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Invitation to Tender

Technical Specification
for the Supply
of 15 Tons of Magic Powder

Abstract

This technical specification concerns the supply of 15 tons of magic powder. Deliveries are foreseen over 3 months from placement of the contract.

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1. INTRODUCTION

1.1 Introduction to CERN

CERN, the European Organization for Nuclear Research, is an intergovernmental organization with 21 Member States¹.

Its seat is in Geneva but its premises are located on both sides of the French-Swiss border (<http://cern.ch/fplinks/map.html>).

CERN's mission is to enable international collaboration in the field of high-energy particle physics research and to this end it designs, builds and operates particle accelerators and the associated experimental areas. At present more than 11 000 scientific users from research institutes all over the world are using CERN's installations for their experiments.

The accelerator complex at CERN is a succession of machines with increasingly higher energies. Each machine injects the beam into the next one, which takes over to bring the beam to an even higher energy, and so on. The flagship of this complex is the Large Hadron Collider (LHC) as presented below:

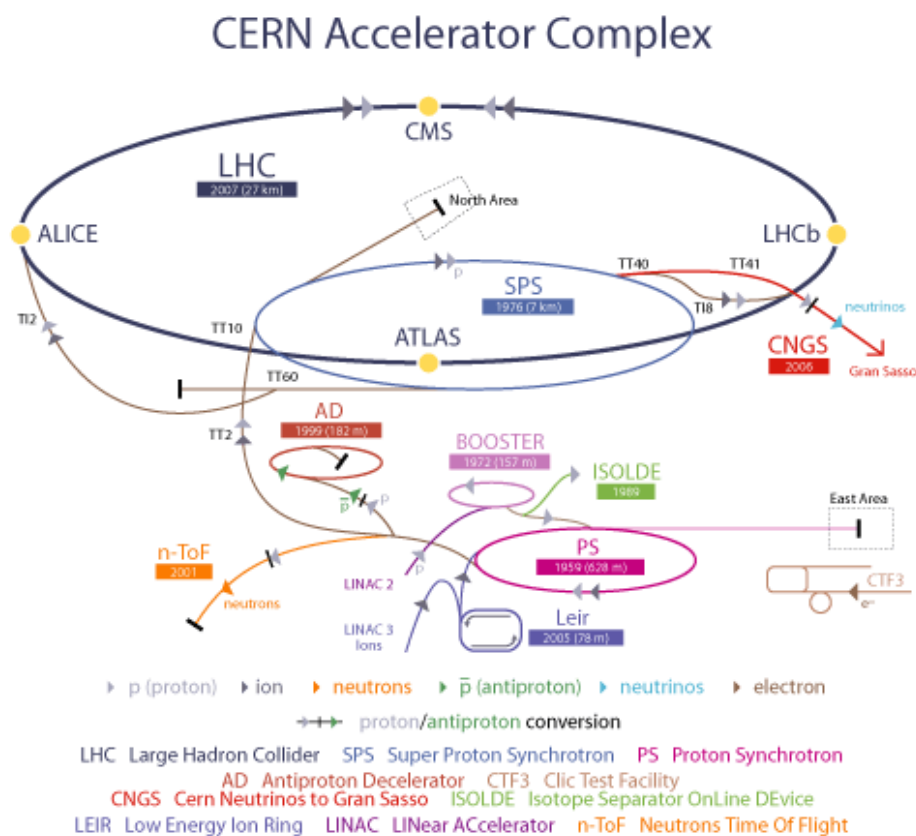


Figure 1: CERN Accelerator Complex

Further information is available on the CERN website: <http://cern.ch>

¹ The CERN Member States are currently Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Israel, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom. In addition: Serbia is Associate Member State in the pre-stage to Membership and Romania is Candidate for Accession.

1.2 Introduction to the LHC

The Large Hadron Collider (LHC) is the most recent accelerator constructed on the CERN site. The LHC machine accelerates and collides proton beams but also heavier ions up to lead. It is installed in a 27 km circumference tunnel, about 100 m underground. The LHC design is based on superconducting twin-aperture cryo-magnets which operate in a superfluid helium bath at 1.9 K.

1.3 Introduction to the Magic Powder Initiative

In order to improve the reliability and availability of some critical components of the LHC and by the way to speed up the reach of 1 ab^{-1} (one attobarn inverse), CERN Management decided to supply 15 tons of magic powder.

2. SPECIFICATION OF THE SUPPLY

The successful bidder (hereinafter referred to as the “contractor”) shall deliver the 15 tons of magic powder (hereinafter referred to, in whole or in part, as the “supply”) as defined in this technical specification. The supply shall originate from CERN Member States.

2.1 Deliverables Included in the Supply

The supply shall include:

- 15 tons of magic powder complying to the technical requirements described in section 3;
- Packing and shipping DDU so that it is not altered during transport;
- Documentation.

2.1.1 Activities at the Contractor’s Premises

The contractor shall execute the following activities at his premises:

- Series’ production of the 15 tons of magic powder;
- Demonstration of efficiency on a test bench at the contractor’s premises;
- Quality controls;
- Packing and shipping.

The series’ production shall be preceded by the pre-series’ production of 50 kg of magic powder. Production of the series shall not start before CERN has given its formal approval of the pre-series in writing.

2.1.2 Activities on the CERN Site

The contractor shall execute the following activities on the CERN site:

- Unpacking;
- Acceptance tests.

2.2 Items and Services Supplied by CERN

CERN will supply the following items and services:

- Dedicated test bench;
- Operation of the test bench.

3. TECHNICAL REQUIREMENTS

3.1 General Description

The supply shall include and be compliant with the following parameters and conditions:

Fineness (thru 75 µm)	97.5%
Moisture	max. 5%
PH	6.8 – 7.5

Impurities	max. 1%
Apparent density	0.8 kg/dm ³
Operating temperature	21°C ± 5°C

3.2 Design Criteria

The supply shall comply with the following design prescriptions, i.e. all professional and/or CERN standards/codes, namely:

3.2.1 European Directives

- Construction Products Directive 89/106/EEC,
- Regulation (EU) 305/2011 on harmonized conditions for the marketing of construction products and repealing Directive 89/106/EEC,
- Workplace Health and Safety Directive 89/391/EEC,
- Pressure Equipment Directive 97/23/EC.

3.2.2 Others

- CERN SSIs and GSIs ;
- Swiss Federal Ordinance entitled “Ordonnance sur la réduction des risques liés à l'utilisation de substances, de préparations et d'objets particulièrement dangereux (Ordonnance sur la réduction des risques liés aux produits chimiques – ORRChim)”;
- Swiss “Code de l'environnement – Partie réglementaire – Livre V – Titre IV : Déchets”.

The contractor may propose other recognized standards subject to prior written approval by CERN. In such cases, the contractor shall submit to CERN all the necessary documentation (in English or French) for CERN approval. CERN reserves the right to veto the use of certain codes or norms if it is considered that their application will not fulfil this technical specification or performance criteria.

3.3 Materials

The supply shall be made of magic powder that shall increase the MTBF by a factor 50.

3.4 Dimensions and Tolerances

Since the powder will be spread using an existing special gun owned by CERN, the powder fineness shall not be more than 75 µm. Nevertheless, CERN accepts up to 2.5 % particles larger than 75 µm, but in all cases, the powder fineness shall be no more 125 µm.

3.5 Operational Conditions

The supply shall operate efficiently while spread on equipment at 21°C.

4. PERFORMANCE OF THE CONTRACT

4.1 Delivery Schedule

Once the contractor is notified of the award of the contract, he shall deliver the supply according to the following delivery schedule:

Documents sent by the contractor for CERN's written approval	15 March 2015
Demonstration of efficiency at the contractor's premises and acceptance by CERN of the pre-series	5 April 2015
Delivery of the first batch of 7.5 tons of magic power to CERN	20 April 2015
Acceptance by CERN of the first batch of 7.5 tons of magic power before shipment	30 April 2015
Delivery of the second batch of 7.5 tons of magic power to CERN	20 May 2015
Acceptance by CERN of the second batch of 7.5 tons of magic power before shipment	30 May 2015

CERN and its representatives shall have free access during normal working hours to the manufacturing or assembly sites, including any subcontractor's premises, during the contract period. The place of manufacture may only be changed after written approval by CERN.

4.2 Contract Follow-Up and Progress Monitoring

The contractor shall assign a technical responsible for the execution of the contract and its follow-up throughout the duration of the contract.

4.3 Documentation Handling, Quality Control and Quality Assurance

The contractor shall plan, establish, implement and adhere to a documented quality assurance program that fulfils all the requirements described in this technical specification.

The contractor shall submit all text documents produced in electronic format in Microsoft Word® and/or PDF format.

4.4 Tests

4.4.1 Tests to Be Carried out at the Contractor's Premises

CERN reserves the right to be present, or to be represented by an organization of its choice, to witness any tests carried out at the contractor's or his subcontractors' premises. The contractor shall give at least 10 working days' notice of the proposed date of any such tests.

List of tests:

- Demonstration of efficiency on a test bench
- Quality Controls.

4.4.2 Tests to Be Carried out at CERN by the Contractor

List of tests:

- Acceptance tests.

To organize these tests, the contractor shall take into account and implement the rules and provisions defined in document ref. PSO/2011-001 entitled *Working on the CERN Site*.

4.5 Packing and Shipping

The contractor is responsible for the packing and, where included, the transport to CERN. He shall ensure that the equipment is delivered to CERN without damage and any possible deterioration in performance due to transport conditions.

4.6 Warranty

The warranty shall be as defined in the tender form.

5. CERN CONTACT PERSONS

Persons to be contacted for technical matters:

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