



EQUIPMENT SPECIFICATIONS

Ref. (Chrono No.): DTNM/S2PC/2025/006

Version A

Date of issue: 10/02/2025

Description of the equipment

FREE DISTRIBUTION

EOTP: A-ASMAT-GO-5G-DD
OS:
Platform POUDR'INNOV 2.0

	Name	Title	Signature / Date
Written by	Ulrich SOUPREMANIEN	Research Engineer	<u>X</u> <small>Auteur</small>
Checked by security	Béryl BLONDEAU	Safety Engineer	<u>X</u> <small>ISI</small>
Checked by FEM		Facilities Engineering Manager	<u>X</u> <small>ISI</small>
Checked by Installation		Installation Manager	<u>X</u>
Checked by Hiérarchique	Christophe BRANLY	Laboratory Head or Platform Manager	<u>X</u>
Checked by Security	L. LE MENTEC	Security Correspondent (if 51 circular applicable)	<u>X</u>
Issued by	Richard LAUCOURNET	Head of Department	<u>X</u> <small>CdD</small>

DISTRIBUTION LIST AND ARCHIVING**INTERNAL DISTRIBUTION**

Purchasing Department	- Anne MANGIN - Syrga TURGANALIEVA	- 1 copy (email)
Department	- Richard LAUCOURNET - Béryl BLONDEAU - Hélène DUFOUR	- 1 copy (email) - 1 copy (email) - 1 copy (email) - 1 copy (email)
Division	- Christophe BRANLY	- 1 copy (email) - 1 copy (email) - 1 copy (email)
Laboratory	- Céline DELAFOSSE - Gérard DELETTE - Olivier TOSONI - Hugo DAYDE - Myriam DALMASSO	- 1 copy (email) - 1 copy (email)

ARCHIVING

Archiving by the assistant	- Delphine LORIDON	- 1 hardcopy + PDF file
----------------------------	--------------------	-------------------------

Table of changes

Version	Writer	Date	Subject of the change
O	U. SOUPREMANIEN	10/02/2025	First issue

TABLE OF CONTENTS

1.	PURPOSE.....	4
2.	DEFINITION	4
3.	GLOSSARY	4
4.	APPLICABLE DOCUMENTS	5
5.	CUSTOMER – SERVICE PROVIDER CONTACT	5
6.	CONFIDENTIALITY	5
7.	TECHNICAL SPECIFICATIONS.....	5
8.	WORK ENVIRONMENT, PLACE OF INSTALLATION, SUPPLY LIMITS.....	8
9.	LEAD TIMES	9
10.	QUALITY	9
11.	SAFETY AND CONFORMITY.....	9
12.	ENVIRONMENTAL CLAUSES.....	ERREUR ! SIGNET NON DÉFINI.
13.	EQUIPMENT DOCUMENTATION.....	11
14.	ACCEPTANCE CONDITIONS.....	11
15.	TRAINING.....	12
16.	WARRANTY	12
17.	MAINTENANCE	13
18.	ELEMENTS TO BE PROVIDED IN THE BID.....	13
APPENDIX 1. EQUIPMENT SPECIFICATIONS COMPLIANCE - TO BE PROVIDED BY THE EQUIPMENT MANUFACTURER.....		14
APPENDIX 2. SPECIFICATIONS FOR INSTALLING EQUIPMENT - TO BE PROVIDED BY THE EQUIPMENT MANUFACTURER.....		19

1. PURPOSE

The present specifications describe the supply, on behalf of CEA of items of equipments required for characterizing the evolution of the induction (B , in Tesla) regarding an external magnetic field (H , en A/m) applied to a soft magnetic material. These materials can be magnetized under an applied field due to a current flowing through an external winding coiled around the component.

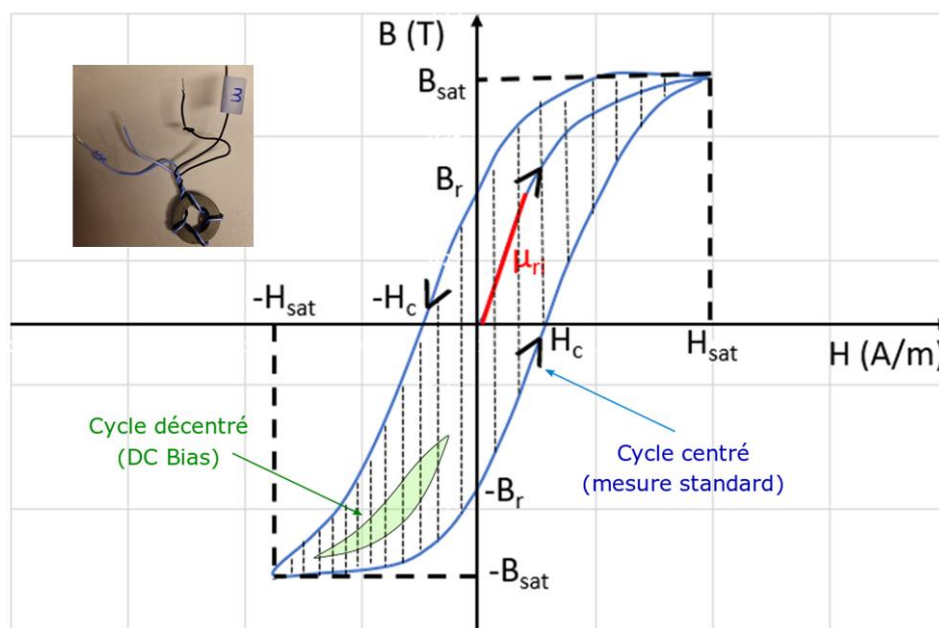


Figure 1 – Representation of a hysteresis cycle

The equipment must supply the electric power to the coils according to defined currents and voltages amplitudes allowing for the application of a targeted magnetic flux (induction) inside the magnetic material. Therefore, hysteresis B-H cycles could be obtained for different operating working conditions.

This cycle allows for the calculation of several fundamental characteristics of the manufactured materials as saturation flux (B_{sat}), coercive field (H_c), relative permeability (μ_r) as well as losses (area of the previous B-H cycle, Figure 1)

The soft magnetic materials that should be tested are: ferrites (spinnelle type Manganese-Zinc (Mn-Zn) or Nickel-Zinc (Ni-Zn), nanocrystallines or amorphous (Finemet type) and alloys Iron-Silicon, Iron-Cobalt and Iron-Nickel (permalloys).

2. DEFINITION

In this document, the contractor is referred to as “the supplier”.
The instructing party is referred to as “CEA”.

3. GLOSSARY

- LITEN : Laboratoire d’Innovation pour les Technologies des Energies Nouvelles/
Laboratory of innovation for new energy technologies and nanomaterials
- LMCM : Laboratoire des Matériaux et Composants Magnétiques / Laboratory of Magnetic
Materials and of Magnetic Components

Bsat/Jsat	Saturation flux or polarization (T)
Br	Remnant flux (T)
Hc	Coercive field (A/m)
μ_r	Relative permeability (SI)
I	Current (A)
V	Voltage (V)

4. APPLICABLE DOCUMENTS

The supplier shall comply with the documents and all procedures in force at CEA/GRENOBLE. Below is a non-exhaustive list:

EQ/CS23-10: Règles applicables aux entreprises extérieures (French version)
EQ/CS23-11: Applicable rules for outside companies (English version)

These documents shall be available for consultation upon request by the supplier.

5. CUSTOMER – SERVICE PROVIDER CONTACT

The technical contacts for the basic and additional services are:

Mr. Ulrich SOUPREMANIEN
Tel.: 04 38 78 31 51
Email: ulrich.soupremanien@cea.fr

6. CONFIDENTIALITY

The supplier undertakes to keep confidential and shall refrain from disclosing to any third party, without written approval from CEA, the whole or part of information and/or knowledge belonging to CEA or any third party, that it may obtain or may have obtained during the service performed on behalf of CEA.

7. TECHNICAL SPECIFICATIONS

7.1 Expected specifications

The equipment will be dedicated to the magnetic characterization of soft magnetic materials, mainly ferrites (spinel-type such as MnZn or NiZn, which are tested in the laboratory at operating frequencies between 10 kHz and 5 MHz). This equipment should also enable the testing of nanocrystalline, amorphous, FeSi, FeCo and FeNi (permalloys) materials (which are tested in the laboratory at operating frequencies between 1 kHz and 200 kHz). The characteristics of typical materials are shown in Table 1.

Tableau 1 – Characteristics of targeted materials

Material grade	μ_r typical	B _{sat} /J _{sat} (T)	H _c (A/cm)
Ferrite (Mn-Zn, Ni-Zn)	Between 100 and 5000	0.5	10
Nanocrystalline	Between 1000 and 10000	1	0.01
Amorphous	Between 10000 and 100000	1.2	0.005
Fe-Ni	Between 100 and 1000	1.5	0.015
Fe-Si	Between 100 and 5000	2.2	1
Fe-Co	Between 100 and 1000	2.5	1

The magnetic circuit's electrical excitation system is designed to generate the signals required to achieve and measure magnetic saturation (B_{sat}) and coercive field strength (H_c) for all the soft magnetic material grades analyzed, taking into account frequency analysis (from 1 kHz to 5 MHz on a sinusoidal or rectangular carrier with a 50% duty cycle).

The main samples tested in the laboratory are available in toroidal shape and have the following dimensions:

	Dim. typical lab.	<i>Dim. min.</i>	<i>Dim max.</i>
External diameter (mm)	16	7	70
Internal diameter (mm)	9.5	4	35
Height (mm)	6	1	20

EE (or EI) type components must also be able to be characterized using this equipment. In standard situation, measurements can be carried out at room temperature. As an option (subject to compulsory quotation), it must be possible to carry out these measurements at temperatures of up to at least 200°C, using this equipment or additional sub-equipment.

The system must describe the entire B-H hysteresis cycle in its standard version (cycle centered at the origin). The equipment should also allow for the addition of a DC bias component in order to perform analyses for off-center cycles, in particular to determine the component's magnetic losses for those configurations useful for laboratory applications.

Optional: the equipment could characterize strips made of magnetic powder (for electromagnetic shielding of components).

The equipment must enable data to be saved on a medium (hard disk or USB keys) (using dedicated control and backup software). All measurement results can be stored in the equipment's internal memory or on a medium, providing the following quantities (units will be in SI):

- Curve in $B=f(H)$
- Magnetization in 1st quadrant: J_{sat}/B_{sat}
- In 2nd quadrant, remanent magnetization: B_r
- Coercivity: H_cB
- Magnetic losses by volume: P_{cv}

Measurements must be guaranteed within 4% (at 25°C) of total dispersion on reference samples (to be supplied by the manufacturer): 1 Mn-Zn toroid, 1 Ni-Zn toroid and 1 nanocrystalline toroid.

The equipment will comprise the following functional assemblies:

- the device comprising the B-H analyser:

Parameter	Specifications
Frequency range	Between 10 kHz to 5 MHz
Measurable saturation inductions	From 0.1 to 2.5 T
Measurable coercive fields	From 0.01 A/cm to 100 A/cm
Measurable permeabilities	From 25 à 10000
T. de tests des échantillons.	Ambient but up to 200C (in option)
Charac. Dim. Of samples	7 mm < L < 70 mm

Mains target soft. Magn. grades	Mn-Zn, Ni-Zn, Amorphous, Nanocrystallin, Permalloys
Uncertainty of power losses measurements	±4%

To achieve the signal amplitudes specific to laboratory applications, the equipment must be able to reach voltages (U) of at least 50 V at $f < 1\text{ MHz}$ and at least 10 V for test frequencies between $1 < f < 5\text{ MHz}$. AC currents must reach at least 2.5 A. The power amplifier should be capable to work at frequency of at least 5 MHz for these voltage and current conditions. Distortion rates of signals passing through this power amplifier shall be less than 0.5% for all test conditions and a considered load of 50 Ω .

- Computer system with control and monitoring software
- *Optional at mandatory quotation: a thermal control system for measurement up to at least 200°C.*
- *Optional at mandatory quotation: a measuring system for core excitation with a DC bias component.*
- *Optional with optional quotation: a system for characterizing strips made of magnetic materials.*

References to current standards, certifications and accreditations will be provided. In accordance with standards IEC 60404-15, ASTM A342M and VG 95578, the equipment must comply with standard EN IEC 61326-1, as well as with risks related to magnetic fields: the equipment must comply with directive 2013/35/EU on the prevention of risks related to electromagnetic fields. Electromagnetic field measurements will be supplied by the equipment manufacturer, along with, zoning around the equipment and pictograms if necessary.

7.2 IT equipment

If the equipment is delivered with a computer, it shall be set up with a Windows 11 Operating System and shall be compatible with the SYMANTEC Endpoint Protection.

The hardware shall enable networking and shall feature at least wired (Ethernet) network.

CEA's facilities management shall be called on to configure the PC to the CEA standard before its networking.

It must be possible to save the configuration and acquisition data in a repository of a network server. Therefore, the acquisition data shall be supplied as result files that can be transferred onto the network.

The system must have a remote supervisory system. This supervisory system shall feature a read only profile of the parameters. It shall not be possible to perform any action on the operation of the equipment.

Additional profiles will allow to make the following functions:

- User for the piloting of the equipment
- Maintenance technician for the configuration of the equipment
- Administrator (only for the system administrator staff)

Remote control access of the computer equipment from the Internet shall not be authorised for the maintenance or commissioning phases. Should, for technical reasons, remote control access from an Intranet be required, the supplier shall specify such requirement in its bid. It shall provide the list of all the remote actions that may occur on the equipment using the

remote control access. CEA will then carry out an analysis to determine whether or not CEA grants an exception, without this being constituted as a commitment. In any case, the implementation of remote control access shall give rise to a reduction by the supplier which shall be specified in the bid. By default, the remote control access shall then be implemented via RDP (Remote Desktop Protocol) software.

In case parameters of the system can be modified, the supplier will have to indicate in the offer the elements of **analysis of security of this system of supervision allowing to demonstrate that the security of the equipment remains mastered by technical means independent from the system of supervision**. If these elements are not briefly known at the time of the offer, the supply of these elements will constitute a deliverable in the putting into service.

8. WORK ENVIRONMENT, PLACE OF INSTALLATION, SUPPLY LIMITS

8.1 Environment, Facilities

The supplier shall include in its bid the fluid requirements, electrical power supply and any other required interfaces.

8.2 Delivery

Any item of equipment delivered shall bear the order number as well as the recipient's name. The supplier shall plan all measures for unloading and installing the equipment. Delivery shall be performed between 8 a.m. and 4:30 p.m. from Monday to Friday.

The equipment must be installed at the Grenoble site, in building E at the following address:

CEA/LITEN/DTNM/SA3D/LMCM

17, rue des martyrs
38054 Grenoble Cedex 9
Tel : +33(0)4 38 78 31 51

The equipment and peripherals shall be delivered in a clean condition and packaged in a proper manner.

Transport trays, pallets and packaging crates shall be suited to the weights and volumes of the items so as to ensure safe transport and to subsequently prevent any dispute related to defective packaging.

All transport trays, pallets and packaging crates shall be removed by the supplier as the processing of packaging waste is not managed by CEA.

8.3 Conditions for performing work on the CEA site

In cooperation with the supplier and its subcontractors (if any), CEA shall draw up the overall prevention plan for the equipment installation and commissioning services.

As equipment lending, including safety equipment, is prohibited by CEA, the supplier and its subcontractors (if any) shall provide the required safety equipment for preventing the specific risks caused by its work (PPE, CPE, etc.). It shall be responsible for replacement and repair of said equipment and, as applicable (without compensation from CEA), it shall train and

acquaint its staff with the use thereof in keeping with regulations. Said equipment shall comply with the regulations in force and the supplier shall possess a certificate of conformity.

The supplier and its subcontractors (if any) shall provide collective safety equipment designed to prevent accidents stemming from the work (marking out of the work areas, marking out of the traffic areas; marking out of the handling areas, marking out and implementation of barriers around pits, height differences, etc.). It shall perform and ensure their removal insofar as the service no longer requires the presence of marking systems.

9. LEAD TIMES

The equipment will be installed on site and received before August 2025

10. QUALITY

The supplier shall apply a quality management system that is of the same level as ISO 9001 for all its activities.

Any significant and/or repeated failures to comply with the specifications shall be notified to the supplier (anomaly email or improvement sheet) in order to perform corrective actions within a stipulated timeframe. In the event of failures or should said corrective actions not be performed, penalty shall be applied to the service provider in reference to the contract.

CEA Grenoble reserves the rights to inspect the effective operation of the system at any time, via quality audits which may be performed at the service provider's premises and on the CEA Grenoble site.

Any measurements taken by the supplier for acceptance tests shall comply with the requirements of paragraph 7.6 of ISO 9001 (control of monitoring and measuring devices). Should the supplier subcontract these measurements, they shall be supplied with a certificate of conformity.

11. SAFETY AND CONFORMITY

As set forth in CEA's general purchasing conditions, the supplier undertakes to consider safety as an absolute priority in the design, preparation and performance of the services subject of the Contract.

The supplier shall read and apply the "Rules applicable to outside companies working at the Grenoble centre" (refer to chapter 4, "Applicable documents").

The supplier and its subcontractors (if any), irrespective of their rank, shall apply the legal and regulatory provisions pertaining to safety and environmental protection.

The equipment shall comply with the regulations in force.

The equipment shall be CE certified, feature a "CE marking" and shall be accompanied by a CE declaration of conformity (refer to chapter 12 "Documentation").

11.1 Risk analysis

The Supplier shall provide a risk analysis for the equipment and include all the associated items of safety equipment, their actions and servo-controls.

Said analysis shall highlight the specific risks related to the equipment and provide substantiation for the associated protection measures.

The supplier shall transmit this analysis to CEA right from the design phase (refer to chapter 12 "Documentation").

11.2 Risks related to facilities and machines

The equipment shall comply with the regulations in force, especially the "Machinery" Directive 2006/42/EC.

11.2.1 Power supply disconnection and separation device

A power supply disconnection and separation device shall be provided on the equipment, for each source of energy of the machine.

11.2.2 Power supply lockout / tagout device

A power supply lockout / tagout device with dissipation of the residual energy shall be provided on the equipment, for each source of energy of the machine.

11.2.3 Emergency stop



Emergency stop buttons shall feature protection against unintentional operation. See the example on the photo opposite.

11.3 Risks related to electricity

11.3.1 Generalities

The equipment shall comply with the regulations in force, in particular the following Directives:

- "Electrical Equipment" 2017/35/EU;
- "Electromagnetic compatibility" 2014/30/EU;
- "Restriction of the use of certain hazardous substances in electrical and electronic equipment" (2011/65/EU).

11.4 Risks related to noise

The equipment shall comply with the regulations in force, in particular the "Machinery" Directive 2006/42/EC.

11.5 Risks related to temperatures

The equipment shall comply with the regulations in force, in particular the "Machinery" Directive 2006/42/EC.

11.6 Signalling

Residual risks shall be indicated on the machine by means of regulatory hazard pictograms (triangles with yellow background), accompanied by additional text when applicable. In this case, this text shall be written in French.

11.7 Regulatory inspections

CEA shall have the necessary regulatory inspections carried out by an authorised organisation of its choice, in order to verify that the supplied equipment complies with the regulations.

The Supplier shall remedy any non-conformity in the shortest time possible without being able to claim any compensation. Depending on the severity of the detected anomalies, CEA may decide to suspend the commissioning operations until the problems have been solved (refer to Article 30 of chapter 11 of the General Purchasing Conditions).

11.7.1 Inspection of the work equipment

The equipment supplied shall comply with the regulations in force in France.

These regulations include European texts.

The various standards applicable to the machine shall be complied with.

The general rules specified by the "Machinery" Directive 2006/42/EC on the use of work equipment and protection measures shall be complied with.

CEA may have an inspection of the work equipment carried out at the place of manufacture by an inspection organisation it will have previously selected. The report issued further to this inspection at the place of manufacture shall be free of any non-conformity. In the event of any non-conformity which would not have been remedied, a second inspection shall be carried out after the equipment is installed on the site.

Refer to chapter 13. CEA shall have an inspection of the work equipment carried out on the place of installation. The report issued further to this inspection shall be free of any non-conformity. In the event of a non-conformity, a second inspection shall be carried out after the equipment is installed on the site.

11.7.2 Regulatory electrical inspection

Once the equipment is installed on the site and prior to commissioning, CEA shall have a regulatory electrical inspection carried out by an inspection body of its choosing.

12. EQUIPMENT DOCUMENTATION

The supplier undertakes to provide:

- The user's manual written in French; if this is not possible, only the "safety" section of the manual shall be written in French.
- The servicing and maintenance manual.
- The work equipment inspection.
- The regulatory electrical inspection.
- The CE declaration.
- The equipment safety analysis and in particular the supervisory system, the safety instructions and risk identification.
- The drawings.
- The as-built file (DOE).

13. ACCEPTANCE CONDITIONS

Acceptance is given once the equipment has been delivered in full, installation and commissioning operations have been completed, and tests have been satisfactorily carried out.

An acceptance report is drawn up by CEA and signed by both CEA and supplier representatives.

Acceptance criteria:

- Regulatory conformity of the equipment (cf. § 11)
- Contractual technical requirements:
 - Data with:

- $B=f(H)$ curve
- Saturation magnetization: J_{sat}/B_{sat}
- Remanent magnetization : B_r
- Coercivity: H_{cB}
- Magnetic losses by volume: P_{cv}
- Relative material permeability, μ_r
- Measurement on frequencies between 10 kHz and 5 MHz minimum
- Measurements possible on toroidal cores and also on EI or EE cores
- Voltage values (U) of at least 50 V can be applied to the wound component for frequencies < 1 MHz, and at least 10 V for frequencies between $1 < f < 5$ MHz.
- AC currents applied to the component must be capable of reaching 2.5 A.
- Supply of at least one of the three reference standards below:
 - Mn-Zn reference standard certified to $\pm 4\%$ (at 25°C) over the frequency range from 50 to 500 kHz and for inductions of 100 mT
 - Ni-Zn reference standard certified to $\pm 4\%$ (at 25°C) over the frequency range from 200 to 2 MHz and for inductions of 10 mT
 - Nanocrystalline reference standard certified to $\pm 4\%$ (at 25°C) over the frequency range
- Receipt of documents, user manuals

14. TRAINING

The supplier undertakes to provide the following training courses.

14.1 Training on the use of the equipment

The supplier undertakes to provide training in the use of the Equipment for at least three (3) persons. The supplier will indicate in its offer the number of days (or hours) of training required to use the equipment.

14.2 Training on first level maintenance

The supplier undertakes to provide first-level maintenance training for at least three (3) people. The supplier will indicate the number of training days required in its offer.

15. WARRANTY

Notwithstanding the legal warranty, the equipment shall be guaranteed 1 year as from acceptance against any material, manufacturing, installation and operating defect, in compliance with the technical requirements of the specifications.

Said warranty shall cover the parts (excluding consumables), workmanship, transportation and travel.

Throughout the warranty period, the supplier undertakes to carry out repair work at the latest within 72 hours following receipt of a fax or an email form CEA requesting a service call. These services shall be carried out every day from Monday to Friday, from 8 a.m. to 5 p.m.

In the event of equipment unavailability, the warranty period shall be extended by a period of time equal to the equipment downtime.

16. MAINTENANCE

At the end of the warranty, CEA shall be given the possibility to purchase a maintenance contract.

The supplier shall include in its price base, a cost estimate, of the maintenance services by taking into account the following levels of requirement:

- Full service (commitments on the availability time of the equipment including the preventive maintenance services, unlimited corrective maintenance and supply of spare parts). By default, the performance expected in the Full Service contract is that stipulated herein;
- Preventive maintenance (parts and manpower) + corrective maintenance on demand (hourly rate) including compliance with service and repair lead times.

Following adjustment of CEA's maintenance requirements, the maintenance contract may be put in place after the warranty period, further to negotiations.

17. ELEMENTS TO BE PROVIDED IN THE BID

- ☐ Comments from the Equipment Manufacturer on the Equipment Specifications (refer to § Annex 1).
- ☐ The description of required utilities. Completed characteristics of fluid requirements, power supply and all other necessary interfaces (refer to § Appendix 2).
- ☐ Maintenances costs
- ☐ The duration and description of the planned training
- ☐ Safety analysis of the equipment (refer to § 11.1)

Appendix 1. Equipment Specifications compliance - to be provided by the equipment manufacturer

Supplier name	
Offer reference	

C = **Compliant**
NC = **Non Compliant adaptations are necessary**
NA = **Non Applicable**

Spécification Topics	Compliant ?			Supplier Comments	Supplier Alternative proposal	Final decision
1.Purpose	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
6. Confidentiality	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
7.1 Expected Spécifications	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
7.3 IT equipment	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
8.1 Supply limits	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
8.2 Environnement facilities	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			

Spécification Topics	Compliant ?			Supplier Comments	Supplier Alternative proposal	Final decision
8.3 Delivery	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
8.4. Conditions for performing work on the CEA site	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
9-Lead Times	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
10 Quality	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11 1.Risk analysis	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.2.1- Power supply disconnection and separation device	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.2.2 Power supply lockout/tagout device	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.2.3- Emergency stop	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.2.4- "Service" nitrogen or compressed air connection	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			

Spécification Topics	Compliant ?			Supplier Comments	Supplier Alternative proposal	Final decision
11.3.1 Risks related to electricity - Generalities	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.3.2 Presence of an uninterruptible power supply (UPS)	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.4- Risk related to fire	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.5 Risks related to explosion	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.6 Risks related to chemicals	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.7 Risks related to handling	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.8 Risks related to pressure vessels	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.9 Risks related to work at height	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.10 Risks related to artificial optical radiation	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.11 Risks related to noise	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			

Spécification Topics	Compliant ?			Supplier Comments	Supplier Alternative proposal	Final decision
11.12 Risks related to temperatures	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.13 Signalling	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.14.1 Work equipment inspections	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
11.14.2 Regulatory electrical inspections	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
12. Environmental Clauses	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
13. Equipment documentation	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
14 Acceptance Conditions	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
15.1 Training on the use of the equipment	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
15.2 Training on first level maintenance	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
15.3 Training on advanced maintenance	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			

Spécification Topics	Compliant ?			Supplier Comments	Supplier Alternative proposal	Final decision
16 Warranty	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
17 Maintenance	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			
18 Elements to be provided in the BID	C <input type="checkbox"/>	NC <input type="checkbox"/>	NA <input type="checkbox"/>			

Validation summary of the points to be clarified			
	Name	Date	Signature
SUPPLIER			
CDPE			
Division Manager			

**Dispatch : Head of the Department- CDPE (Chef de Projet Equipement) - Service Achats
- Chef d'installation - Responsable plateforme**

Appendix 2. Specifications for installing equipment - to be provided by the equipment manufacturer

Features completed with fluid requirements, power supply and any other interfaces he deems necessary for a good estimate of the cost of installing the equipment.

- 1) This appendix will allow the CEA to produce the fluids PID and electrical PID.
- 2) These PIDs will then be sent for verification to the equipment supplier for approval.
- 3) The Hook Up and Fit Up will begin after the official validation of the PIDs by the supplier.



Annexe2_Datasheet
_for_Tool_Installatio

This file can be sent at a company.

The file content is put here as an illustration of the requested content.

Modèle de l'équipement :

Liste des Equipments & sous-equipments						
Nom	Location (Fab or sub-fab)	Type (Chiller, pump...)	Model	Dimensions (L x w x h) in mm	Weight (Kg)	Supplied by

Dimensionnement nécessaire des facilities pour le bon fonctionnement de l'équipement				Connection		Consumption (e) = "Consomation"				Pressure (bar) at the connection on the tool		Temp (° C)		Purity		
Fluid (a)	From	To	Description (b)	ID (c.)	Size (d)	Type	Min	Max	Average	Min	Max	Min	Max		Supplied by	Comments (ex: max length..) (f)

Comments

(a): Voir feuille "Fluids" pour quelques exemples

(b): Pour décrire le but et les caractéristiques de connexion

(c): Nom de la connexion identifiée sur l'équipement

(d): Taille de la connexion, l'unité doit être précisée

(e): Flows (débit entrant et sortant) et consommations qui doivent être converti comme décrit ci-dessous :

Exhaust : m3/h

ERP (PCW), EDI (DIW), VP, drain : l/min

Gaz : Slm (Standard liter per minute)

(f): Mettre les remarques et contraintes à connaître pour l'installation de l'équipement : par exemple longueur maximale, ...

Exigences Electriques									
From	To	Type (power, signal..)	Voltage	Phases	Breaker Amp = limite en ampères de sécurité	FLA (Full Load Amperage)	Average Amp	Supplied by	Installed by

Nuisances									
From	To	Type (power, signal..)	Voltage	Phases	Breaker Amp = limite en ampères de sécurité	FLA (Full Load Amperage)	Average Amp	Supplied by	Installed by

Nuisances		unity	level
Security description must be attached	Noise	dB	
	Vibrations		
	X rays		
	Magnetic		
	Dust		
	"Nano" particles		

Fluids	Descriptions
ACS / CDA	Air Comprimé Sec / Compressed Dry Air
N2S	Nitrogen Service
N2P	Nitrogen Process
Ar	Argon Process
He	Helium Process
Exhaust	Exhaust
Acid Drain	Acid Drain
HF Drain	HF Drain (if [HF] > 1%)
Solvent Drain	Solvent Drain
ERP / PCW	Eau de Refroidissement Process / Process Cooling Water
EDI / DIW	Eau Dé-Ionisée / Deionised Water
VP	Vide Process / Vacuum (P=-880mbar) (expect pump)
Process Gas	Example : H2, SiH4, CH4...
Process Fluid	Example : IPA, HF, H3PO4...