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Beneficiary of purchase: CEA | DRT | LIST | DIR

Specifications:

**Three dimensions laser scanner for the reconstruction
of parts manufactured by Wire Arc Additive
Manufacturing Process**

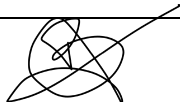
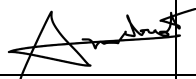
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INTERNAL REFERENCES OF CEA DRT:
Object: Purchase of a 3D laser scanner to reconstruct components manufactured by Wire Arc Additive Manufacturing

Buyer entity:	
Organisation	CEA Saclay
Beneficiary of purchase	CEA DRT LIST DIR
Funding:	Projet PRISM
General information of the need:	
Nature	Supplies
Object of the contract	3D scanner to reconstruct components manufactured by WAAM
Field	Optical, vision, laser
Sub-field	Materials and optical parts
Typology	Punctual
Estimated delivery date	December 2024
	Delivery of the supply must take place before the end of 2024
Generalities:	
Delivery or fulfilment address	Commissariat à l'Energie Atomique et aux Energies Alternatives DRT LIST - Centre CEA Paris-Saclay Building 565 – PC057 - 91191 Gif-sur-Yvette Cedex
Geographical area of delivery or performance: Paris region	


VERSIONING			
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1. INTRODUCTION

Located in Saclay on the Digiteo site, PRISMA is a platform dedicated to metallic additive manufacturing (AM) of medium to very large parts, built by Wire Arc Additive Manufacturing (WAAM). The platform offers the latest generation of multi-process robotic equipment allowing for the manufacturing of the part, the monitoring of the process and the finishing of the part. It also incorporates digital solutions for the development of process numerical continuity. The digital solutions range from the numerical model of the physical process of metallic deposition, to the digital twin of the physical equipment or AI-Assisted robotic programming software. By offering mutualised means of manufacturing and by incorporating digital solutions that enable the digital continuity of the process, the platform enhances the deployment of AM processes for industrial production.

2. BACKGROUND

PRISMA aims at assisting industrial actors at manufacturing parts by WAAM process from the design of the part to its finishing. On PRISMA platform, this last stage consists in using a machining spindle located at the extremity of one of the robotic arms to obtain a neat outer aspect of the part and withdraw the excess material to meet the required dimensions and geometry of the part. To that purpose, we are looking for a 3D laser scanner that would enable the accurate reconstruction of the geometry of the manufactured part.

3. TECHNICAL SPECIFICATIONS

This call for tenders concerns the purchase of an Equipment that would enable the three dimensional reconstruction of the parts manufactured by AM processes including a laser scanner and any other devices required to that purpose. The Equipment supplied must be new only and must meet the following technical and performance characteristics.

3.1 TECHNICAL CHARACTERISTIC:


- The laser scanner should be functional during continuous observation: several minutes to several hours (robustness and reliability of the equipment are expected).
- The Equipment must have been calibrated.
- The laser scanner must allow for the inspection of components which size varies from tens of centimetres to 2 m high and width.
- Resolution of the laser scanner should enable the distinction of one single track (minimum 0.2 mm).
- Working distance should be below 4 m.
- In addition to the laser scanner, the Equipment must include a probe to enable punctual measurements.

3.2 COMMUNICATION EXPECTATIONS:

- An Ethernet interface is expected.
- The laser scanner should be able to generate point cloud files and the data should be in open format.
- All the communication and power cables necessary to use the scanner should be supplied (at least 5m long, see options).
- The scanner should come with a control software that would display in real time the scan being performed, and would include interfacing libraries (open API) that enable the user to process the outputted data.

3.3 CHARACTERISTIC RELATED TO THE ENVIRONMENT:

- The Equipment must come with a carrying case to protect it.
- A tripod to support the Equipment is expected, or any basic solution usually furnished with the Equipment.

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3.4 OPTIONS

Please add a section in your offer including the following options:

1. Option 1: 5 m communication and power cables.
2. Option 2: 10 m communication and power cables.
3. Option 3: Training courses for at least a group of 6 people and at least two days, given at CEA on the DIGITEO Site (Saclay – France). If possible in French, otherwise in English. The course must include a theoretical stage and a demonstration one.
4. Option 4: If existing, the contractor is asked to propose a clamping solution to support the scanner
5. Option 5: If existing, the contractor is asked to propose an articulated arm as a solution to support the scanner.
6. Option 6: If existing, the contractor is asked to propose a linear mount to support the scanner.
7. Option 7: If the solution exists, offer a wireless Equipment.

4. CONTENT OF THE SERVICE

As part of this service, the delivery of the equipment should be ensured by the Contractor who is also requested to provide all relevant user guides and/or equipment maintenance documentation in French and/or English. The Contractor will carry out its installation, commissioning and testing on the CEA site before acceptance.

4.1 TEST OF THE EQUIPMENT

The Equipment is expected to be tested before delivery and calibrated. After delivery, the Equipment is also expected to be implemented and tested on site (at CEA) by the Contractor.

4.2 DOCUMENTATION

The documentation associated with all Equipment will include:


- The operating, user and maintenance manuals in paper or in .pdf format in French and/or English;
- Certificates of compliance with French and European standards;
- The calibration measurements of the Equipment probe;
- The Equipment Calibration Sheet;
- The certification of the Equipment.

4.3 DELIVERY ON SITE

The Equipment must be delivered to CEA-Saclay, Digitéo Lab., building 565. The Contractor complies with the security conditions provided for on the site.

The Contractor will ensure:

- The packaging of the Equipment, adapted to the means of transport used and allowing easy handling under the existing access conditions.
- The protection of equipment for storage, so as to avoid any deterioration, in particular by:
 - Shocks that may occur during transport,
 - Bad weather,
 - Temporary storage conditions in unprotected areas, outside the premises,
 - Transport to the room provided for the machines at the CEA,
 - The unloading and depositing of the equipment in the room provided.
- That the means of transport used to deliver the equipment and its packaging are as respectful of the environment as they can be.

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4.3.1 Desired deadline

Given the manufacturing time, the delivery of the Equipment is desired before the end of 2024. Considering T_0 the date of the signature of the contract, the Holder commits to respect the following set deadline:

- Signature of the contract T_0
- End of the test hold in the factory (calibration probe) and delivery $T_1 = T_0 + 4 \text{ weeks}$
- Reception and tests on site (CEA) $T_2 = T_1 + 2 \text{ weeks}$
- End of the warranty $T_3 = T_2 + 24 \text{ months}$

5. RECEPTION

Reception will be declared once the equipment has been delivered, implemented and tested on site at CEA by the Contractor. The on-site tests will ensure that the equipment complies with its expected specifications and that it is indeed capable of performing the reconstruction of the metallic components manufactured as specified in this document.

6. WARRANTY AND HELPLINE

The Equipment provided by the Holder (including the components that could be part of the options) must be guaranteed for at least 24 months (labour and travel included). The terms of the guarantee are set out in Draft Contract B24-0462. In addition, the Contractor will provide the CEA with unlimited telephone assistance, within 24 working hours following the call from the CEA, from 9:00 a.m. to 5:00 p.m., with the aim of reducing the time of interruption of the operation of the Equipment, in the event of a simple or complex breakdown.

7. MAINTENANCE (OPTION)

A preventive maintenance contract aiming to clean the Equipment and recalibrate it if needed is expected (optional) for a period of at least 3 years, starting from the reception on site of the Equipment.

A 3 years corrective maintenance contract, starting after the end of the warranty is also expected (optional). It would enable the intervention of the Contractor if the characteristics of the Equipment are no longer similar to its nominal characteristics or in the event of faulty electronic and/or mechanical parts.