



Society for Innovation & Development  
an IISc initiative

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### Request for Quote and Specifications of Stepper

- The GEECI (Gallium Nitride Ecosystem Enabling Centre and Incubator) at SID-Indian Institute of Science is seeking bids from qualified industries for a stepper tool as per the specifications below.
- 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 30 days from the date of posting of this tender, as listed on the website date/time stamp, and by 5 pm on the 30<sup>th</sup> day or next weekday in case the 30<sup>th</sup> 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, GST # 29AAATS5333E1ZJ.”
- All quotations should be CIF Bangalore.
- In case of courier shipments maximum permissible weight would be 70kgs.
- Cost of last mile transportation, including any insurance, from port of shipment to IISc has to be quoted as an option.
- 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](mailto:sraghavan@iisc.ac.in)
- Post such submission all vendors should send an email to [sraghavan@iisc.ac.in](mailto: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 Center 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 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 neighboring 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 fulfill 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 any add-ons as their sole responsibility.

1.	Primary application	<ul style="list-style-type: none"> <li>Align and expose of various layers on a 150 mm wafer.</li> <li>Si, SiC and GaN wafer</li> </ul>
2.	Wafer requirement	<ul style="list-style-type: none"> <li>150 mm wafer as primary.</li> <li>Option to accommodate 100 mm wafer.</li> <li>Wafer flat alignment for 100 mm and 150 mm.</li> <li>Wafer thickness 300-800 um</li> <li>Wafer acceptance through standard 150 or 100 mm open cassette holder.</li> <li>Wafer bow 50-80 um.</li> <li>Ability to handle transparent wafers.</li> </ul>
3.	Optical systems	<ul style="list-style-type: none"> <li>Resolution <math>\leq 250</math> nm.</li> <li>Numerical aperture 0.4-0.6 or better</li> <li>Field size 22X22 mm (vendor to provide other options)</li> <li>Conventional illumination (<math>&gt;2000</math> mW/cm<sup>2</sup>) with better than 2% nonuniformity within field.</li> <li>Annual illumination (<math>&gt;2000</math> mW/cm<sup>2</sup>) with better than 2%, nonuniformity within field.</li> <li>Reduction factor 4X/5X</li> <li>Depth of focus <math>\pm 500</math> nm with <math>\pm 5\%</math> CD</li> <li>CD control <math>\pm 5\%</math> or better over 9 points in 150 mm wafer with 8 mm edge exclusion.</li> <li>Exposure nonuniformity better than <math>\pm 2\%</math>.</li> <li>Vendor to provide find and last wafer lens heating effect in a 25 wafer batch.</li> </ul>
4.	Overlay	<ul style="list-style-type: none"> <li>2 point alignment or better.</li> <li><math>\leq 40</math> nm front side (maximum value)</li> <li><math>\leq 500</math> nm back side (option)</li> </ul>
5.	Light source	<ul style="list-style-type: none"> <li>Vendor to specify.</li> </ul>
6.	Reticle size with pellicle	<ul style="list-style-type: none"> <li>Reticle size 5/6-inch</li> <li>Reticle library 10 (specify)</li> </ul>
7.	Wafer throughput	<ul style="list-style-type: none"> <li><math>\geq 50</math> WPH (6 inch wafer)</li> <li>Specify through put at 200 mJ/cm<sup>2</sup> exposure dose.</li> </ul>
8.	Environment inside tools	<ul style="list-style-type: none"> <li>Class 1</li> </ul>
9.	Photoresist	<ul style="list-style-type: none"> <li>Vendor to recommend suitable photoresist for best pattern fidelity, uniformity, and yield.</li> </ul>
10.	Particle per wafer front side	<ul style="list-style-type: none"> <li>Vendor to specify.</li> </ul>
11.	Particle per wafer back side	<ul style="list-style-type: none"> <li>Vendor to specify.</li> </ul>
12.	Process software	<ul style="list-style-type: none"> <li>Front panel displaying equipment and process status along with appropriate software to be supplied.</li> </ul>

		<ul style="list-style-type: none"> <li>• The software must allow varying levels of instrument access. Simplified basic access for a user to full access to an engineer.</li> <li>• Interlock that can interface with the online reservation system so that the tools can only be used by authorized users.</li> <li>• Complete logs of all the process and system parameters to be available and stored for future trouble shooting.</li> <li>• Graphical representation of tool and process parameters</li> <li>• Software needs to be supported for the lifetime of the tool.</li> </ul>
13	Safety	<ul style="list-style-type: none"> <li>• Mention any special safety requirement of the tool.</li> <li>• The tool must come with a complement of interlocks to prevent common user errors.</li> <li>• Any malfunction should have an audible alarm system.</li> <li>• Flashing lights during emergencies should also be an option.</li> </ul>
14	Pre-purchase testing	<ul style="list-style-type: none"> <li>• To ensure the equipment conforms to specifications, the committee requires the vendor to perform some standard tests before completing the purchase process.</li> </ul>
15	<p><b>Qualification and Acceptance Criteria:</b> 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.</p>	
16	<p><b>SEMI Standards:</b> The technical bid should include details of the SEMI standards the tool confirms to.</p>	
17	<p><b>Clean Room Compatibility:</b> The system should be compatible with better than class 100 cleanroom environment.</p>	
18	<p><b>Shipping:</b> On all systems the cost of shipping up to IISc should be included. IISc will help with customs clearance at Bangalore Airport. Please include your payment option. IISc would prefer to retain at least 20% of payment till instruments have been commissioned and successfully demonstrated.</p>	
19	<p><b>Tool Training:</b> The bid should include as an option the cost of training personnel on site before shipment and post installation at IISc.</p>	
20	8.	<p><b>Tool footprint and utilities:</b> 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 <b>MINIMUM</b> set of utility requirements needed are provided in Table 1. If there are additional utility requirements please include them in the technical bid. <b>Please list connector types for all utilities.</b></p>
21	<p><b>Cost of Ownership and supply of spares:</b> 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</p>	

	ownerships between reactors.
22	<b>Maintenance:</b> 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.
23	<b>Maintenance:</b> 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.
24	<b>Maintenance:</b> System operation, process and troubleshooting manuals and detailed drawings are a must. Their inclusion must be indicated in the technical bid.
25	<b>Online support:</b> System should have the capability for online diagnostics from a remote location in case of tool problems.
26	<b>Post sales service and Indian Presence:</b> Bidders should provide details of after sales service and support and in particular that 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.
27	<b>Payment Terms and Conditions:</b> 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.
28	<b>References:</b> Bidders should provide details of other locations in India with similar tool installations.
29	<b>References:</b> 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.
30	<b>Company financials:</b> 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.
31	The following documentation should be provided. ISO9001 quality certification. CE marking confirmation.
32	<b>III-V nitride processing:</b> Please include information on whether the tool and its fixturing has been used for deposition of the said metals on GaN on Si wafers of 6” diameter for power applications.



