



Press release - 5 February 2016

European consortium launches Blue Nodules project

On 1 February a European consortium launched a new Horizon 2020 project: Blue Nodules. This project addresses the challenge of creating a viable and sustainable value chain to retrieve polymetallic nodules from the ocean floor. It will develop and test new highly-automated and sustainable technologies for deep-sea mining with minimal environmental pressures.

The technical side of the project is dedicated to subsea harvesting equipment in addition to the in-situ seafloor and sea surface processing of polymetallic nodules. The operational aspect focuses on sea operations and logistics, including compliance with, and development of, rules and regulations, and the business case. The independent, dedicated environmental part will focus on environmental pressures and on an Environmental Impact Assessment. In all areas, Blue Nodules will build on the results of the European FP7 projects, MIDAS and Blue Mining and the EcoMining pilot action funded by the JPI Oceans initiative of the European science foundations.

Rodney Norman, Director at IHC Mining, which is coordinating the project, explains that Blue Nodules is significant because it allows the European consortium to expand technological development beyond the vertical transportation system of Blue Mining to the seafloor mining vehicle and other components of the system.

Kick off

On 9 and 10 February, the coordinator of the project, IHC Mining, part of Royal IHC in The Netherlands, will host the Blue Nodules kick-off meeting at its premises in Kinderdijk. The partners are excited to launch the project and start working together to achieve its objectives. Furthermore, stakeholder expectations are taken into account by way of a stakeholder group and an advisory board. An independent ethics advisor will safeguard the ethics standards of the project.

About Blue Nodules

Blue Nodules is a four-year EU-funded project that launches in February 2016 and is part of Horizon 2020's Research and Innovation action. The project aims to develop 'Breakthrough Solutions for the Sustainable Harvesting and Processing of Deep Sea Polymetallic Nodules' and is granted for the call SC5-11c-2015 'Deep mining on continent and/or in sea-bed'.

Website: www.blue-nodules.eu

The consortium consists of 14 leading industry and research partners from nine European countries:

Royal IHC – IHC Mining B.V.	The Netherlands
Dredging International	Belgium
Continental AG	United Kingdom & Hungary
IHC MTI	The Netherlands
De Regt Marine Cables	The Netherlands
Uniresearch	The Netherlands
Seascope Consultants Ltd.	United Kingdom
GSR	Belgium
Bureau Veritas	France
NIOZ	The Netherlands
RWTH Aachen	Germany
NTNU	Norway
Aarhus University	Denmark
UPC	Spain

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Note for the editors, not for publication:

For more information please contact the Project Coordinator:

Mr Rodney Norman
Director IHC Mining
IHC Mining B.V.
T + 31 88 015 41 41
M + 31 6 10 18 37 9
r.norman@ihcmerwede.com

Members of the Blue Nodules consortium and their unique technologies include:

Royal IHC – IHC Mining B.V. - Coordinator

The Netherlands

IHC Mining, Royal IHC's specialised mining division, provides integrated solutions for the onshore, marine and deep-sea mining markets. It offers advisory services, in-depth studies and engineering to determine the overall technical and economic viability of the project. IHC designs, builds and supplies innovative mining vessels and advanced mining equipment ranging from dredgers and crawlers, slurry transport systems and mineral separation plants to plant automation and control systems. During operation, IHC Mining provides life cycle support, resulting in optimal use of equipment at minimum costs.

www.royalihc.com/mining

Dredging International

Belgium

The Belgian dredging, environmental and marine engineering group DEME is an international market leader for complex marine engineering works. Driven by several worldwide challenges (rising sea level - scarcity of raw materials - increasing energy demand - reduction of CO₂ emissions - contamination of our waterways and soils), DEME has transformed from solely a dredging and land reclamation company to a worldwide operating multidisciplinary and innovative marine engineering and environmental group.

Building on 170 years of experience and know-how, DEME has organically moved into several related sectors, such as the financing of marine engineering and environmental projects, executing EPC related complex marine engineering projects including civil engineering works, the development and construction of renewable energy projects, providing services for the oil, gas and energy sector, the decontaminating and recycling of polluted soils and sludge, the mining of marine resources (granulates and minerals), etc.

Thanks to an integrated company structure, DEME strongly emerges as a 'global solutions provider' which offers its clients overall solutions. DEME has the most modern, high-tech and versatile fleet. DEME was named 'Belgian Enterprise of the Year 2015' and has 4,600 employees worldwide. In 2014, the Group achieved a turnover of 2.6 billion euros.

www.deme-group.com

Continental AG

United Kingdom & Hungary

Continental AG, with Headquarters in Hanover, Germany, is a global development supplier of advanced automotive components and technical rubber products. ContiTech Oil & Gas is a recognised market leader with over 50 years of experience in the development, manufacture and supply of flexible fluid transfer systems with a particular focus on the offshore oil & gas, marine and dredging industries. ContiTech Rubber Industrial Kft, based in Szeged, Hungary, is part of the Oil & Gas Division and the lead competency centre for high-pressure drilling hoses, seawater suction hoses, dredge and seabed mining hoses. Their technical expertise covers materials development, with particular focus on rubber compounds, fabrics and metal components, design of fluid transfer systems with the aid of the latest CAD programs, FEA software including their own modelling and simulation systems developed in-house to enable hydrodynamic, fatigue analysis etc., extensive in-house testing facilities, and market-leading production facilities.

www.contitech-oilmarine.com

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IHC MTI

The Netherlands

IHC's dredging and mining knowledge center, is the worldwide leading center of expertise in the area of translating knowledge of dredging, mining and deep-sea mining processes into the specification, design and application of equipment. IHC MTI assists IHC Mining in expanding its' portfolio. This incorporates the application of this knowledge to develop engineering tools and consultancy services.

Using its extensive knowledge built up within the dredging industry, MTI Holland has a proven long term track record in development of theory required for the proper functioning of centrifugal pump and vertical transport pumping system required in dredge mining and deep sea mining industries.

www.mtiholland.com

De Regt Marine Cables

The Netherlands

De Regt Marine Cables is a prominent name in the design and manufacture of Custom-engineered, specialty, dynamic or static cable solutions used in subsea applications. The company boasts over 90 years of technological innovation and strength around cable design. These have been applied in many areas; include the Oil & Energy sector, Defence, Seismic Exploration and Scientific projects.

The company's engineering design departments include all the disciplines required for the specification and design of cable systems for subsea and surface applications. De Regt Marine Cables has a strong team of engineers, capable of working on conceptual design studies as well as working on a project level, translating concepts to products.

<http://www.deregtcables.com>

Uniresearch

The Netherlands

Uniresearch B.V. is a SME which is specialised in supplying project management and consultancy services in the field of national and European research projects and innovation activities. Uniresearch is and has been involved in many research projects.

Uniresearch is involved in Blue Mining (FP7) and within H2020 Uniresearch participates in several other projects. In the BLUE NODULES project, Uniresearch has been assigned the task of project management facilitator and lead the Dissemination, Exploitation and Communication part. Uniresearch will be the main partner to establish all necessary tools for communication and management.

www.uniresearch.com

Seascope Consultants Ltd.

United Kingdom

Seascope Consultants provides solutions and high-level advice to the rapidly developing offshore sector including industry, policymakers and regulatory bodies. Expertise includes strategic environmental assessment, stakeholder consultation and engagement, ocean governance and regulatory control. Seascope Consultants manages the Secretariat of the Global Ocean Biodiversity Initiative (GOBI; www.gobi.org) and provides the Secretariat for the European Marine Observation and Data Network (EMODnet; www.emodnet.eu). SSC is the Coordinator for the FP7-funded MIDAS project, which is focused on the management of impacts arising from the exploitation of deep-sea mineral and energy resources.

In Blue Nodules, Seascope Consultants will coordinate the Environmental Impact Management part and will contribute to environmentally-focused tasks, providing expertise on environmental impact and the application of scientific results to the development of legislation and governance measures.

www.seascopeconsultants.co.uk

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GSR

Belgium

Global Sea Mineral Resources (GSR) is one of the subsidiary companies of the Belgian dredging and environmental marine engineering group DEME. On 14th of January 2013, the International Seabed Authority and GSR signed a 15-year contract for prospecting and exploration for polymetallic nodules. Under the contract, GSR will have exclusive rights for exploration for polymetallic nodules over 76,728 square kilometres of the seabed in the eastern part of the Clarion Clipperton Zone (CCZ) of the Central Pacific Ocean.

www.demegroup.com/expertises/deepsea-nodule

Bureau Veritas

France

Bureau Veritas is a world leader in laboratory testing, inspection and certification services. BV has more than 64,000 employees in around 1,330 offices and laboratories located in 140 countries. Bureau Veritas helps its clients to improve their performance by offering services and innovative solutions in order to ensure that their assets, products, infrastructure and processes meet standards and regulations in terms of quality, health and safety, environmental protection and social responsibility. The Marine & Offshore Division of Bureau Veritas provides ship and offshore units classification, ship and marine equipment certification, technical assistance and outsourcing services. Within Blue Nodules Bureau Veritas will carry out an analysis listing of all Rules and regulations applicable to the project.

www.bureauveritas.com

NIOZ

The Netherlands

NIOZ Royal Netherlands Institute for Sea Research, with laboratories on the isle of Texel and in Yerseke, is the national oceanographic institute and principally performs academically excellent multidisciplinary fundamental and frontier-applied marine research, addressing important scientific and societal questions pertinent to the functioning of estuarine and delta areas, coastal seas and open oceans. The institute employs around 300 staff. NIOZ serves as national marine research facilitator (NMF) for the Dutch scientific community. The institute operates the ocean-going RV Pelagia as well as smaller vessels for coastal research, and manages laboratories and a large pool of marine research equipment, often designed and built by the institute's own technical department.

Website: www.nioz.nl

RWTH Aachen

Germany

RWTH Aachen University is since many years one of the top ranked technical University of Excellence in Germany. Two institutes of the University will be involved in the BLUE NODULES project. The AMR (Unit of Mineral Processing) which is active in research on mineral processing of poly metallic nodules in close cooperation with companies and official authorities. The other institute (The Institute for Mining and Metallurgical Machinery (IMR) offers fundamental research, as well as industry oriented research and practice oriented services.

www.rwth-aachen.de

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NTNU

Norway

NTNU is Norway's leading technical university. The Department of Geology and Mineral Resources Engineering (IGB) is part of the Faculty of Engineering Science and Technology at NTNU and involved in the BLUE NODULES project. IGB offers education and research within geology and ore geology, mineral production (including mining engineering and mineral processing) and engineering geology. The research group is concerned with education and research activities, consultation and laboratory services within process and product development. The mineral processing laboratory is suitable for various projects both in type and scale. From mineral separation processes like flotation, magnetic separation, gravity separation and electrostatic separation, to projects concerned with crushing and grinding, screening and classification etc.

www.ntnu.edu

Aarhus University

Denmark

Aarhus University is an academically diverse research-oriented institution and a top ten university among universities. It has a long tradition of partnerships with some of the world's best research institutions and university networks. The activities of the Department of Bioscience cover both fundamental and applied research in very diverse fields of biology and oceanography. The department has excellent research facilities and laboratories, including a new interdisciplinary Arctic Research Centre (ARC). The department is an integrated part of the National Center of Environment and Energy acting as a major advisor for the national government and other agencies. AU's major activities in the Blue Nodules project will focus on tasks related to the implementation and application of coupled hydrodynamic and sediment modelling. Further, AU will collaborate with other project partners to facilitate dedicated impact scenarios and impact assessments (sediment plume and tailings dispersal, knock-on hydrographic and far field effects).

www.au.dk

UPC

Spain

The Universitat Politècnica de Catalunya [BarcelonaTech (UPC)] is a public institution which offers broad higher education in a wide range of technical, artistic and humanistic fields. The Laboratory of Applied Bioacoustics (LAB) of the UPC holds expertise in: Signal Modelling & Analysis; 3D Numerical simulations; Acoustic Propagation Model & Acoustic Target Model; Biosonar and Communication Mechanisms; Control of Marine Noise Pollution; Measurement and monitoring of anthropogenic sound sources; Development of passive techniques to explore the ocean Assessment of noise pollution effects on marine organisms; Automatic identification and classification of biological and anthropogenic sound sources; Tracking of marine mammals with passive techniques and Ambient Noise Imaging; Ethical and Legal Aspects of Marine Mammal Research; Cross-disciplinary approach to help creating policies towards underwater anthropogenic noise control.

Within Blue Nodules LAB will focus on the soundsThe challenge here is to implement technological developments that combine the interests of the industry and the good environmental status of the ocean.

www.lab.upc.edu

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