

VESTA methanation technology

Catalytic methanation technology for green natural gas production provides an efficient, robust and proven system that can be adapted to any source of syngas, including the CO₂-rich gases typical for biogas upgrading and power-to-gas applications based on green hydrogen utilizing CO₂ feedstock from industry or direct air capture.



Biomass gasification

Synthesizing renewable natural gas via gasification of various bio and waste feedstocks. A route to monetization via low carbon fuel standards



Biogas upgrading

Producing both renewable hydrogen and methane products from biogas



Power to gas

CO₂-rich gas conversion to green natural gas by using renewable hydrogen and a subsequent drying section – facilitating a monetization route for clean hydrogen and direct air capture tax credits.

Fueling the low-carbon economy,

VESTA delivers alternative fuels to reduce the carbon impact in the natural gas value chain providing clean energy for heating, power and transportation

A unique, once-through methanation technology

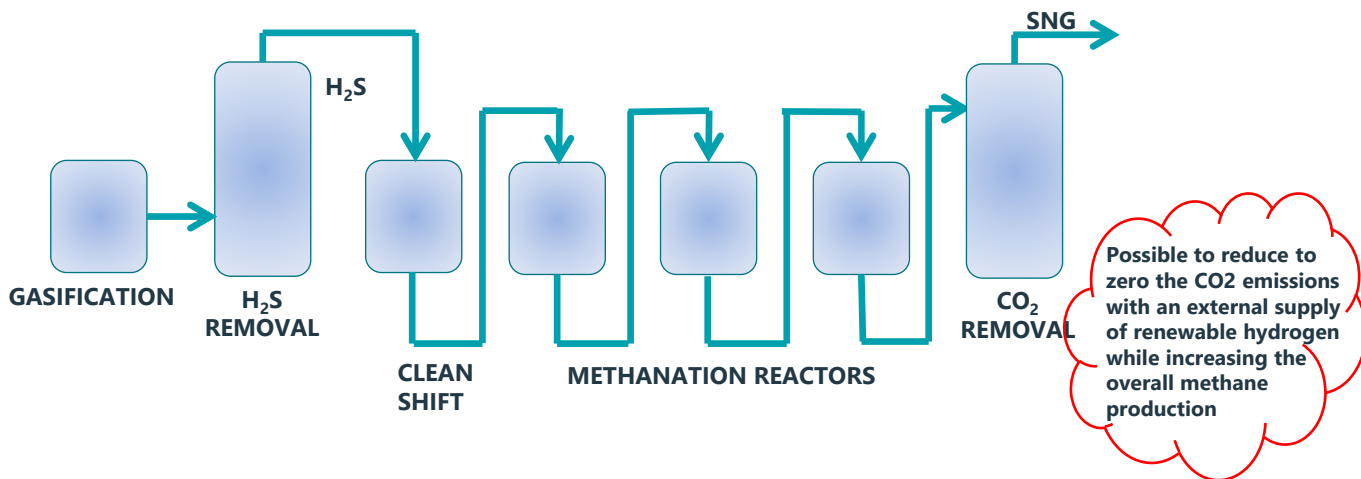
The advantage of VESTA over the other methanation methods is its full flexibility to balance both capital and operative expenditures, and the adaptation of any source of syngas, -from coal, biomass or waste gasification, biogas upgrading and power-to-gas applications.

In conventional SNG processes, the risk of runaway in the methanation reaction is very high. VESTA avoids that risk with the presence of carbon dioxide (CO₂) and water, which act as temperature dampers.

In contrast to other available technologies, VESTA uses a once-through process with CO₂ removal performed downstream of the methanation reactors rather than before the methanation section. This strategy eliminates the need for product recycle compressors and the associated power consumption and installation costs.

Catalyst partner

The high-performance catalyst for the methanation reactors is provided by our partner Clariant. Clariant's high-stability, non-precious metal catalyst is ideal for the increased operating range of 230-700°C contributing to a superior outcome.



Key benefits

- **Simplicity:** Unlike other technologies, VESTA has no recycle gas compressor, reducing the CAPEX, OPEX and power consumption
- **Innovative:** Utilization of low-alloy steel for all the reactors – no refractory required
- **Economic:** Design based on fixed-bed reactors allowing lower CAPEX and OPEX at a range of scales
- **Adaptability:** Flexible feed able to process a wide range of syngas compositions
- **Flexibility:** Suitable for all types of gasifiers and can produce up to 250,000 Nm³/hr of SNG in a single train
- **Optimization:** Opportunity to fully integrate with existing utilities, eg, at the range of steam pressure levels
- **Safety:** Inherently safe design preventing runaway reaction
- **Proven track record:** Available for commercial application

Modular execution: Maximizing project benefits while minimizing overall project risk and execution time with a fast-track modular solution for reliable project execution suitable for the range of 2-100 MW production capacity.