LA3215C - Request-for-Tenders under Open (OJEU) Procedure for the Supply, Delivery, Installation and Commissioning of a Suite of Plasma Etcher & Plasma Deposition Tools, [4 Lots] for Tyndall National Institute, University College Cork (UCC)

Q1	**Regarding Lot 4: should the PECVD tool designed for single-wafer processing, or should it come with a cassette-based loading system?**
A1	***The preferred configuration for the PECVD tool is a cassette-based loading system, as outlined under Lot 4 specification A11 / A50-A54. but as-per section B1: Requirements and Specifications;*** ***It is acknowledged that each Tender's product line may differ from these specifications. As such, each seller is free to propose variances from these specifications. Alternative proposals favourable to the Contracting Authority may be suggested. It is required, however, that whenever a variance from these specifications occurs, the proposed item must meet or exceed the specified characteristics or level of performance.***
Q2	***thank you for the explanation!*** ***could you explain me further how many pieces are preferred for the cassette? 10 pieces or more?*** ***with best Regards,***
A2	***The preferred configuration for the cassette, as outlined under Lot 4 specification A11 / A50 / A52 is;*** ***Separate 25-slot cassettes for both 100 mm and 200 mm diameter wafers or 12/13-slot double-spaced cassettes for both 200 mm diameter wafers and 200 mm diameter wafer-carriers etc. and the material type for the cassettes is to be specified by tenderer.***
Q3	**In the TRD document you make the following statement when giving information about the recipes you require:** **"Tenderers MUST clearly demonstrate how they meet the requirements outlined with results documented in the attached Appendix C – Etch Recipe Results Template, this must be clearly named as "Lot 1 – Recipe # 2 -Results".** **The Tenderer is permitted to use its own test mask / layout and substrates and / or own etching results to demonstrate compliance."** **Can you please clarify if you require the recipe results template to be completed and submitted with our tender submission, or whether this needs to be completed as part of the later demonstration and validation of the recipe during installation on site.** **Can you also please clarify if you would be able to supply samples for processing in the event we do not have the capability to create our own.**

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A3	***The recipe template should be completed and included with the tender submission, based on the tenderer's BKM process recipes, but it is recognised that they may not have exact results matching the specification (e.g. AlSc6%N on Mo etc.) so in this case they can provide their nearest equivalent data, as-per section B1: Requirements and Specifications;*** ***It is acknowledged that each Tender's product line may differ from these specifications. As such, each seller is free to propose variances from these specifications. Alternative proposals favourable to the Contracting Authority may be suggested. It is required, however, that whenever a variance from these specifications occurs, the proposed item must meet or exceed the specified characteristics or level of performance.*** ***Tyndall will provide all samples for processing during the tool commissioning phase. No demonstration samples are required as part of the tender submission.***
Q4	***Regarding the EPD function specified in A14 for the PECVD tool, my understanding it is intended to monitor and control the plasma cleaning and conditioning of the process chamber.*** ***In most PECVD applications, after a certain plasma cleaning time, the deposited film inside the chamber is effectively removed. Therefore, the cleaning process can usually be controlled reliably through the process time.*** ***I was wondering whether the EPD functionality is considered a mandatory requirement for this equipment, or if it could be offered as an optional feature instead.*** ***thank you.***
A4	*The preferred configuration for the PECVD tool is for an EPD to be included as part of the core package to monitor and control chamber cleaning & conditioning, as outlined under Lot 4 specification A14 / A27-A28, but as-per section* ***B1: Requirements and Specifications;*** *It is acknowledged that each Tender's product line may differ from these specifications. As such, each seller is free to propose variances from these specifications. Alternative proposals favourable to the Contracting Authority may be suggested. It is required, however, that whenever a variance from these specifications occurs, the proposed item must meet or exceed the specified characteristics or level of performance.* So yes, EPD for the PECVD tool can be offered as an optional feature.
Q5	**I have two questions regarding Lot 4.** **A32: could you please share me the distance and plan how to connect the pump and the system (the electrical and the location plan)? we would like to understand the plan so that we could provide the suitable dry pump.** **A60: could you please explain a bit more on this point?**

A5	A32: as-per **Appendix B – Sub-Fab Footprint**; *Vacuum pumps / chillers etc. will be located remotely, positioned in a Sub-Fab with up-to a 10 m vertical drop and up-to a 10 m horizontal run to the point-of-use at the tool and as direct replacements for the ancillary equipment for existing tools which will be decommissioned and moved-out to allow installation of the new ancillary equipment. The available Sub-Fab space will be limited and must fit within a space approx. 4 m^2 per tool (the total footprint for the ancillary equipment for the suite of tools being tendered-for is approx. 16 m^2).* *Digital files will be made available upon request.* The vacuum pumps for the existing PECVD tool are positioned almost immediately below the tool, as shown in Appendix B, so the pump model(s) specified by the Tenderer for the new PECVD tool should have sufficient pumping capacity to maintain the required vacuum levels (see specification A44) for deposition / cleaning at this distance. A60: **interleaved / wafer-less clean**; *The capability to run automatic interleaved and / or wafer-less clean **MUST** be available in the software.* The preferred tool configuration is for cassette-loading with up-to 25 wafers per-cassette, so the tool must have the capability to run a full cassette of wafers with any necessary interleaved (between individual wafers) and wafer-less (e.g. pre-conditioning) clean recipes as part of a sequence to complete the deposition of a required film thickness on all wafers in the cassette. This is so that thick films (e.g. > 2 µm) may be deposited on a full cassette of wafers without requiring operator intervention to initiate cleans etc.
Q6	**Ref: A32, A34, A36, A37, A43, A44, A45, A46, A47, A48, A49, A32, A33, A36** **Plumbing is not included with the supply of the equipment, as the requirement depends on the customer's site and site specifications, layout and detailed installation requirements which have not been surveyed, nor is it practical to do in the time to submit tender. Is it okay for Tyndall/UCC to provide the tool fluid and vacuum hook-up?**
A6	***Tyndall / UCC will provide the plumbing for e.g. fluid and vacuum etc. to the point-of-use at the tool in the Fab, with the Tenderer being responsible for the final connection to the tool itself. Please see specification D11 for details of the facilities including process cooling-water, compressed-air etc. which are available on-site. Also, please note that as-per specification D9, Tenderers must provide details of their facility requirements a minimum of sixteen (16) weeks in advance***

	of the equipment delivery, and this information must include the connectors for the various facilities, e.g. KF flange types for vacuum hook-up etc. on the drawings / spec. sheets. ***In the specific case of chiller-fluid lines, RF-generator cooling-lines etc., if the model of chiller provided with the tool requires e.g. hoses / connectors etc. sourced directly from the OEM, then these must be provided by the Tenderer as part of the core package (see specification A43).***
Q7	**Delivery requested term is DAP and hence does not include offloading or placement of the equipment. Please confirm?**
A7	***As per TRD document Delivery MUST include all shipping charges, insurance, customs clearance and all aspects as outlined in DAP (Delivery At Place) incoterms.*** ***Offloading and transportation to the final laboratory location will be managed by Tyndall following delivery of the goods by the Tenderer to Tyndall Goods Inwards.***
Q8	**Regarding Lot 4: should the PECVD tool designed for single-wafer processing, or should it come with a cassette-based loading system?**
A8	***The preferred configuration for the PECVD tool is a cassette-based loading system, as outlined under Lot 4 specification A11 / A50-A54. but as-per section B1: Requirements and Specifications;*** ***It is acknowledged that each Tender's product line may differ from these specifications. As such, each seller is free to propose variances from these specifications. Alternative proposals favourable to the Contracting Authority may be suggested. It is required, however, that whenever a variance from these specifications occurs, the proposed item must meet or exceed the specified characteristics or level of performance.***
Q9	***thank you for the explanation!*** ***could you explain me further how many pieces are preferred for the cassette? 10 pieces or more?*** ***with best Regards,***
A9	***The preferred configuration for the cassette, as outlined under Lot 4 specification A11 / A50 / A52 is;***

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	Separate 25-slot cassettes for both 100 mm and 200 mm diameter wafers or 12/13-slot double-spaced cassettes for both 200 mm diameter wafers and 200 mm diameter wafer-carriers etc. and the material type for the cassettes is to be specified by tenderer.
Q10	***Regarding the EPD function specified in A14 for the PECVD tool, my understanding it is intended to monitor and control the plasma cleaning and conditioning of the process chamber.*** ***In most PECVD applications, after a certain plasma cleaning time, the deposited film inside the chamber is effectively removed. Therefore, the cleaning process can usually be controlled reliably through the process time.*** ***I was wondering whether the EPD functionality is considered a mandatory requirement for this equipment, or if it could be offered as an optional feature instead.*** ***thank you.***
A10	***The preferred configuration for the PECVD tool is for an EPD to be included as part of the core package to monitor and control chamber cleaning & conditioning, as outlined under Lot 4 specification A14 / A27-A28, but as-per section B1: Requirements and Specifications;*** ***It is acknowledged that each Tender's product line may differ from these specifications. As such, each seller is free to propose variances from these specifications. Alternative proposals favourable to the Contracting Authority may be suggested. It is required, however, that whenever a variance from these specifications occurs, the proposed item must meet or exceed the specified characteristics or level of performance.*** **So yes, EPD for the PECVD tool can be offered as an optional feature.**
Q11	**I have two questions regarding Lot 4.** **A32: could you please share me the distance and plan how to connect the pump and the system (the electrical and the location plan)? we would like to understand the plan so that we could provide the suitable dry pump.** **A60: could you please explain a bit more on this point?**
A11	**A32: as-per Appendix B – Sub-Fab Footprint;** ***Vacuum pumps / chillers etc. will be located remotely, positioned in a Sub-Fab with up-to a 10 m vertical drop and up-to a 10 m horizontal run to the point-of-use at the tool and as direct replacements for the ancillary equipment for existing tools which will be decommissioned and moved-out to allow installation of the new ancillary equipment. The available Sub-Fab space will be limited and must fit within a space approx. 4 m^2 per tool (the total footprint for the ancillary equipment for the suite of tools being tendered-for is approx. 16 m^2).***

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	Digital files will be made available upon request. **The vacuum pumps for the existing PECVD tool are positioned almost immediately below the tool, as shown in Appendix B, so the pump model(s) specified by the Tenderer for the new PECVD tool should have sufficient pumping capacity to maintain the required vacuum levels (see specification A44) for deposition / cleaning at this distance.** **A60: interleaved / wafer-less clean;** ***The capability to run automatic interleaved and / or wafer-less clean MUST be available in the software.*** **The preferred tool configuration is for cassette-loading with up-to 25 wafers per-cassette, so the tool must have the capability to run a full cassette of wafers with any necessary interleaved (between individual wafers) and wafer-less (e.g. pre-conditioning) clean recipes as part of a sequence to complete the deposition of a required film thickness on all wafers in the cassette. This is so that thick films (e.g. > 2 µm) may be deposited on a full cassette of wafers without requiring operator intervention to initiate cleans etc.**
Q12	**thanks for the answer.** **I can understand the pump and the system are located at different floor and there will be distance in-between. I would like to understand how pile between the pump and the system is connected, will it has turns? Normally each of the turn will sacrifice 20 percents of the pump efficiency, understanding how the pipeline is arranged will us to configured the right pump.** **besides, I see the machine should fit within 5 m2, i would also like to understand is there any requirement of the length and the weight?**
A12	***The vacuum pumps will be located in the Sub-Fab area on a separate floor underneath the cleanroom. The pump lines will have a maximum of 2x right-angle (90°) turns or 1x right-angle + 1x oblique (< 90°) turns; these are typically located directly above the pump itself and directly underneath the through-floor connection to the tool location at Sub-Fab ceiling-level, as the pumps may not sit directly underneath the tool itself. Please see attached photos of the Sub-Fab configuration for reference. Also, please note that as-per specifications A33 / A37, options of other vacuum pumps (which can include models with higher pump capacity than the base model recommended to meet the requirements of specification A32 / A36) should be provided by the Tenderers.*** ***As-per Appendix A, all four tools must fit within the 20 m^2 area highlighted (red box), with approximately 5 m^2 per-tool. Because of the necessity for thru-wall configuration, a maximum length of 2.5 m is preferred to allow for maintenance access directly behind the tool in the service chase.***

	In relation to weight requirements, it is preferred that the maximum weight is < 2 metric tons per-tool, but this will be assessed on a case-by-case basis by a structural engineer for Tyndall / UCC.
	See additional images below. Tyndall Sub-Fab etch & PECVD vacuum-pumps A.png 

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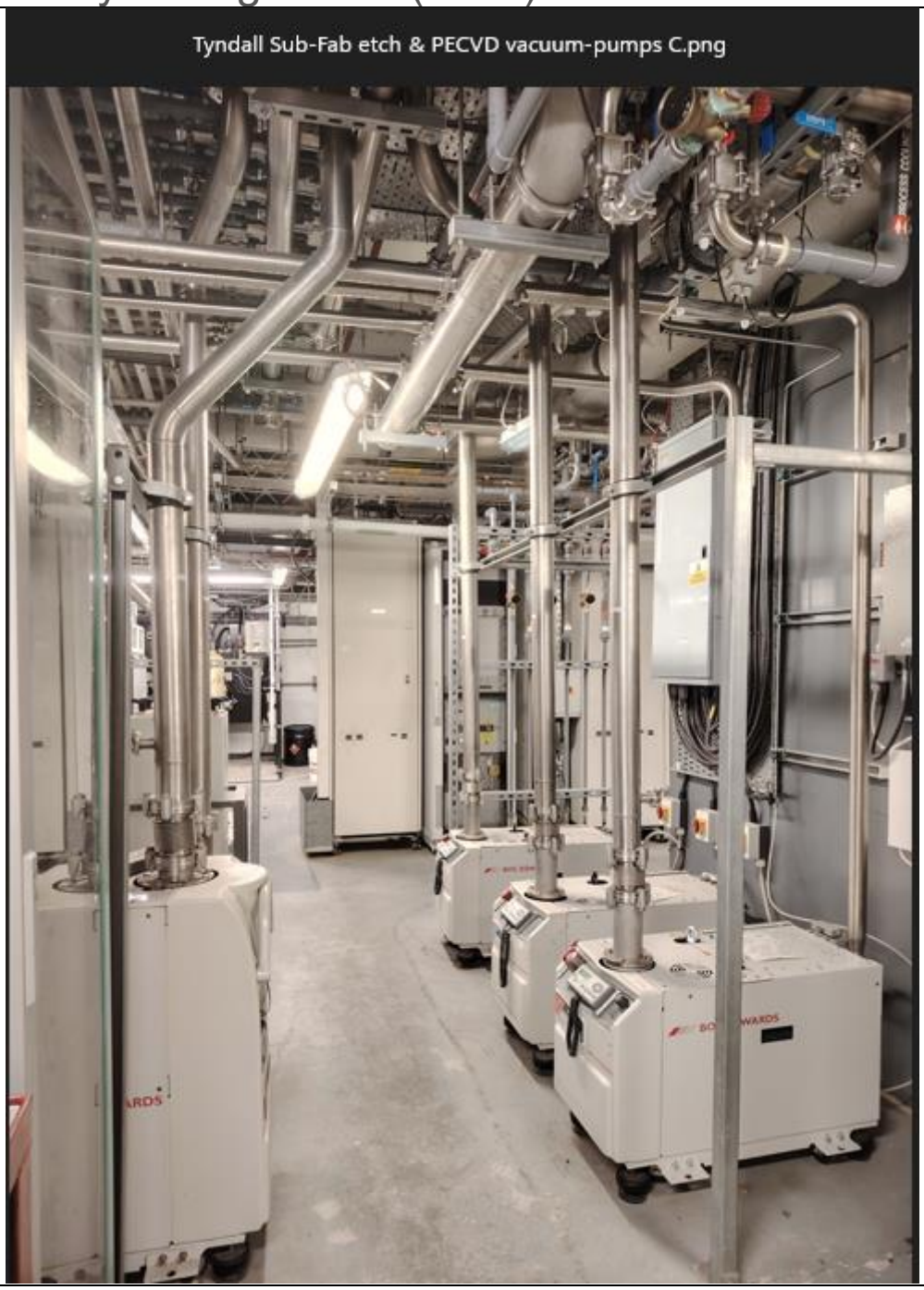

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