool Name” to intimate him of the submission within one day.
- Deviations from the technical specifications requested are allowed. Such deviations must be highlighted and justified. Their acceptance or rejection will be left to the discretion of the technical committee.
- The equipment sought will be placed at the Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc). IISc is India’s No. 1 institution on higher learning and the Centre for Nano Science and Engineering is home to one of the best academic fabs in the world.
- The technical response, corresponding to the tool being offered, should be in the form of a compliance table with at least 5 columns. Serial number in column 1. Each of the numbered technical items below should be addressed in a separate row of the table in column 2. Compliance to this requirement, in Yes/No, deviation from it and justification should be provided in the neighbouring columns 3-5. Post the opening of a hard copy of the technical bid the committee will request for a soft copy of the files for further processing. Companies should NOT mail soft copies of the files unless specifically requested for.
- Detailed technical specifications of the tool being offered should be included.
- Any additional capabilities or technical details, that you would like to bring to the attention of the purchase committee, can be listed at the end of the technical table.
- If multiple systems can fulfil the requirements, vendors can submit multiple bids.
- Vendors are encouraged to highlight the advantages of their tools over comparable tools from the competitors.
- The commercial bid should be broken up to the maximum extent possible into separate items with a cost against each to enable better comparison of price for various configurations across the bidders. As an option, please provide itemized cost for any suggested accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.

Technical Specifications for Fully Automatic Wire Bonder	
Sl. NO.	**Description & Specifications**
1	Application: This system is required to bond, wires and ribbons on HMC, TO, RF packages & Flat substrate (PCB, ceramic & QFN) etc. Type circuits which includes semiconductor chips & package.
2	Bonder should be capable to bond in auto mode with full & with manual override functions.
3	Wire bonder should be equipped with Ultrasonic & thermosonic bonding capability in single unit.
4	The automatic wire bonder system features:
5	Automatic & manual bonding can be bondable:
a	Normal & Deep access wire bondable
b	Pattern recognition and also Cross airline alignment or Cross airline alignment
c	Capability to record the recipe data
d	ESD safe and clean room compatible
e	Table top or standalone wire bonding machine
f	Wire bonding machine have user friendly changeover from ball to wedge configuration with just change of tool or head replace.
6	Wire bonder should capable to bond:
a	Ball –Wedge bonding (Wire Au 0.7mil - 2mil
b	Bumping (Wire Au 0.7mil - 2mil)
c	Wedge- Wedge bonding (Wire Au & Al 0.7mil - 2mil)
d	Ribbon Wedge bonding (Wire Au & Al - 1 mil x 10 mil)
e	Deep access (19mm (¾”) or More) wedge bonding
f	Deep access (19mm (¾”) or More) ball bonding
7	Wire Spool :
a	Spool Size 2"
b	Spool mount please specify
c	Wire feeding angle Wedge bonding 90 Dec
d	Adjustable tear parameter Required
e	Programmable wire tail feed Required

8	**Work holder:**	
a	**Heated work stage with Mechanical and Vacuum clamping required**	
b	**Surface dimension min 100mm X 100 mm or more**	
c	**Height control (Please specify)**	
d	**Exchangeable top plates required**	
e	**Temperature range up to 200°C or more**	
f	**Heater controller compatible with system**	
9	**Bonder should be capable of bonding -Minimum of 40 µm X40 µm pad size and 40 µm pitches.**	
10	**Placement accuracy - Specify**	
11	**Stereo Zoon Microscope::**	
a	**Magnification range 10x-40x/ with eyepiece 10x or better**	
b	**Working distance 100mm minimum**	
c	**Must be focused on sample stage.**	
d	**ESD Safe and clean room compatible.**	
12	**Software:**	
a	**Bonder should be loaded with relevant software covering all the bonding operations, bonding parameter, data logging & analysis, Pattern Recognition Software (PRS) etc**	
b	**Bonder controller should have Integrated Windows-7 or better operating system with internal data base for data storage, with data query and data export tool.**	
c	**Loop height, loop length and shape should be programmable.**	
13	**Bonding parameters:**	
a	**Bond Force**	5-100 cN or more
b	**Ultrasonic power range**	0-2 Watts or more
c	**Bonding time range**	0-10,000ms or less
d	**Loop height range**	Please specify
e	**Different Loop profiles**	Required
f	**Bondable area**	Dimension min 100mm X 100 mm or more (Please specify)
g	**Bond-head or bond head & table movement**	Motorized X, Y and Z
h	**Wire termination method**	Clamp Tear / Table Tear/ Other

i	**Bonding Speed**	Please specify
j	**Bond force calibration**	Please specify (include in the machine)
k	**Inspection/Adjustment of bonding tools**	Please specify
l	**Joysticks for stage, height, tool rotation control and tool position**	
14	**Bonding Wires, Ribbon to be supplied with system:**	
a	**Au wire**	Each 2 No 90mts or more - 1 & 1.5 mil
b	**Al wire**	Each 2 No 90mts or more- 1 & 1.5 mil
c	**Gold ribbon**	2 no 30 Mts or more -1 mil X 10 mil
15	**Bonding Tools to be supplied with system:**	
a	**Wedge tool for Au wire**	Each 5 nos. of Titanium Carbide wedge tool for Gold wire diameter 1mil and 1.5mil
b	**Wedge tool for Al wire**	Each 5 nos. of Tungsten carbide or Microloy or best wedge tool for Al wire diameter 1mil and 1.5mil
c	**Wedge tool for Gold ribbon**	each 5 nos. of Tungsten carbide or Microloy or best wedge tool for Gold ribbon of cross section: 1mil X 5mil
d	**Capillary for ball bonding**	each 5 Nos. of Ceramic capillary for Gold wire diameter 1mil and 1.5 mil
16	**Optional**	
a	**Heavy Wedge bonding - Wire Au & Al 5 mil - 25 mil With wire cutting**	Desirable
b	**Separate temperature controller for work holder and bonding tool**	Desirable
c	**Pattern recognition**	Desirable
17	**Other Optional item of the machine**	
a		
b		
c		
e		
f		
g		

Common Terms and Conditions: A separate table to be included for each of the items below in the technical bid.	
18	**Semi Standards:** Technical bid should provide details of SEMI standards the tool confirms to.
19	**Clean Room Compatibility**: The system should be compatible with better than class 1000 cleanroom environment.
20	**Tool Qualification and Acceptance**: Commissioning shall involve demonstration of **Fully Automatic Wire Bonder** to the required specifications and characterized by the client within time frames as mutually agreed upon. Details of the stage wise certification protocols to be pursued for tool acceptance should be included in the technical bid. The PO will include a mutually agreed upon set of tool qualification criteria. Please list a set of acceptance tests for on-site (vendor) inspection and after installation at IISc.
21	**Tool Training:** The bid should include as an option the cost of training personnel on site before shipment and post installation at IISc.
22	**Tool footprint and utilities:** A floor plan should be part of the technical bid. A list of utility requirements should be part of the technical bid. The system should be compatible with 240±10V, 50 Hz single phase or 415±20V, 50 Hz 3 phase supplies. The MINIMUM sets of utility requirements needed are provided in Table 1. If there are additional utility requirements please include them in the technical bid. Please list connector types for all utilities.
23	**Cost of Ownership and supply of spares:** The quote should include a listing of spares that need to be replaced periodically to ensure that the system is in operation in a stable fashion – the stability parameters being defined by the vendor and agreed to by the client – the cost of such items, the ability to guarantee their availability at this cost for a period of 5 years from the time of procurement. The aim of this exercise is to compare cost of ownerships between reactors.
24	**Maintenance:** The cost of an annual maintenance contract and cost of emergency technical support that may involve an engineer being on site should be quoted for in the commercial bid and addressed in the technical bid. The availability of trained engineers in India for servicing the system will be preferred and should be described in the technical bid.
25	**Maintenance:** On all systems a set of basic tools required -non-standard screw or spanner head that is required for routine tool maintenance should be mentioned- for performing routine maintenance should be included.
26	**Operation & Maintenance:** System operation, process and troubleshooting manuals and detailed drawings are a must (hard copy & soft copy both). Their inclusion must be indicated in the technical bid.
27	**Online support:** System should have the capability for online diagnostics from a remote location in case of tool problems or tele-con with free of cost.
28	**Post sales & service and Indian Presence:** Bidders should provide details of after sales service and support available in India. If not India, the nearest geographical location should be specified. Please provide details of the number of trained personnel in India who can service the machine, the number of tools sold in India and the corresponding number in the southern region or in Bangalore.

29	**Shipping:** On all systems the cost of shipping up to IISc should be included. IISc will help with customs clearance at Bangalore Airport (**DAP MODE**).
30	**Payment Terms and Conditions:** On all systems the payment terms should be specified in the technical and commercial proposal and is subject to negotiation. Please include your payment option. IISc would prefer to retain at least 20% of payment till instruments have been commissioned and successfully demonstrated.
31	**References:** Bidders should provide details of other locations in India with similar tool installations.
32	**References:** Bidders should provide details of at least 3 other locations globally where similar tool installations have been deployed for device fabrication in a clean room preferably for production purposes.
33	**Company financials:** Bidder shall have to submit audited accounts of financial year 2017-18, 2018-19 and 2019-20. Audited statement must be signed and stamped by qualified chartered accounted. Income Tax return for assessment year – 2017-18, 2018-19 and 2019-20.
34	The following documentation should be provided. ISO9001 quality certification. CE marking confirmation.

Details to be provided in addition to other utility requirements the tool may require. If not applicable mark as NA: Not applicable.

Tool dimensions				Electric		Chilled water		Gases									Exhaust	Thermic load
Tool Foot Print, (LXBXH)			Area	Power consumption average	Peak power	Cooling capacity maximum	Process Cooling Water	UHP Nitrogen	UHP Hydrogen	He	Oxygen	Regular Nitrogen	Argon	Forming Gas				Thermic load to clean room
L (mm)	B (mm)	H (mm)	Sq. Metre	kW	kVA	kW	l/h	slpm	slpm	slpm	slpm	slpm	slpm	slpm			m3/h	kW