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Tender

Supply and Installation of a Hydrogen Reactor for Processing of Magnetic Scrap (HPMS) Vessel, to the University of Birmingham

UNIVERSITY OF BIRMINGHAM

F02: Contract notice

Notice identifier: 2021/S 000-012707

Procurement identifier (OCID): ocds-h6vhtk-02b914

Published 7 June 2021, 4:19pm

The closing date and time has been changed to:

21 July 2021, 12:00pm

See the [change notice](#).

Section I: Contracting authority

I.1) Name and addresses

UNIVERSITY OF BIRMINGHAM

Chancellors Court, Edgbaston

BIRMINGHAM

B152TT

Contact

Susanna Ting

Email

S.Y.Ting@bham.ac.uk

Country

United Kingdom

NUTS code

UKG - West Midlands (England)

Internet address(es)

Main address

<https://www.birmingham.ac.uk/index.aspx>

I.3) Communication

The procurement documents are available for unrestricted and full direct access, free of charge, at

<https://in-tendhost.co.uk/universityofbirmingham.aspx/Home>

Additional information can be obtained from the above-mentioned address

Tenders or requests to participate must be submitted electronically via

<https://in-tendhost.co.uk/universityofbirmingham.aspx/Home>

Tenders or requests to participate must be submitted to the above-mentioned address

I.4) Type of the contracting authority

Body governed by public law

I.5) Main activity

Education

Section II: Object

II.1) Scope of the procurement

II.1.1) Title

Supply and Installation of a Hydrogen Reactor for Processing of Magnetic Scrap (HPMS) Vessel, to the University of Birmingham

Reference number

SC9230/21

II.1.2) Main CPV code

- 44615000 - Pressure vessels

II.1.3) Type of contract

Supplies

II.1.4) Short description

This project is funded by the UK Research and Innovation (UKRI) Industrial Strategy Challenge Fund; Driving the Electric Revolution under grant agreement 1524086

The University of Birmingham invites tenders for supply of a bespoke, hydrogen processing of magnet scrap (HPMS) vessel. The HPMS vessel will be the largest magnet recycling plant of its kind in the UK and will focus on processing of end of life magnets containing magnetic scrap.

The HPMS vessel is based on a patented technology, developed at the University of Birmingham, in which hydrogen is used to extract neodymium-iron-boron (Nd-Fe-B) magnet powder from end of life permanent magnet containing products. During the

HPMS process, sintered Nd-Fe-B magnets, which are embedded in end of life products, are loaded inside a vessel, which is then sealed, evacuated, back filled with an inert gas (e.g. Argon or Nitrogen), evacuated and then filled with between 1-4 bar of hydrogen at room temperature for between 1-4 hours. Once exposed to hydrogen, the sintered Nd-Fe-B undergoes the hydrogen decrepitation (HD) process and breaks down into a friable, demagnetised, hydrogenated powder.

Often the end of life products containing the Nd-Fe-B material are encased within some sort of housing so the hydrogenated powder needs to be liberated from the scrap using mechanical agitation through a porous sieve stage. This is typically performed by rotating the scrap within a porous drum (3-5 mm pore size) within the HPMS vessel, after which the powder falls into a sealable collection pot at the bottom of the vessel, which can then be unloaded under an argon or nitrogen atmosphere ($O_2 =$

It would be an advantage if the HPMS vessel could be inertly loaded with scrap in this application through a hopper system or that flanges were in place to retro-fit this.

The extracted alloy powder will be converted into recycled NdFeB magnets using further processes, which do not form part of this tender.

The HPMS process has already been demonstrated at the 5 kg scale using a 300 L vessel at the University of Birmingham. The main objective of the new HPMS vessel will be to scale this technology up to 200-300 kg batch sizes.

Note, due to the space requirements of the system, the large scale HPMS vessel will be installed at the Tyseley Energy Park (TEP).

II.1.5) Estimated total value

Value excluding VAT: £610,000

II.1.6) Information about lots

This contract is divided into lots: No

II.2) Description

II.2.2) Additional CPV code(s)

- 24111000 - Hydrogen, argon, rare gases, nitrogen and oxygen
- 31630000 - Magnets

II.2.3) Place of performance

NUTS codes

- UKG - West Midlands (England)

II.2.4) Description of the procurement

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Page | 3

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II.2.5) Award criteria

Price is not the only award criterion and all criteria are stated only in the procurement documents

II.2.6) Estimated value

Value excluding VAT: £610,000

II.2.7) Duration of the contract, framework agreement or dynamic purchasing system

Duration in months

7

This contract is subject to renewal

No

II.2.10) Information about variants

Variants will be accepted: No

II.2.11) Information about options

Options: No

Section IV. Procedure

IV.1) Description

IV.1.1) Type of procedure

Open procedure

IV.1.8) Information about the Government Procurement Agreement (GPA)

The procurement is covered by the Government Procurement Agreement: Yes

IV.2) Administrative information

IV.2.2) Time limit for receipt of tenders or requests to participate

Originally published as:

Date

7 July 2021

Local time

12:00pm

Changed to:

Date

21 July 2021

Local time

12:00pm

See the [change notice](#).

IV.2.4) Languages in which tenders or requests to participate may be submitted

English

IV.2.7) Conditions for opening of tenders

Date

7 July 2021

Local time

1:00pm

Section VI. Complementary information

VI.1) Information about recurrence

This is a recurrent procurement: No

VI.4) Procedures for review

VI.4.1) Review body

University of Birmingham

Birmingham

Country

United Kingdom