



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

Bid Receiving Public Works and Government
Services Canada/Réception des soumissions Travaux
publics et Services gouvernementaux Canada
1713 Bedford Row
Halifax, N.S./Halifax, (N.É.)
Halifax
Nova Scotia
B3J 1T3
Bid Fax: (902) 496-5016

SOLICITATION AMENDMENT MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise
indicated, all other terms and conditions of the Solicitation
remain the same.

Ce document est par la présente révisé; sauf indication contraire,
les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution
Atlantic Region Acquisitions/Région de l'Atlantique
Acquisitions
1713 Bedford Row
Halifax, N.S./Halifax, (N.É.)
Halifax
Nova Scot
B3J 1T3

| | |
|--|--|
| Title - Sujet Metallic Power Based Fusion 3D Prin Metallic Power Based Fusion 3D Printer | |
| Solicitation No. - N° de l'invitation W7707-227170/B | Amendment No. - N° modif. 003 |
| Client Reference No. - N° de référence du client W7707-22-7170 | Date 2022-07-21 |
| GETS Reference No. - N° de référence de SEAG PW-SHAL-207-11541 | |
| File No. - N° de dossier HAL-1-87186 (207) | CCC No./N° CCC - FMS No./N° VME |
| Solicitation Closes - L'invitation prend fin at - à 02:00 PM Atlantic Daylight Saving Time ADT on - le 2022-08-04 Heure Avancée de l'Atlantique HAA | |
| F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/> | |
| Address Enquiries to: - Adresser toutes questions à: Grieve, Bronwen | Buyer Id - Id de l'acheteur hal207 |
| Telephone No. - N° de téléphone (902) 943-2394 () | FAX No. - N° de FAX (902) 496-5016 |
| Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: | |

Instructions: See Herein

Instructions: Voir aux présentes

| | |
|--|--|
| Delivery Required - Livraison exigée | Delivery Offered - Livraison proposée |
| Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur | |
| Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur | |
| Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie) | |
| Signature | Date |

Amendment 003 is raised to:

- 1. Answer bidder questions**
- 2. Amend Annex "A" Requirement**
- 3. Amend Annex "B" Basis of Payment**

1. Bidder Questions and Answers:

Q2. Are you looking for a (PBF) Powder Bed Fusion metal additive type technology and machine? (NPP description is Powder Based Fusion)

A1: Yes, it should read "powder bed fusion" wherever "powder based fusion" appears. See amendments to Annex "A" below.

Q3. Does a Directed Energy Deposition (DED) system which uses metal powders and utilizes fiber lasers fit your NPP requirements to quote?

A2: No. DRDC requires the capabilities of a PBF AM machine.

Q4. It appears that the bid asks for powders to complete installation of the printer. For installation, we only need one material among the listed materials. The machine doesn't require to be installed for each materials and as such, there is no need to have 6 different powders for installation purpose. The builds made during the installation are to check calibration and that the machine is working as intended // quality control.

Therefore, we were planning to included 60kg of Stainless Steel Powder SS 17-4. I would simply like to clear up any misunderstanding regarding this specific item.

A3: Yes, one type of material and whichever the Bidder deems to be the best powder/quantity in order to complete the set up. See Amendment to Annex "A" below.

Q5. With reference to the Annex A, Machine Dimensions.
This requirement limits number of well quality machines to propose. We believe the requested dimension does not allow many manufacturers to propose a solution for this RFP. We kindly ask Canada to remove this requirement from RFP.

A4: We will remove this requirement. See amendment to Annex "A" below.

Q6. If your bid specifications is indicated FIRM, does this mean for each of the specifications noted or just that the printer can do everything you ask?

A5: The reference to "FIRM" in Annex "A", 5.1, 5.2, 5.3, and 5.4 refers to the fact that these items are part of the firm requirement (to be provided upon contract award) as opposed to the "Optional" requirements referenced in Annexes "A" and "B" which may be ordered at a later date through a Contract Amendment.

In order to be found technically compliant, bids must demonstrate compliance with all items listed in Annex "C" Technical Evaluation.

The successful bidder must deliver a product that meets every requirement in Annex "A" in order for it to be accepted.

- Q7. The powdered listed are non-specific, for example there are about a dozen different stainless steel powders available including (but not exclusively) 304L, 316L, 316Ti, and 17-4 - each stainless offers very different material properties. The same is essentially true of nickel alloy and 'steel' - which again are very generic.

Can we get clarification on the specific type of metals requested, or is it up to the vendor to choose?

- A7: It is up to the supplier to provide pricing for each of the materials identified in Annexes "A" and "B". DRDC has requested pricing on your most popular sub-type of powder.

Please note that no lines will be added to the Basis of Payment. Pricing must be provided in accordance with the Basis if Payment in order to be found responsive.

2. Amendments to Annex "A" Requirement:

a. Under section 1. Title

DELETE: in its entirety

INSERT:

Powder Bed Fusion (Metal) 3D printer

b. Under section 2. Background

DELETE: in its entirety

INSERT:

Department of National Defence (DND)/Defence Research and Development Canada (DRDC) currently uses traditional manufacturing equipment and techniques, which tend to limit how complex manufactured prototypes and their parts can be. Therefore, it is DRDC's intent to augment its current manufacturing capabilities, by introducing the Additive Manufacturing (AM) technique known as **Powder Bed Fusion** (PBF) – which is sometimes referred to as metal 3D printing. By doing so, it will provide DRDC the ability to create new alloys and print testable designs and participate with other North Atlantic Treaty Organization (NATO) countries in the research and development of the structural stability of parts created with the additive manufacturing process.

c. Under section 3. Acronyms

DELETE: in its entirety

INSERT:

| | |
|-------|---|
| A | Amp |
| AM | Additive Manufacturing |
| C | Celsius |
| CSA | Canadian Standards Association |
| DND | Department of National Defence |
| DRDC | Defence Research and Development Canada |
| in | Inch |
| lbs | Pounds |
| NATO | North Atlantic Treaty Organization |
| TA | Technical Authority |
| PBF | Powder Bed Fusion |
| HSS | High Speed Steel |
| kg | Kilogram |
| MDS | Material Data Sheet |
| m | Meter |
| mm | Millimeter |
| mm/s | Millimeter per Second |
| V | Volt |
| W | Watt |
| WXDXH | WidthXDepthXHeight |
| Yb | Ytterbium-Doped Silica |

d. Under section 5.1 [FIRM] Powder Based Fusion Metal 3D Printer

DELETE: in its entirety

INSERT:

(removing "Machine Dimension" requirement in its entirety)

5.1 [FIRM] **Powder Bed Fusion Metal 3D Printer**

Required Quantity: 1

The Contractor must provide the requirement with the following specifications:

| Specifications | Value |
|----------------------------------|--|
| Build volume | Minimum of 250mm x 250 mm x 250mm |
| Scanner exposure | Exposure area of 250mm x 250 mm |
| Scan speed | Minimum of 6500 mm/s |
| Weight of machine | Minimum 1300kg |
| Z-axis position repeatability | $\leq \pm 0.005$ mm |
| Recirculating Filtration+ System | Must utilize self-cleaning filters, expected time between filter changes at 1500 laser hours |
| Re-coater blade | Must be either: Hard re-coaters (high-speed steel (HSS) or ceramic blades) OR Soft, flexible re-coaters (a brush or silicone) Re-coating system travel speed must be minimum 40-500 mm/s. |

| Specifications | Value |
|-------------------------|---|
| Material Parameters | All offered materials should include published Material Data Sheets (MDS) related to build properties and be backed up by 3 rd party testing |
| Support | Vendor must have Support Engineers in North America |
| Laser Power Range | Yb fiber laser, 400W – 1000W |
| Power Supply | Minimum 30A, 400V |
| Gases Used | Nitrogen and Argon |
| Heated Build Platform | System must have integrated platform heating module capable of operating between approximately 40 to 200 deg C |
| User Interface | Touch Screen |
| Powder Bed Camera | Monitoring system in between coats |
| Materials to be Printed | Aluminum, Steel, Nickel Alloy, Stainless Steel, Titanium, Copper |

e. Under section 5.3.1 Powders:

DELETE: in its entirety

INSERT:

5.3.1 Powders

The Contractor must provide enough **powder (material of their choice)** to complete the installation of the **Powder Bed Fusion** Metal 3D Printer as per section 5.1.

*Costs for the powders must be included in the price for the **Powder Bed Fusion** Metal 3D Printer in Annex “B”.*

| Item | Description |
|---------|------------------------|
| 5.3.1.1 | Stainless Steel Powder |
| 5.3.1.2 | Steel Powder |
| 5.3.1.3 | Nickel Allow Powder |
| 5.3.1.4 | Aluminum Powder |
| 5.3.1.5 | Copper Powder |
| 5.3.1.6 | Titanium Powder |

5.3.2 Accessories

| Item | Description | Required Quantity |
|---------|----------------------------------|-------------------|
| 5.3.2.1 | Filters for recirculating system | 3 |
| 5.3.2.2 | Internal Powder Bed Camera | 1 |

3. Under Annex “B” Basis of Payment, Table 1 – Firm Requirements:

DELETE: in its entirety

INSERT:

Solicitation No. - N° de l'invitation
W7707-227170/B
Client Ref. No. - N° de réf. du client

Amd. No. - N° de la modif.
003
File No. - N° du dossier

Buyer ID - Id de l'acheteur
hal207
CCC No./N° CCC - FMS No./N° VME

TABLE 1 – FIRM REQUIREMENTS

| Annex “A” Item | Description of the Deliverable | Unit of Issue | Qty (A) | Unit Price (B) | Extended Total (A x B) |
|---------------------------------|--|------------------|------------|-------------------|---------------------------|
| 5.1 and 5.3.1 | Metal 3D Printer as per Annex “A” item 5.1 Price must include the cost of powder required to complete installation of the Metal 3D Printer as per Annex “A”, item 5.3.1 | EACH | 1 | | |
| 5.2 | Powder Sieve Unit | EACH | 1 | | |
| 5.4 | Technical Data – Operations and Maintenance Manuals (1 PDF and 2 hard copies) | LOT | 1 | | |
| 5.4.7 | Filters for the recirculating system | EACH | 3 | | |
| 5.4.8 | Internal Powder Bed Camera | EACH | 1 | | |
| 5.6 | Installation | LOT | 1 | | |
| 5.7 | Training | LOT | 1 | | |
| Subtotal (GST/HST not included) | | | | | |

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED