

Flemish expertise centres join forces with industry to push green hydrogen production forward

LEUVEN, May 28, 2021 — Flemish research centres imec and VITO (both partners in EnergyVille), together with industrial pioneers Bekaert, Colruyt Group, DEME and John Cockerill announced today that they are joining forces to invest in the production of green hydrogen. Under the flag of Hyve, the consortium aims at a cost-efficient and sustainable production of hydrogen at gigawatt level. Hyve will put the Flemish region in the driver seat for the deployment of a hydrogen economy and the transition towards a carbon neutral industry in Europe.

The EU's commitment to reaching climate neutrality by 2050, as part of Europe's Green Deal, will only be reached when we drastically transform our energy system. Within the Green Deal, hydrogen technology is considered essential in the energy transition towards a carbon neutral society. Especially in the chemical industry, the steel and cement industry, and in heavy duty transport, green hydrogen is considered key in decarbonisation. Today, the chemical industry depends on grey hydrogen, produced by steam reforming. Unfortunately, this process involves the emission of large quantities of CO₂. Green hydrogen, on the other hand, is produced through the electrolysis of water using renewable energy. To make green hydrogen competitive, the price of green electricity should further decrease, electrolyzers should be made more cost-efficient and the economy of scale should do its trick lowering the production costs.

The Hyve consortium brings together players across the value chain to achieve this ambitious goal, merging expertise in developing new components for electrolysis, with material suppliers, integration companies that will integrate the new components into their electrolyzers, and companies that will use this innovative infrastructure to generate green hydrogen.

Flemish research centres **imec** and **VITO** (both partners in **EnergyVille**) will leverage their knowledge to boost the efficiency of the electrolysis-technology. Imec's expertise in solid state electrolytes, electrode surfaces, and process technology at nanoscale is combined with VITO's expertise in membranes, catalysis, and system integration. **Bekaert**, supplier of Metallic Porous Transport Layers for electrolysis, will supply the appropriate materials. **John Cockerill**, world leader in the production of alkaline electrolyzers, will integrate the results into its production. **DEME**, worldwide leader in dredging and offshore energy services, aims at using the novel electrolyzers to convert wind and solar energy into green hydrogen and derived green products ('e-fuels'). Through the 'Hyport®'-concept, DEME aims to import cheap green hydrogen products into Europe, complementary to local European production. Retailer **Colruyt Group** will support research applications for sustainable transport. Colruyt Group is already running a hydrogen filling station, testing hydrogen-powered forklifts as well as the first heavy-duty trucks, collaborating on a green hydrogen plant in Zeebrugge through the energy holding company Virya Energy and is exploring e-fuels via Dats24.

“Colruyt Group has been producing its own green hydrogen for about ten years. Three years ago we opened the very first fully integrated public hydrogen filling station in Europe. In the coming months, four more public hydrogen filling stations will be equipped. Recently, our group put the first 44-ton hydrogen-powered electric heavy-duty truck in Europe on the roads. We clearly believe in hydrogen

technology as a promising zero-emission solution for transport and logistics and are committed to invest in innovative hydrogen applications. We are convinced that with our partners in a strategic cooperation for the development of a new promising hydrogen electrolysis component, we can take important steps towards a more sustainable mobility and energy supply”, says **Jef Colruyt**, CEO at Colruyt Group.

“In line with its vision to provide solutions for a sustainable future, DEME is proud to participate in Hyve, a project in which partners along the value chain jointly develop a novel green hydrogen technology. This initiative complements and reinforces DEME’s ongoing efforts towards solving global challenges, like reduction of CO₂ emissions, and is fully aligned with its strategic objectives.,” says **Luc Vandembulcke**, CEO at DEME Group.

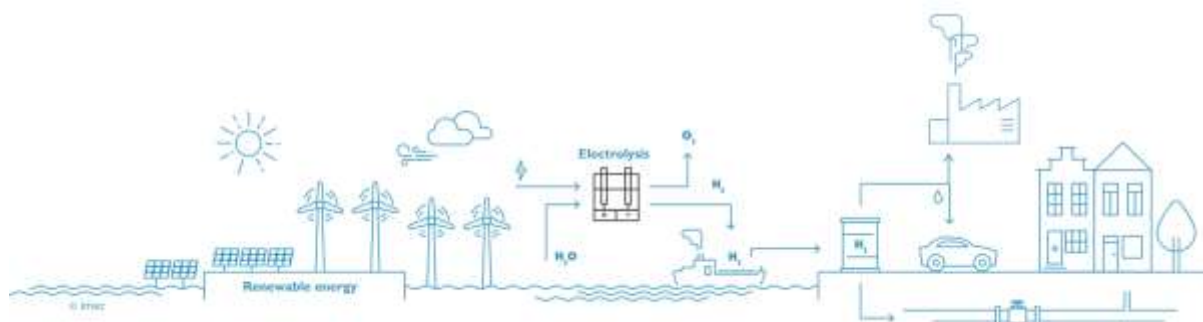
“Bekaert has a commitment to create green and sustainable solutions. Therefore, we look forward to work closely with the consortium partners and develop the building blocks for this electrolysis technology of the future, fully consistent with our ‘better together’ aspiration. We are committed to delivering long-term value to all our stakeholders and as such, create sustainable business partnerships. Like the one of this consortium”, says **Oswald Schmid**, CEO at Bekaert.

“John Cockerill is very pleased to partner with renowned research centres and major Belgian industrial players on this innovative project. Thanks to our position as world leader in the manufacture of high-capacity electrolyzers and our expertise in the field of hydrogen, we can put our know-how at the service of improving performance to make this project an innovative and iconic success in decarbonizing industry”, says **Jean-Luc Maurange**, CEO of the John Cockeril Group.

“Sustainable development is in VITO’s DNA. We focus on a systems approach, paying attention to the whole techno-economic value chain. That is the best way to approach the complex problems of the energy transition. We do this together with our EnergyVille partners and with the necessary focus on industrial applicability. Hyve is a striking example of such collaboration and constitutes an important step for the research on green hydrogen in Flanders,” says **Dirk Fransaer**, managing director at VITO.

“As a world-renowned research centre in nanoelectronics and digital technology, we believe that technology is key in realizing a sustainable society and we are committed to leverage our expertise to enable this. Our ‘power-to-molecules’ program, investigating how CO₂ can be converted into valuable molecules for industry, points the way towards a carbon-neutral society”, says **Luc Van den hove**, CEO at imec. “Within Hyve, imec and VITO combine their knowledge and transfer it to an ambitious, large-scale innovation project to make Flanders a frontrunner in green hydrogen.”

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About imec

Imec is a world-leading **research and innovation center** in nanoelectronics and digital technologies. Imec leverages its **state-of-the-art R&D infrastructure** and its team of more than **4,500 employees and top researchers**, for R&D in advanced semiconductor and system scaling, silicon photonics, artificial intelligence, beyond 5G communications and sensing technologies, and in application domains such as health and life sciences, mobility, industry 4.0, agrofood, smart cities, sustainable energy, education, ... Imec unites world-industry leaders across the semiconductor value chain, Flanders-based and international tech, pharma, medical and ICT companies, start-ups, and academia and knowledge centers. Imec is headquartered in Leuven (Belgium), and has research sites across Belgium, in the Netherlands, Taiwan and the USA, and offices in China, India and Japan. In 2020, imec's revenue (P&L) totaled 680 million euro.

Further information on imec can be found at www.imec-int.com.

Imec is a registered trademark for the activities of imec International (IMEC International, a legal entity set up under Belgian law as a “stichting van openbaar nut”), imec Belgium (IMEC vzw supported by the Flemish Government), imec the Netherlands (Stichting IMEC Nederland), imec Taiwan (IMEC Taiwan Co.), imec China (IMEC Microelectronics (Shanghai) Co. Ltd.), imec India (IMEC India Private Limited), imec San Francisco (IMEC Inc.) and imec Florida (IMEC USA Nanoelectronics Design Center Inc.)

About VITO

VITO is a leading international research and service centre. It provides knowledge and technological innovations that facilitate the transition to a more sustainable society. We do this in the field of energy, chemistry, materials, health technology and land use. We unite different parties in a sustainable value chain. By cooperation, expansion and development of expertise we can make smarter use of existing sustainable solutions and develop new technologies.

Technology should be feasible and cost-effective. This calls for partnerships between research centres, commercial parties and the authorities, who together create impact in the sustainability transition. VITO is the driving force by providing practical knowledge, innovative processes and business models.

VITO makes this connection between research, government and market, between knowledge, policy and business in order to create impactful changes.

VITO. Vision on Technology for a Better World.

Sustainable. Entrepreneurial. Inspiring. Creative.

Further information on VITO can be found at <https://vito.be/nl>

About DEME Group

DEME is a world leader in dredging, solutions for the offshore energy market, environmental works and maritime civil works. The company can build on more than 140 years of know-how and experience and stands out for its pioneering approach and innovative new technologies.

DEME's ambition is to work towards a sustainable future by offering solutions to global challenges: rising sea levels, growth of the world population, reduction of CO₂ emissions, polluted rivers, seas and soil, and scarcity of raw materials.

Although DEME has its roots in Belgium, the company has developed a strong presence on all seas and continents. DEME can rely on 5,200 highly trained professionals throughout the world. With a versatile and modern fleet of more than 100 ships, supported by a large in-house equipment fleet, the company can offer solutions for even the most complex projects.

About Colruyt Group

Colruyt Group is active in the distribution of food and non-food products in Belgium, France and Luxembourg, with over 600 own shops and approximately 580 affiliated shops. In Belgium, these are Colruyt, OKay, Bio-Planet, Cru, Dreamland, Dreambaby, Bike Republic and the affiliated shops Spar and Spar Compact. In France, in addition to Colruyt shops, there are affiliated shops of Coccinelle, Coccimarket and Panier Sympa. The Group is the majority shareholder in the chain that includes ZEB, ZEB For Stars, The Fashion Store and PointCarré. Solucious supplies food service and retail products to professional customers in Belgium (hospitals, SMEs, the hospitality industry, etc.). Other activities include fuel distribution in Belgium (DATS 24), printing and document management solutions (Symeta Hybrid) and green energy production (Eoly). The group employs more than

30,000 people and achieved sales of EUR 9.5 billion in 2019/20. Colruyt is listed on Euronext Brussels (COLR) under ISIN no. BE0974256852.

About the John Cockerill group

John Cockerill is a global player in the energy transition. With more than 200 years of experience in energy and industry, he is now developing innovative technological solutions that contribute to the decarbonisation of human activities, whether it is a question of developing new production capacities of 'electricity from renewable energies, to store green electricity or to optimize the energy efficiency of existing power plants and industrial equipment. It adapts its technologies and expertise to the specific needs of its energy and industrial customers. Thanks to its electrolyzers, with the largest capacities in the world (from 5 to 1000 Nm³ / h), it meets the growing hydrogen needs of the mobility, industry and energy markets. Today, John Cockerill is positioned as the world leader in hydrogen with 70MW sold in 2020, or 20% market share and already 1000 references in the sale of electrolyzers worldwide.

John Cockerill is thus making his technological contribution to the fight against climate change. In 2020, it achieved a turnover of 1.01 billion euros in 19 countries on 5 continents.

About EnergyVille

EnergyVille is a collaboration between the Belgian research partners KU Leuven, VITO, imec and UHasselt for research into sustainable energy and intelligent energy systems. EnergyVille develops the technologies and knowledge to support public and private stakeholders in their transition to an energy-efficient, decarbonised and sustainable urban environment. The unique complementarity of the research partners allows us to integrate the entire value chain of the energy system in our research. This extends from materials and components to the level of entire energy systems, business models and strategies. Our activities are grouped into six interdisciplinary areas: photovoltaics, electrical and thermal storage, power electronics and conversion, buildings and districts, strategies and markets.

With around 400 researchers and state-of-the-art research facilities, EnergyVille is a top European innovation hub in the energy field. It brings together research, development and training under one name, in close cooperation with local, regional and international partners from both industry and public authorities.

As an R&D innovation hub, located in the industry-oriented ecosystem of Thor Park (Genk), EnergyVille offers an attractive environment for energy research, industrial product development and business creation. The cooperation is supported by the city of Genk, the province of Limburg, LRM, Nuhma, POM Limburg and the European structural funds.