

New global initiative aiming to transform net zero hydrogen production



Cranfield University has announced it is leading the UK's collaboration on an international partnership, the Global Hydrogen Production Technologies Center (HyPT), to make low-cost, large-scale, net zero hydrogen production a reality.

The HyPT is a £14.1 million (\$17.45 million) five-year project which seeks to accelerate net zero hydrogen technologies to make it available at low cost, approximately one dollar per kilogram of hydrogen.

Besides Cranfield University, this global project is led by U.S. Arizona State University, Australia's University of Adelaide and Canada's University of Toronto.

According to Cranfield University, UK Research and Innovation (UKRI) has allocated £6.2 million (\$7.67 million) in funding to UK partners, with Cranfield University receiving £1.8 million (\$2.22 million). Other UK partners include Imperial College London, Newcastle University, the University of Cambridge and the University of Birmingham.

Researchers at Cranfield are expected to analyze the social and environmental system changes needed to build a global hydrogen economy, addressing how to make it affordable and looking at the impact production has on local communities and ecosystems.

Researchers will also look into developing pathways for energy-intensive and hard-to-abate industries such as ammonia, steel, cement, aluminium and transportation, to adopt it as a source of energy, Cranfield University said.

The University emphasized that large-scale hydrogen production with net zero emissions of greenhouse gases is essential to meet the Paris Agreement's climate targets and limit global warming to 2°C.

Nazmiye Ozkan, Professor in Sustainable Energy Transitions, Head of the Center for Energy Systems and Strategy at Cranfield University and the UK lead for the project, commented: *"HyPT is a transformative international collaboration dedicated to driving the development of a sustainable hydrogen ecosystem. Our mission is to unlock the potential of net zero hydrogen production, making it an accessible and affordable energy source."*

"What's crucial is that this initiative will not only advance cutting-edge hydrogen technologies but also address the economic and policy dimensions that are essential to developing a global hydrogen economy."

To note, according to Cranfield, HyPT seeks to develop three major net zero hydrogen production technologies:

- Water electrolysis, where electricity is used to split water into oxygen and hydrogen.
- Methane pyrolysis, where natural gas is heated to a high temperature and splits into hydrogen and solid carbon.
- Photocatalytic solar water splitting, where sunlight is used help water break apart into oxygen and hydrogen.

Arizona State University will lead the water electrolysis work, the University of Adelaide will lead the photocatalysis theme and the University of Toronto will lead the methane pyrolysis studies. The HyPT aims to develop breakthroughs in these technologies while assessing their impacts on local communities and ecosystems so that the net zero hydrogen economy develops in an ethical manner, Cranfield University stated.

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