Office of Innovation and Industrial Relations (OIIR)

LICENSING & PARTNERING OPPORTUNITY

جامعة حمد بن خليفة
HAMAD BIN KHALIFA UNIVERSITY
عضو في مؤسسة قطر
Member of Qatar Foundation

Improving Dry Reforming of Methane for Higher Quality Syngas Production

ADDRESSING CURRENT DRM CHALLENGES

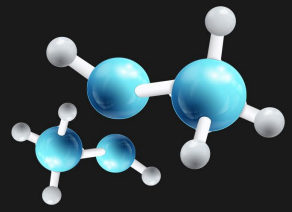
As industries worldwide look to address carbon dioxide (CO2) emissions, dry reforming of methane (DRM) has emerged as a solution that can mitigate greenhouse gases while also producing a valuable product: synthesis gas (syngas).
However, the syngas produced by many DRM methods is low quality with a low H2/CO ratio, and the methods also suffer from severe catalyst deactivation. Both drawbacks have obstructed the widespread commercialization of DRM.

A CO2 SOLUTION

HBKU has established a new method of producing high H2/CO ratio syngas while reducing overall CO2 emissions and operating costs compared with conventional syngas production methods. The method combines DRM with a commercially available COSORB process. Rather than using expensive steam and oxygen as main oxidants, the process uses CO2 itself as the oxidant. CO2 is also used to regenerate catalysts.
In addition, a highly stable and affordable copper-nickel alloyed catalyst can be used to address catalytic deactivation while also improving the H2/CO ratio.

APPLICATIONS

- Syngas production for gas-to-liquid (GTL) industries Extremely light and strong composites for aerospace and defense industries
- Petrochemicals/cleaner fuels
- Catalyst regeneration
- Green solvents and reagents



VALUE PROPOSITIONS

Effective: Combines processes to cut CO2 emissions in syngas production by over 65%.

High-Quality: Produces syngas with a high H2/CO ratio, enhancing its downstream industrial potential.

Economical: Cuts syngas production costs by at least 20%.

Reliable: Uses affordable non-noble metal catalysts, sustaining over 10 hours of DRM activity without deactivation.

Desirable byproducts: Can use CO2 to produce high-selectivity, high-yield Dimethyl Carbonate (DMC) and Ethylene Glycol as a byproduct.

Less toxic: Provides a low-pressure, cost-effective, and less toxic method for producing DMC.

PATENT STATUS

Patent US20210009411A1 Granted

LICENSING OPPORTUNITIES

Hamad Bin Khalifa University is offering this technology for license.
For more information, please contact: innovation@hbku.edu.qa