

Request for Proposals (RFP)

The Provision of specialist engineering services to design, develop, manufacture, and test a bespoke low pressure steam turbine blade articulation system.

RFP No. 1016/15/08/2022

Date of Issue	Friday , 29 July 2022	
Compulsory Briefing Session	Date: 04 August 2022 Time 11:00-12:00 Place: Online-MS Teams Link: Meeting ID: 334 105 030 586 Passcode: HegeXJ	
Closing Date	Monday, 15 August 2022 @16h30	
Place of submissions	Electronically at tender@csir.co.za Mail size is 25MB, send multiple emails when exceeded	
Enquiries	Strategic Procurement Unit	E-mail: tender@csir.co.za
CSIR business hours	08h00 – 16h30	
Category	Professional	

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SECTION A – TECHNICAL INFORMATION

1 INTRODUCTION

The Council for Scientific and Industrial Research (CSIR) is one of the leading scientific research and technology development organisations in Africa. In partnership with national and international research and technology institutions, CSIR undertakes directed and multidisciplinary research and technology innovation that contributes to the improvement of the quality of life of South Africans. The CSIR's main site is in Pretoria while it is represented in other provinces of South Africa through regional offices.

2 BACKGROUND

The CSIR Photonics Centre is currently developing a laser-based surface enhancement process to address crack-related phenomena for critical metal components. The current project is specifically focused toward the blade attachment roots of Low Pressure (LP) steam turbine blades (fir-tree configuration) for the power generation sector. The turbine blades need to be moved relative to the laser beam to successfully achieve processing. A bespoke automated LP blade processing platform is required to dynamically articulate the blades into the correct positions. The blade processing platform is to be integrated onto the existing laser processing infrastructure.

3 INVITATION FOR PROPOSAL

Proposals are hereby invited for the provision of specialist engineering services to design, develop, manufacture, and test a bespoke low pressure steam turbine blade articulation system.

4 PROPOSAL SPECIFICATION

All proposals are to be submitted in a format specified in this enquiry. However, tenderers are welcome to submit additional / alternative proposals over and above the originally specified format.

The proposal submission must include supporting documentation highlighting the criteria stipulated in section 5. The proposal must include pricing to deliver a complete operational system as per the system technical specifications provided in Annexure A. The pricing costs must be all inclusive of engineering concept development, detailed design and analysis, manufacturing, testing and integration / commissioning. Pricing should further indicate costs per degree of freedom (X,Y,Z, and rotation), and bill of material and machining/manufacturing costs. The proposal must indicate key project time-frames.

The system will need to operate in conjunction with an existing laser system. The CSIR will host a compulsory supplier briefing session to provide the necessary engineering details to facilitate accurate proposal pricing. The CSIR will select a potential supplier/s based upon the proposals received. The supplier will be required to present a refined concept for approval within 4 weeks after receiving the order. Upon refined concept approval, the supplier will further require CSIR approval of the detailed design for manufacturing. The supplier will be required to deliver a fully functional system that can be operated independently (i.e. own power supply and control system). Delivery must include system operation training. Payment milestones can be negotiated based upon the successful proposal, however these must fall within the payment conditions of the CSIR, and National Treasury.

System Specifications:

A machine is required for articulation of a Low Pressure (LP) steam turbine blade for the purpose of development of an innovative laser surface enhancement technology. The area to be laser processed is the entire fir tree root of the LP blade section. A LP turbine blade is typically made from martensitic stainless steel, and can have a mass of around 25 kg, width of 250 mm, and length of 1200 mm. LP blades may have various attachment configurations such as pinned, or fir tree roots. The system required is for the fir tree root type which may be straight or curved entry blades.

The system must enable a laser beam to be scanned across the root surface (on either a flat, a convex or concave surface) at a rate of 300-600 mm/min (max of 1200 mm/min). The focus of the laser beam must not deviate by more than 0.5 mm for any region processed. The out-of-focus tolerance of 0.5 mm will be tested using a dial gauge prior to machine acceptance. For curved entry blades, the curved root may rotate along the root curvature (radius around 185 mm), and should be able to oscillate ± 180 degrees. Line of sight of laser processing optics must provision for ± 60 degrees from the surface normal for off-axis LSP processing.

The system must therefore provision for line of sight from all possible laser angles along the blade root. Multiple blades must be able to be rapidly clamped into position with a position repeatability tolerance of < 0.1 mm. The proposal must include development and supply of a jig for a specific LP turbine blade. Fine adjustment mechanisms (of < 0.1 mm) will be required to adjust machine mechanical calibration to ensure the relative motion planes/paths are as required. The device will require a minimum of 4 degrees of freedom that are driven and controlled by Beckhoff automation infrastructure (to enable integration with current infrastructure).

The system must operate as a stand-alone device with power supply and automation control included. The blade should be able to move in the X,Y,Z, and rotated along the curvature of the root radius. The motion will require simultaneous co-ordination of axis for both position and velocity. The system motion sequence must be programmable, and must be initiated by a manual button, or via a sequence start synchronisation signal from the laser. An emergency stop button is required which will cut all system power.

A fine adjustment mechanism must enable rotation of the blade to be precisely set at the centre of rotation of the mechanical system. The system must be completely operational in a stand-alone mode upon delivery (therefore all motors, drives, power supplies, cables, control PC are already configured for motion control of position and velocity). The system will operate with splashing of de-ionised water, therefore all motion components and electronics must accommodate such an environment. The machine will be expected to run in batch production cycles of 12-24 hours per day.

The technical specifications are listed in annexure A.

The selected supplier may be required to sign an NDA with the CSIR due to potentially innovative aspects of the technology development.

5 FUNCTIONAL EVALUATION CRITERIA

5.1 The evaluation of the functional / technical detail of the proposal will be based on the following criteria:

	Functional Evaluation Criteria
Suitable qualifications and professional accreditation	<ul style="list-style-type: none"> BSc Eng/B Eng (Washington accord) in a relevant Engineering discipline (Mechanical, Mechatronics or related)=100%) staff members >5 x with ECSA accreditation Incorrect/insufficient qualification = 0%
Years of relevant experience in development and implementation of mechanical/mechatronic engineering solutions for local industry for applications of structural integrity.	<ul style="list-style-type: none"> 10 years or more experience in design, testing and implementation of bespoke engineering solutions for structural integrity applications involving complex systems which include precision alignment and articulated motion. = 100% (Evidence provided detailing solution, application, and stakeholder contact) 5 years or more experience in design, testing and implementation of bespoke engineering solutions for structural integrity applications involving complex systems which include precision alignment and articulated motion. = 50% (Evidence provided detailing solution, application, and stakeholder contact) Less than 5 years experience in design, testing and implementation of bespoke engineering solutions for structural integrity applications involving complex systems which include precision alignment and articulated motion. = 0%

Engineering capability in performing complex machine design including engineering analysis.	<p>Demonstrable experience with all of the following engineering tool sets: (1) Computer Aided Design, (2) Finite Element Analysis</p> <ul style="list-style-type: none"> Evidence provided to demonstrate capability for prior projects = 100% Capability in some or none of the above = 0%
Track record in the successful design, manufacturing, testing and implementation of engineering projects for the power generation industry that involve bespoke engineered machinery for materials processing for structural integrity applications.	<ul style="list-style-type: none"> Evidence of 1 successfully completed project for = 50% Evidence of 3 or more successfully completed projects = 100% No track record = 0 % <p>(completed projects implies the technology developed has been implemented, and the components are in service)</p>
Engineering capability in machine automation using Beckhoff Automation	<p>Demonstrable completed project using Beckhoff automation infrastructure. Relevant capability in the required engineering tools = 100%</p> <p>Capability in some or none of the above = 0%</p>
Engineering track record of development of systems that include articulated motions platforms	<p>Demonstrate completed projects where solution involves synchronised motion (of at least 2 degrees of freedom) where feed-rate, and position are controlled. Required capability evidence provided = 100%.</p> <p>Capability in some or none of the above = 0%</p>
Engineering track record of development of systems that are involved in batch production runs or material processing runs where jigging solutions are employed to ensure consistency	<p>Demonstrate completed projects where application involves repetitive processing of multiple identical components. The system must show evidence of developed jigging solution to ensure adequate process control and repeatability between batches.</p> <ul style="list-style-type: none"> Evidence provided to demonstrate capability for prior projects = 100% Capability in some or none of the above = 0%
Experience in laser materials processing technology	<p>Demonstrable completed projects or active projects involving laser systems for materials processing applications.</p> <ul style="list-style-type: none"> Relevant capability in the required engineering tools = 100% Capability in none of the above = 0%

Track record in the design and development of technical solutions for R&D applications for novel and innovative processes	<ul style="list-style-type: none"> • Technical solution is a novel globally (i.e. patent applications made) = 100% • No track record of work on novel technologies = 0%
Technical Feasibility of proposed concept	<ul style="list-style-type: none"> • Initial technical solution of proposed concept is technically feasible = 100% • Initial technical solution of proposed concept is technically not feasible, and does not follow the required specification = 0%

5.1 Proposals with functionality / technical points of less than the pre-determined minimum overall percentage of 70% and less than 50% on any of the individual criteria will be eliminated from further evaluation.

5.2 Refer to annexure B for the scoring sheet that will be used to evaluate functionality

6 ELIMINATION CRITERIA

Proposals will be eliminated under the following conditions:

- Bidders that submit late bids will not be considered
- Bidders that submit to the incorrect location or email address will be eliminated
- Bidders that are listed on the NT database of restricted suppliers will not be considered
- Proposals that score less than 70% for required functional evaluation criteria
- Non-attendance of compulsory briefing session
- Bidders that are registered on the NT Register of Tender Defaulters will not be considered
- Bidders that do not submit a fully completed and signed SBD 1 and SBD 4 Form will not be considered

7 NATIONAL TREASURY CENTRAL SUPPLIER DATABASE REGISTRATION

Before any negotiations will start with the winning bidder it will be required from the winning bidder to:

- be registered on National Treasury's Central Supplier Database (CSD). Registrations can be completed online at: www.csd.gov.za;
- provide the CSIR of their CSD registration number; and
- provide the CSIR with a certified copy of their B-BBEE certificate. If no certificate can be provided, no points will be scored during the evaluation process. (RSA suppliers only)

SECTION B – TERMS AND CONDITIONS

8 VENUE FOR PROPOSAL SUBMISSION

All proposals must be submitted at:

- **Electronically at tender@csir.co.za**
- **Emails may be sent in parts if it exceeds 25MB**

9 TENDER PROGRAMME

The tender program, as currently envisaged, incorporates the following key dates:

- Issue of tender documents: 29 July 2022
- Compulsory briefing session 04 August 2022, 11:00-12:00
Microsoft MS Teams Link:
https://teams.microsoft.com/l/meetup-join/19%3ameeting_ODJiNzM5ZTctNjl0ZC00N2E3LThkNWEtYjcxZjgwNzY5OTM5%40thread.v2/0?context=%7b%22Tid%22%3a%22fd3c5d5-ddb2-4ed3-9803-f89675928df4%22%2c%22Oid%22%3a%22e779a48e-c4a5-49f2-9050-1d475c125b4c%22%7d
- Last date for submission of queries: 10 August 2021
- Closing / submission Date: 15 August 2022

- Estimate appointment date of successful tenderer:

10 SUBMISSION OF PROPOSALS

10.1 All proposals are to be clearly marked with the RFP number and the name of the tenderer.

Proposals must consist of two parts:

PART 1: Technical Proposal: RFP No-1016-15-08-2021

PART 2: Pricing Proposal, B-BBEE and other Mandatory Documentation:

RFP No:1016-15-08-2022.

10.2 Proposals submitted by companies must be signed by a person or persons duly authorised.

10.3 The CSIR will award the contract to qualified tenderer(s)' whose proposal is determined to be the most advantageous to the CSIR, taking into consideration the technical (functional) solution, price and B-BBEE.

11 DEADLINE FOR SUBMISSION

Proposals shall be submitted at the address mentioned above no later than the closing date of **Monday, 15 August 2022** during CSIR's business hours. The CSIR business hours are between 08h00 and 16h30.

Where a proposal is not received by the CSIR by the due date and stipulated place, it will be regarded as a late tender. Late tenders will not be considered.

12 AWARDING OF TENDERS

12.1 Awarding of tenders will be published on the CSIR's tender website. No regret letters will be sent out.

13 EVALUATION PROCESS

13.1 Evaluation of proposals

All proposals will be evaluated by an evaluation team for functionality, price and B-BBEE. Based on the results of the evaluation process and upon successful negotiations, the CSIR will approve the awarding of the contract to successful tenderers.

A two-phase evaluation process will be followed.

- The first phase includes evaluation of **elimination** and **functionality criteria**.
- The second phase includes the evaluation of **price** and **B-BBEE** status.

Pricing Proposals will only be considered after functionality phase has been adjudicated and accepted. Only proposals that achieved the specified minimum qualification scores for functionality will be evaluated further using the preference points system.

13.2 Preference points system

The 80/20 preference point system will be used where 80 points will be dedicated to price and 20 points to B-BBEE status.

14 PRICING PROPOSAL

- 14.1 Pricing proposal must be cross-referenced to the sections in the Technical Proposal. Any options offered must be clearly labelled. Separate pricing must be provided for each option offered to ensure that pricing comparisons are clear and unambiguous.
- 14.2 Price needs to be provided in South African Rand (excl. VAT), with details on price elements that are subject to escalation and exchange rate fluctuations clearly indicated.
- 14.3 Price should include additional cost elements such as freight, insurance until acceptance, duty where applicable.
- 14.4 Only firm prices* will be accepted during the tender validity period. Non-firm prices** (including prices subject to rates of exchange variations) will not be considered.

**Firm price is the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax which, in terms of a law or regulation is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;*

***Non-firm price is all prices other than "firm" prices.*

- 14.5 Payment will be according to the CSIR Payment Terms and Conditions.

15 VALIDITY PERIOD OF PROPOSAL

Each **proposal** shall be valid for a minimum period of six (6) months calculated from the closing date.

16 APPOINTMENT OF SERVICE PROVIDER

- 16.1 The contract will be awarded to the tenderer who scores the highest total number of points during the evaluation process, except where the law permits otherwise.
- 16.2 Appointment as a successful service provider shall be subject to the parties agreeing to mutually acceptable contractual terms and conditions. In the event of the parties failing to reach such agreement CSIR reserves the right to appoint an alternative supplier.
- 16.3 Awarding of contracts will be announced on the National Treasury website and no regret letters will be sent to unsuccessful bidders.

17 ENQUIRIES AND CONTACT WITH THE CSIR

Any enquiry regarding this RFP shall be submitted in writing to CSIR at tender@csir.co.za with **“RFP No 1016/15/08/2022- Provision of specialist engineering services to design, develop, manufacture, and test a bespoke low pressure steam turbine blade articulation system.**” as the subject.

Any other contact with CSIR personnel involved in this tender is not permitted during the RFP process other than as required through existing service arrangements or as requested by the CSIR as part of the RFP process.

18 MEDIUM OF COMMUNICATION

All documentation submitted in response to this RFP must be in English.

19 COST OF PROPOSAL

Tenderers are expected to fully acquaint themselves with the conditions, requirements and specifications of this RFP before submitting proposals. Each tenderer assumes all risks for resource commitment and expenses, direct or indirect, of proposal preparation and participation throughout the RFP process. The CSIR is not responsible directly or indirectly for any costs incurred by tenderers.

20 CORRECTNESS OF RESPONSES

- 20.1 The tenderer must confirm satisfaction regarding the correctness and validity of their proposal and that all prices and rates quoted cover all the work/items specified in the RFP. The prices and rates quoted must cover all obligations under any resulting contract.
- 20.2 The tenderer accepts that any mistakes regarding prices and calculations will be at their own risk.

21 VERIFICATION OF DOCUMENTS

- 21.1 Tenderers should check the numbers of the pages to satisfy themselves that none are missing or duplicated. No liability will be accepted by the CSIR in regard to anything arising from the fact that pages are missing or duplicated.
- 21.2 An electronic copy of each proposal must be submitted
- 21.3 Pricing schedule and B-BBEE credentials should be submitted with the proposal, but as a separate document and no such information should be available in the technical proposal.

22 SUB-CONTRACTING

- 22.1 A tenderer will not be awarded points for B-BBEE status level if it is indicated in the tender documents that such a tenderer intends sub-contracting more than **25%** of the value of the contract to any other enterprise that does not qualify for at least the points that such a tenderer qualifies for, unless the intended sub-contractor is an exempted micro enterprise that has the capability and ability to execute the sub-contract.
- 22.2 A tenderer awarded a contract may not sub-contract more than **25%** of the value of the contract to any other enterprise that does not have an equal or higher B-BBEE status level than the person concerned, unless the contract is sub-contracted to an exempted micro enterprise that has the capability and ability to execute the sub-contract.

23 ENGAGEMENT OF CONSULTANTS

The consultants will only be remunerated at the rates:

- 23.1 Determined in the "Guideline for fees", issued by the South African Institute of Chartered Accountants (SAICA); or
- 23.2 Set out in the "Guide on Hourly Fee Rates for Consultants", by the Department of Public Service and Administration (DPSA); or
- 23.3 Prescribed by the body - regulating the profession of the consultant.

24 TRAVEL EXPENSES

24.1 All travel expenses for the CSIR's account, be it directly via the CSIR's travel agent or indirectly via re-imbursements, must be in line with the CSIR's travel policy. The following will apply:

24.1.1 Only economy class tickets will be used.

24.1.2 A maximum of R1400 per night for accommodation, dinner, breakfast and parking will be allowed.

24.1.3 No car rentals of more than a Group B will be accommodated.

25 ADDITIONAL TERMS AND CONDITIONS

25.1 A tenderer shall not assume that information and/or documents supplied to CSIR, at any time prior to this request, are still available to CSIR, and shall consequently not make any reference to such information document in its response to this request.

25.2 Copies of any affiliations, memberships and/or accreditations that support your submission must be included in the tender.

25.3 In case of proposal from a joint venture, the following must be submitted together with the proposal:

- Joint venture Agreement including split of work signed by both parties;
- The original or certified copy of the B-BBEE certificate of the joint venture;
- The Tax Clearance Certificate of each joint venture member;
- Proof of ownership/shareholder certificates/copies; and
- Company registration certificates.

25.4 An omission to disclose material information, a factual inaccuracy, and/or a misrepresentation of fact may result in the disqualification of a tender, or cancellation of any subsequent contract.

25.5 Failure to comply with any of the terms and conditions as set out in this document will invalidate the Proposal.

26 CSIR RESERVES THE RIGHT TO

26.1 Extend the closing date;

26.2 Verify any information contained in a proposal;

26.3 Request documentary proof regarding any tendering issue;

26.4 Give preference to locally manufactured goods;

- 26.5 Appoint one or more service providers, separately or jointly (whether or not they submitted a joint proposal);
- 26.6 Award this RFP as a whole or in part;
- 26.7 Cancel or withdraw this RFP as a whole or in part.

27 DISCLAIMER

This RFP is a request for proposals only and not an offer document. Answers to this RFP must not be construed as acceptance of an offer or imply the existence of a contract between the parties. By submission of its proposal, tenderers shall be deemed to have satisfied themselves with and to have accepted all Terms & Conditions of this RFP. The CSIR makes no representation, warranty, assurance, guarantee or endorsements to tenderer concerning the RFP, whether with regard to its accuracy, completeness or otherwise and the CSIR shall have no liability towards the tenderer or any other party in connection therewith.

DECLARATION BY TENDERER

Only tenderers who completed the declaration below will be considered for evaluation.

RFP No: 1016-15-08-2022

I hereby undertake to render services described in the attached tendering documents to CSIR in accordance with the requirements and task directives / proposal specifications stipulated in RFP No.1016-15-08-2022. at the price/s quoted. My offer/s remains binding upon me and open for acceptance by the CSIR during the validity period indicated and calculated from the closing date of the proposal.

I confirm that I am satisfied with regards to the correctness and validity of my proposal; that the price(s) and rate(s) quoted cover all the services specified in the proposal documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.

I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this proposal as the principal liable for the due fulfilment of this proposal.

I declare that I have no participation in any collusive practices with any tenderer or any other person regarding this or any other proposal.

I accept that the CSIR may take appropriate actions, deemed necessary, should there be a conflict of interest or if this declaration proves to be false.

I confirm that I am duly authorised to sign this proposal.

NAME (PRINT)

CAPACITY

SIGNATURE

NAME OF FIRM

DATE

WITNESSES

1

2

DATE:

28 ANNEXURE A

Specifications			Compliance to Specification	
			YES	NO
1	A Low Pressure Steam Turbine Blade with the following specifications	Material: steel Mass: 25 kg Length: 1200 mm Width: 250 mm Attachment Root Type: Fir Tree Number of serrations: 6 Root Geometry: Convex and concave Root radius: 2.5-3 mm Radius of rotation: 185 mm		
2	Machine operation	Duty cycle 12-24 hours per day		
3	Operating environment	Water splash		
4	Degrees of Freedom	4 (x,y,z, and rotation)		
5	Motors and controller compatibility	Architecture based on Beckhoff motors and drives to enable integration to existing infrastructure		
6	Clamp location	Blade aerofoil only		
7	Acceptable tolerance (tested with dial gauge)	< 0.5 mm (for eccentricity on blade rotation)		
8	Motion Range	+/- 180 degrees		
9	Rotational Speed of root surface (max)	1200 mm/min		
10	Rotational Speed of root surface (operating)	300-600 mm/min		
11	The solution must include reliable blade fixation and reference jigs. Repeatability in mounting	< 0.1 mm		
12	Fine adjustment mechanisms are required for mechanical calibration with position adjustment.	< 0.1 mm		

29 ANNEXURE B

	Functional Evaluation Criteria	Weight
Suitable qualifications and professional accreditation	<ul style="list-style-type: none"> BSc Eng/B Eng (Washington accord) in a relevant Engineering discipline (Mechanical, Mechatronics or related)=100%) staff members >5 x with ECSA accreditation Incorrect/insufficient qualification = 0% 	10%
Years of relevant experience in development and implementation of mechanical/mechatronic engineering solutions for local industry for applications of structural integrity.	<ul style="list-style-type: none"> 10 years or more experience in design, testing and implementation of bespoke engineering solutions for structural integrity applications involving complex systems which include precision alignment and articulated motion. = 100% (Evidence provided detailing solution, application, and stakeholder contact) 5 years or more experience in design, testing and implementation of bespoke engineering solutions for structural integrity applications involving complex systems which include precision alignment and articulated motion. = 50% (Evidence provided detailing solution, application, and stakeholder contact) Less than 5 years experience in design, testing and implementation of bespoke engineering solutions for structural integrity applications involving complex systems which include precision alignment and articulated motion. = 0% 	10%
Engineering capability in performing complex machine design including engineering analysis.	<p>Demonstrable experience with all of the following engineering tool sets: (1) Computer Aided Design, (2) Finite Element Analysis</p> <ul style="list-style-type: none"> Evidence provided to demonstrate capability for prior projects = 100% Capability in some or none of the above = 0% 	10%
Track record in the successful design, manufacturing, testing and implementation of engineering projects for the power generation industry that involve bespoke engineered machinery for materials processing for structural integrity applications.	<ul style="list-style-type: none"> Evidence of 1 successfully completed project for = 50% Evidence of 3 or more successfully completed projects = 100% No track record = 0 % <p>(completed projects implies the technology developed has been implemented, and the components are in service)</p>	20%
Engineering capability in machine automation using Beckhoff Automation	<p>Demonstrable completed project using Beckhoff automation infrastructure. Relevant capability in the required engineering tools = 100%</p> <p>Capability in some or none of the above = 0%</p>	10%
Engineering track record of development of systems that	Demonstrate completed projects where solution involves synchronised motion (of at least 2 degrees of freedom) where feed-rate, and position	5%

include articulated motions platforms	are controlled. Required capability evidence provided = 100%. Capability in some or none of the above = 0%	
Engineering track record of development of systems that are involved in batch production runs or material processing runs where jigging solutions are employed to ensure consistency	Demonstrate completed projects where application involves repetitive processing of multiple identical components. The system must show evidence of developed jigging solution to ensure adequate process control and repeatability between batches. <ul style="list-style-type: none"> Evidence provided to demonstrate capability for prior projects = 100% Capability in some or none of the above = 0% 	10%
Experience in laser materials processing technology	Demonstrable completed projects or active projects involving laser systems for materials processing applications. <ul style="list-style-type: none"> Relevant capability in the required engineering tools = 100% Capability in none of the above = 0% 	5%
Track record in the design and development of technical solutions for R&D applications for novel and innovative processes	<ul style="list-style-type: none"> Technical solution is a novel globally (i.e. patent applications made) = 100% No track record of work on novel technologies = 0% 	5%
Technical Feasibility of proposed concept	<ul style="list-style-type: none"> Initial technical solution of proposed concept is technically feasible = 100% Initial technical solution of proposed concept is technically not feasible, and does not follow the required specification = 0% 	15
Totals		100%