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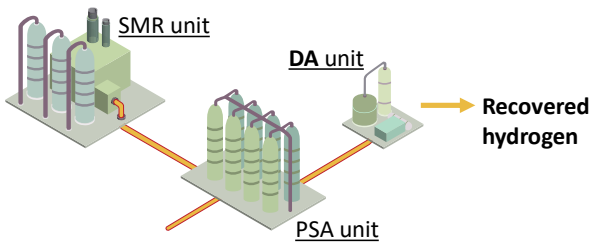
DA

Zero-carbon technology for hydrogen recovery

Around 70 million metric tonnes of hydrogen are produced globally and used across different industries: fertilizer, refining, petrochemicals, and glass manufacturing. Not many of us are aware that only 80-85% of produced hydrogen are consumed on-purpose, while the rest is lost in numerous diluted streams. Moreover, the H_2 present in the natural gas, so-called "native hydrogen", has been never exploited up to now. There is a need for a technology to extract hydrogen from lean sources with low cost. **DA** has developed an economical process for hydrogen separation from lean sources, which would enable complete hydrogen recovery.

How does it work?

DA units are fully electrified and could be powered by renewable electricity. The units could be easily integrated with existing infrastructure to valorise accompanying hydrogen from streams, e.g. effluent of pressure swing adsorption (PSA) units, effluent of water gas shift (WGS) reactors, effluent of hydrotreatment units and natural gas containing native hydrogen.



DA units isolate hydrogen as a separate stream with purities of up to 99.99% with low energy consumption. The solution is easily adapted and scaled for different applications.

Economics

As a case study, analysis of existing ethane cracking unit equipped with a PSA system has been performed. In existing setup non-recoverable hydrogen is lost as a part of fuel gas. **DA** units enable recovery of the residual amounts of hydrogen and bring additional income through amelioration of existing process.

Estimation for existing ethane cracker*	
Total ethane capacity, t/y	1 000 000
Hydrogen losses in fuel gas, t/y	8 000
Benefits of **DA**[1] unit	
IRR[2]	**37%**
Payback years	**1.3**

* Market location: Northern Europe

[1] Price estimation for power 0.04 €/kWh; "Blue" hydrogen price assumed to be 1.5 €/kg

[2] IRR – investment on 2 years with 10 years of operation

More details

If you are interested in DA technology or would like to get more details on our solutions, you could reach us at info@dadada.ee or drop us a call +372 712 42 44