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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](mailto: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

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**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

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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<sub>2</sub> =

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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#### **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

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**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

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**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

