idw - Informationsdienst Wissenschaft
Nachrichten, Termine, Experten

Press release

Technische Universität Bergakademie Freiberg
Philomena Konstantinidis

06/18/2024
http://idw-online.de/en/news835443

Transfer of Science or Research
Energy, Geosciences
transregional, national

Producing blue hydrogen - two new patents at TU Freiberg

Two new patents from experts in reservoir technology and fluid mining at TU Bergakademie Freiberg describe a technology for producing hydrogen from resources that can no longer be extracted: When a deposit of crude oil or natural gas is deemed to be depleted, more than 30 per cent of the hydrocarbons originally present still remain underground. Hydrogen is produced from these.

"Today, hydrogen is produced industrially from crude oil, natural gas or coal above ground using a process known as steam reforming. However, the process that has now been patented will make it possible to use this technology directly in an extracted reservoir in the future. This opens up huge and climate-friendly potential for the production of blue hydrogen, which will conserve further fossil reserves," explains Professor Moh'd Amro from the Institute of Drilling Technology and Fluid Mining at TU Bergakademie Freiberg.

He adds that the aim of the investigations is to clarify the technical feasibility as a first step: "As more knowledge is gained about this new technology, it will then be possible to optimise economic parameters." At present, the price is estimated at more than 5 euros per kilogramme of hydrogen, which is even higher than the price of conventionally produced hydrogen.

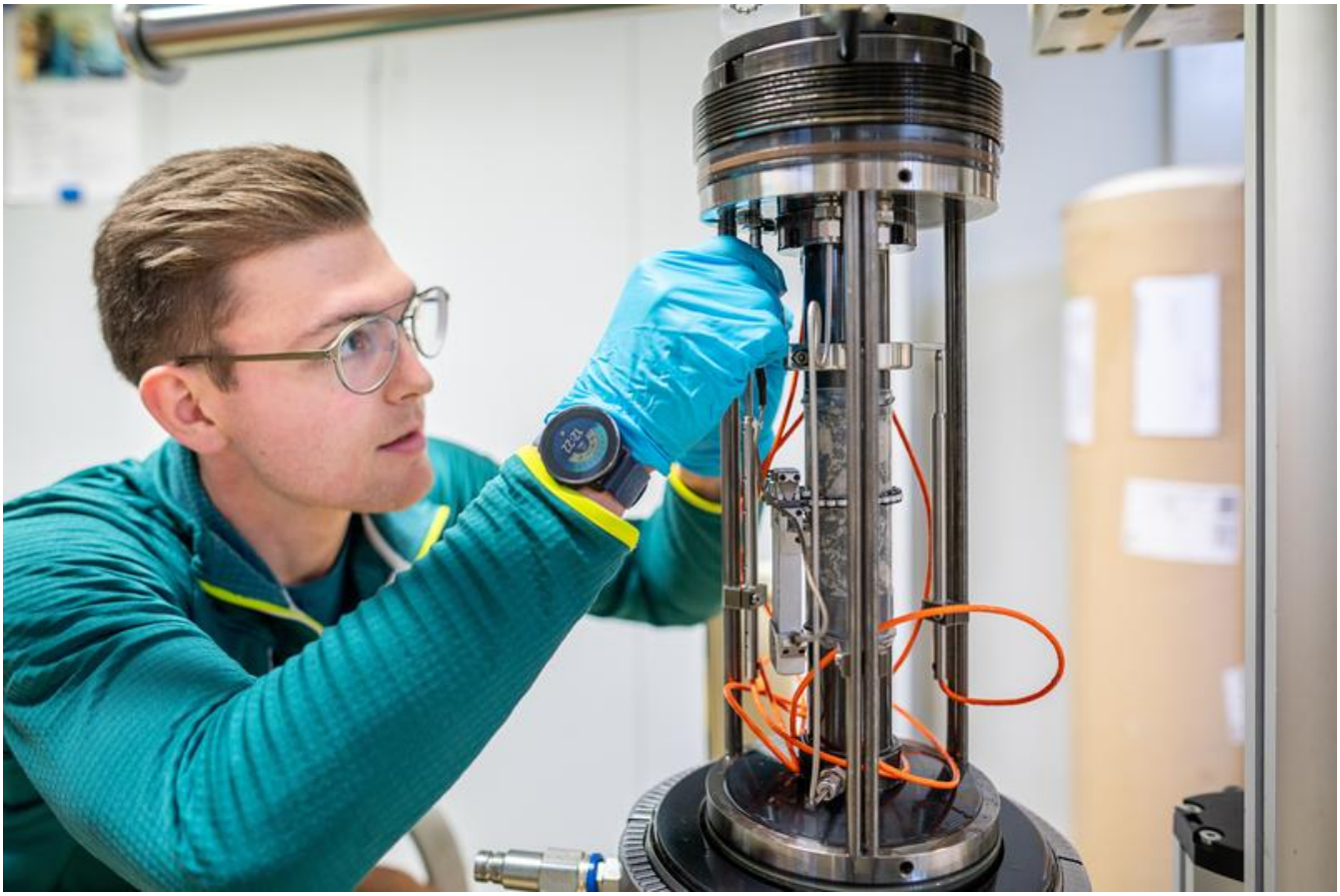
More environmentally friendly than previous blue hydrogen

"This enables the continued use of a storage facility that would otherwise have to be sealed and stored and makes the hydrogen produced in it accessible as an energy source for many future applications, such as for mobility or energy-intensive industries." In contrast to the conventional production of hydrogen, resources are utilised that are otherwise inaccessible.

In addition to hydrogen, the process also produces CO₂. If this is stored underground, it is not released into the atmosphere and is therefore also climate-neutral. The hydrogen produced in this way is known as blue hydrogen.

To develop the technology, the team led by Professor Moh'd Amro used advanced simulations of the behaviour of the hydrogen production method underground. The team also investigated how hydrogen can be produced above ground from the intermediate products water and carbon monoxide. Both solutions have now been registered as patents in Germany (DE 10 2022 203 221 B3 & DE 10 2022 203 277) and are further advancing research into post-utilisation technologies for depleted oil reservoirs.

contact for scientific information:
Prof. Dr.-Ing. Mohd Amro
+49 3731 39-2542
Mohd.Amro@tbt.tu-freiberg.de



To develop the technology, the team led by Professor Moh'd Amro used advanced simulations of the behaviour of the hydrogen production method underground.
Crispin Mokry
TU Bergakademie Freiberg / C. Mokry