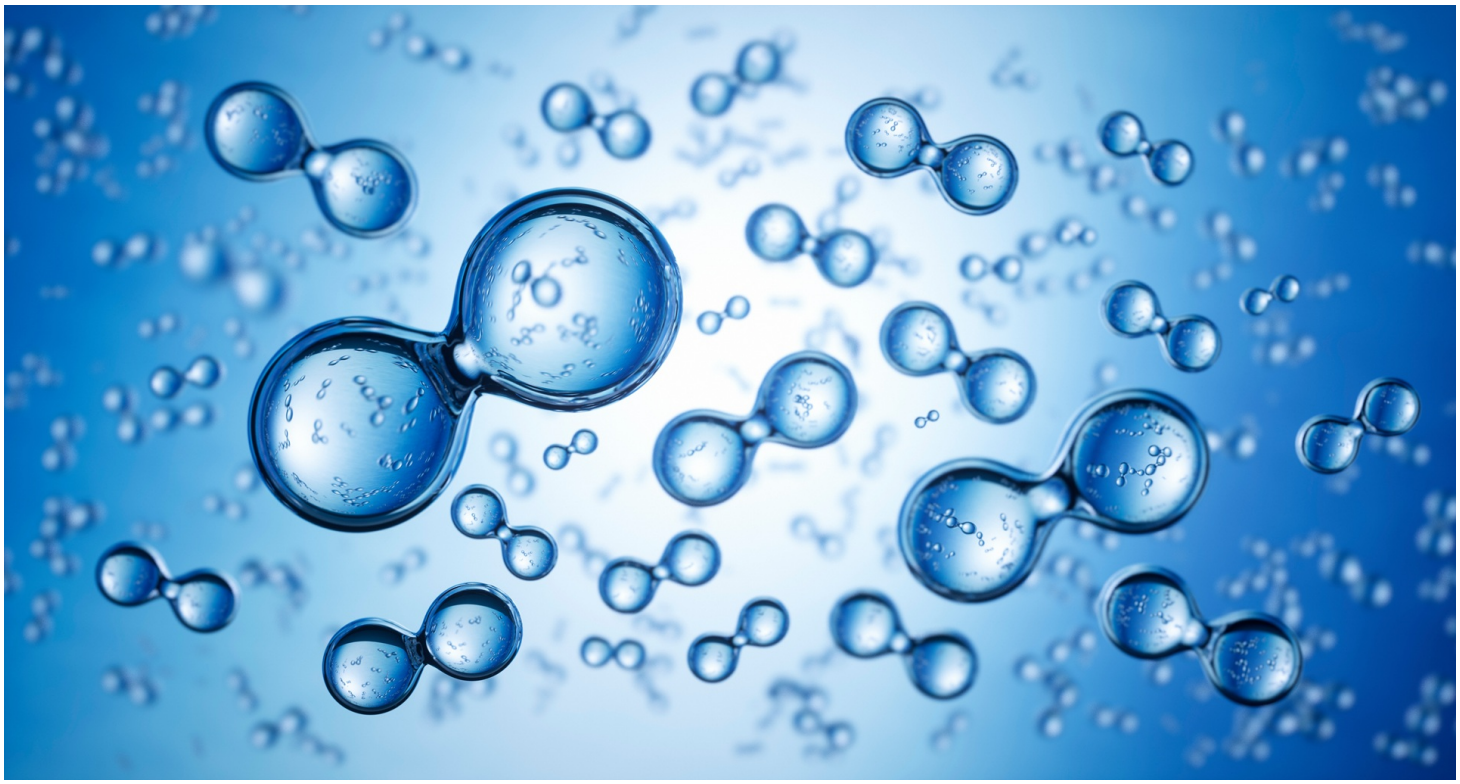

Written on 02 February 2026

3 minutes of reading

News

Innovation and Industry

Renewable energies

Hydrogen

Natural hydrogen is a promising energy resource that requires a significant geological exploration phase. Resource assessment depends on the ability to perform rapid analyses of rock samples potential to generate hydrogen. To meet this challenge, IFPEN and Vinci

Technologies have pooled their expertise within the framework of the JIP (Joint Industry Project), aimed at validating the final steps in the development of a new reliable and rapid analysis tool: HYDROGEN-EVAL.

Three companies have joined this industrial consortium: **Petrobras** (the Brazilian oil company that is also interested in new energies), **CVA** (a geoscience services and consulting company), and **Hyreveal** (a start-up offering services dedicated to the exploration of natural hydrogen).

Towards rapid, simplified analyses

HYDROGEN-EVAL is a **new, powerful and fast prospecting and analysis tool** for measuring **the kinetics of natural hydrogen generation** from rock samples. This new quantitative tool is based on Rock-Eval® technology, developed over the past 30 years by IFPEN and Vinci Technologies to rapidly quantify **the organic matter potential of rock samples** by combining **pyrolysis, oxidation, and real-time analysis of the gases released**.

Equipped with a specific hydrogen detector and an innovative water injection system, HYDROGEN-EVAL will enable **the quantification of the kinetics and maximum amount of hydrogen** that a rock can produce in two contexts: **iron-rich rocks** and **organic matter-rich rocks**.

This instrument will be able to perform the analysis steps usually carried out manually in the laboratory in minimal time and at a lower cost.

Currently, a long and complex analytical chain

HYDROGEN-EVAL will thus make it considerably **easier to assess and quantify hydrogen potential**. Currently, in order to define **the hydrogen potential of source rocks and the associated formation kinetics**, it is necessary to have quantitative tools, which are available in laboratories today but require costly and time-consuming tests.

The current operational chain begins with an **analysis of the target sample** using various tools (X-ray diffraction, scanning electron microscopy, tomography, etc.) to evaluate a variety of characteristics, including porosity, permeability, and mineralogical composition.

The rocks are then crushed to increase the exchange surface area and **placed in hermetically-sealed capsules in contact with water** to study their kinetic evolution. The composition of the gas produced is measured continuously over a period of weeks or months. The hydrogen production kinetics and the yield of the rock can thus be quantified.

A a consortium that remains open

The three-year JIP launched by IFPEN and Vinci Technologies will enable the methods and instruments used in HYDROGEN-EVAL to be developed for different hydrogen generation sources:

- Organic matter-rich rocks, type I, II, or III (*Work Package 1*)
- Iron-rich minerals (*Work Package 2*)
- Iron-rich rocks and mineral formations (*Work Package 3*)

The results obtained by HYDROGEN-EVAL will be validated using conventional laboratory tests (*Work*

Package 4).

The JIP was launched with three sponsors, but it is possible to join this consortium at no additional cost during the first year of the JIP (until the end of 2026). At the end of this JIP, sponsors will benefit from a database of hydrogen kinetics and yields for a wide variety of rocks, and a 15% discount on the cost of the HYDROGEN-EVAL system for sponsors signing up at the regular price.

Interested companies can contact: nicolas.ferrando@ifpen.fr - j.ammouial@vinci-technologies.com

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