

Media Release

Clariant Catalysts powers Ineratec's green fuel production technology

- **Partnership to develop emerging technologies for production of renewable fuels and chemicals**
- **Ineratec's gas-to-liquids process occurs entirely in transportable containers allowing highly efficient "green fuel" synthesis**
- **Process employs Clariant's advanced catalysts for conditioning and upgrading syngas**

Munich, July 9, 2020 – Clariant has joined forces with Ineratec in the challenge for a greener future. The companies have entered a partnership to develop and commercialize novel technologies for the production of renewable fuels and chemicals. Clariant will provide its extensive catalysis expertise and broad portfolio of syngas conditioning and upgrading catalysts to support Ineratec's groundbreaking gas-to-liquid technology.

Stefan Heuser, Senior Vice President & General Manager at Clariant Catalysts, commented on the partnership, stating, "We are honored to support Ineratec in their pioneering work in sustainable fuel production. Their state-of-the-art, container-sized gas-to-liquid technology has great potential for the decentralized fuel market, and we are excited to contribute with our tailor-made syngas catalyst innovations." Tim Boeltken, Co-founder & Managing Director of Ineratec, added, "We are very proud to announce Clariant among our catalyst partners, and would like to thank them for joining us in creating a more sustainable future."

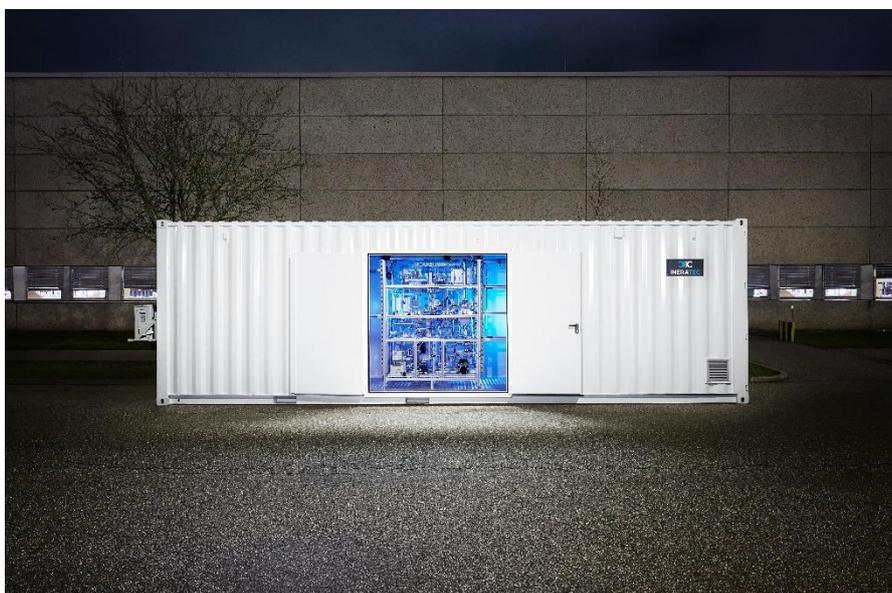
Ineratec, a spin-off of the Karlsruhe Institute of Technology (KIT), is specialized in modular chemical reactor technologies for producing sustainable fuels and chemicals. The striking feature of this company's solution is that the entire chemical process is realized in transportable container units. Their gas-to-liquids process combines hydrogen generated from renewable power, with greenhouse gases (such as CO₂), to form CO₂-neutral synthetic hydrocarbons and fuels.

The technology relies on Clariant's catalysts to convert CO₂ to valuable chemicals, fuels, and additives:

- Clariant's HyProGen® R-70 produces renewable syngas via reverse water-gas-shift – an essential step in the conversion of "green hydrogen" and CO₂ to "green fuels".
- Clariant's signature methanol catalyst, MegaMax®, generates renewable methanol, which can be used as fuel additive, solvent, or as raw material for "green chemicals" such as "green polypropylene".

- For the production of renewable synthetic natural gas (SNG), the catalyst METH® 134 supports the efficient hydrogenation of CO₂ to methane.

The microstructured core of the modular Ineratec reactors provides a large surface for heat and mass transport. Highly exothermic reactions, such as methanol synthesis or CO₂ hydrogenation, can be operated efficiently and safely in compact container-sized plants. This enables outstanding reactor productivity, with high conversion per reactor pass. Due to this innovative chemical reactor technology for renewable energy, Ineratec was awarded the German Entrepreneur Award 2018.



Ineratec's compact reactor technology allows the entire synthesis process to occur in compact modular plants.
(Photographs: Ineratec)

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Clariant is a focused, sustainable and innovative specialty chemical company based in Muttenz, near Basel/Switzerland. On 31 December 2019, the company employed a total workforce of 17 223. In the financial year 2019, Clariant recorded sales of CHF 4.399 billion for its continuing businesses. The company reports in three business areas: Care Chemicals, Catalysis and Natural Resources. Clariant's corporate strategy is based on five pillars: focus on innovation and R&D, add value with sustainability, reposition portfolio, intensify growth, and increase profitability.

www.clariant.com/catalysts

Clariant's Catalysts business unit is a leading global developer and producer of catalysts for industrial processes. It has been part of the Catalysis business area of the Clariant Group since the acquisition of Süd-Chemie in 2011. Clariant Catalysts is headquartered in Munich, Germany, and has a total of 16 production sites (incl Joint Ventures), 7 sales offices, and 11 R&D and technical centers around the world. Approximately 2 061 employees serve customers across all regional markets. Aimed at delivering sustainable value to customers, Clariant's catalysts and adsorbents are designed to increase production throughput, lower energy consumption, and reduce hazardous emissions from industrial processes. The broad portfolio also includes products that enable the use of alternative feedstock for chemical and fuel production.