NEOdymium-Iron-Boron base materials, fabrication techniques and recycling solutions to Highly REDuce the consumption of Rare Earths in Permanent Magnets for Wind Energy Application

Fact Sheet

Project Information

NEOHIRE

Grant agreement ID: 720838

Funded under H2020-EU.2.1.3.

Project website

Overall budget € 4 532 638,75

Status Closed project

EU contribution € 4 443 888,75

Start date 1 February 2017

End date 31 January 2020

Coordinated by ASOCIACION CENTRO TECNOLOGICO CEIT

Spain

Objective

Regarding NdFeB PM technology for WT, it is still necessary to break through 3 important barriers: Strong dependence on China for supply and high price of REE present in PM, high difficulty of substitution of REE in PM, and technical and economic barriers that avoid establishing commercially viable, large-scale REE recycling framework.

In this context, NEOHIRE main objective is to reduce the use of REE, and Co and Ga, in WTG. This objective is mainly achieved through the development of: a) New concept of bonded NdFeB magnets able to substitute the present state-of-the-art commercial bonded PMs for WT, and b) High recycling rate of the CRM family.
sintered magnets for WT, and b) New recycling techniques for these CRM from the future and current PM wastes. In this way, the EU external demand of REE and CRM for PM in WTG will be reduced in a 50%.

The specific objectives are: i) To develop a new NdFeB material solution that reduces the use REE and CRM amount in PM for WTG (100% of HRE, 30% of LRE Nd/Pr, and 100% of CRM Co and Ga), ii) To increase the deliverable electric power in wind power electric generators from current 2.74 MW to 3.56 MW per 1Tn of REE owing to novel electric machine designs, iii) To research and develop two recycling processes to highly increase the CRM recycling rates in NdFeB PM wastes for sintered PM from current WT (increase from 0 to 70% the recovered Nd, separate 100% of Dy and recover 90% of Co) and novel Bonded NEOHIRE PM (recycling almost 95% of Nd), iv) To achieve an economic and technically feasible large-scale framework for NdFeB PM commercial recycling, and v) To ensure the economic and technical sustainability of NdFeB resin-bonded PM developed technologies.

NEOHIRE will count on PM material RTD experts (CEIT, UOB), material recycling experts (UOB, KU LEUVEN), material characterisation RTD experts (CEIT, UPV, LBF), JP Powder manufacturer (AICHI), PM manufacturer (KOLEKTOR), LCA experts (UNIFI) and WT manufacturer (INDAR). AICHI (Japan) will be involved by providing advice and raw materials to the project.

Field of science

/engineering and technology/environmental engineering/energy and fuels/electric energy
/engineering and technology/environmental engineering/waste management/recycling
/engineering and technology/environmental engineering/energy and fuels/renewable energy/windpower
/social sciences/other social sciences/social sciences interdisciplinary/sustainable development

Programme(s)

Call for proposal

H2020-NMBP-2016-two-stage

Funding Scheme

RIA - Research and Innovation action

Coordinator

ASOCIACION CENTRO TECNOLOGICO CEIT
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<td>Research Organisations</td>
<td>€ 719,725</td>
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<td>20018 San Sebastian</td>
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Contact the organisation [link]

Participants (9)

**UNIVERSIDAD DEL PAIS VASCO/ EUSKAL HERRIKO UNIBERTSITATEA**

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<td>Higher or Secondary</td>
<td>€ 251,250</td>
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<td>48940 Leioa</td>
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**THE UNIVERSITY OF BIRMINGHAM**

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<td>Higher or Secondary</td>
<td>€ 804,568,75</td>
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**FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.**

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<td>Hansastrasse 27C 80686 Munchen</td>
<td>Research Organisations</td>
<td>€ 502,345</td>
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Contact the organisation [link]
FUNDACION CIDAUT
Spain
EU contribution
€ 248 000
Address
Plaza Vicente Aleixandre Campos 2 Pq Tecnologico De Boecillo 209 47151 Valladolid
Activity type
Research Organisations
Website
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KATHOLIEKE UNIVERSITEIT LEUVEN
Belgium
EU contribution
€ 698 000
Address
Oude Markt 13 3000 Leuven
Activity type
Higher or Secondary Education Establishments
Website
Contact the organisation

AICHI SEIKO KABUSHIKI KAISHA
Japan
EU contribution
€ 0
Address
Wanowari 1 Branchi Arao Cho Tokai Shi 476 8666 Aichi
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Contact the organisation

KOLEKTOR MAGNET TECHNOLOGY GMBH
Germany
EU contribution
€ 792 500
Address
Harkortstrasse 60 45145 Essen
Activity type
Private for-profit entities (excluding Higher or Secondary Education Establishments)
Website
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<tr>
<td>UNIVERSITA DEGLI STUDI DI FIRENZE</td>
<td>Italy</td>
<td>€ 259 750</td>
<td>Piazza San Marco 4, 50121 Florence</td>
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<tr>
<td>INDAR ELECTRIC SL</td>
<td>Spain</td>
<td>€ 167 750</td>
<td>Poligono Txara, 20200 Beasain</td>
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