

## Organizational Info

Organization Name: OMV

Organization URL: <https://www.omv.com/en>

OMV produces and markets oil and gas, innovative energy and high-end petrochemical solutions – in a responsible way. With Group sales of EUR 23 bn and a workforce of around 20,200 employees in 2018, OMV Aktiengesellschaft is one of Austria's largest listed industrial companies. Sustainability is an integral part of the corporate strategy. OMV is set to invest EUR 500 mn in innovative energy solutions by 2025.

## Challenge Synopsis:

This Challenge, sponsored by OMV, is seeking solutions in the form of deployable, or near deployable technology that enables the production of hydrogen through methane pyrolysis.

## Challenge Statement & Context:

“Massive quantities of natural gas are currently available for energy generation and chemical production. It has been estimated that the natural gas industry worldwide has already produced around 3000 trillion cubic feet of gas and the remaining gas reserve is estimated at 7000 trillion cubic feet. The global demand for natural gas today is around 100 trillion cubic feet and is expected to rise to about 130–210 trillion cubic feet in 2030. Therefore, even if half of the natural gas reserves are consumed for generating heat and electricity this corresponds to around 278 billion tonne equivalents of CO<sub>2</sub> released into the atmosphere. That's a lot of greenhouse gas that can contribute to climate change.”

There exists the potential to remove 80% or more of the carbon from natural gas leveraging methane pyrolysis. There are two primary technologies that we know of: thermal pyrolysis and plasma pyrolysis. This Challenge is interested in advances in these two technologies, but is also open to entirely novel approaches to separating out physical carbon from methane, with hydrogen as the output.

## OMV is seeking solutions that include, but are not limited to:

- High-efficiency pyrolyzers
- Improved carbon separators
- Innovations for feedstock handling of methane, or in the purification of output hydrogen

Goal is to supply a 100 MW electrolyzer

- This yields a demand of 20,000 cubic meter\*hr of hydrogen
- So we are looking for a production scale of between 10,000 - 15,000 tonnes / year of hydrogen.

## Response Criteria:

- This Challenge is generally seeking technologies that are available commercially, or close to commercial availability; Technology Readiness Levels (TRL) of 7-9 are preferred
- Notwithstanding the above, truly disruptive concepts can be evaluated even with lower TRL. Investment and/or co-development opportunities are possible.

- Though the ultimate goal is to supply a 100 MW electrolyzer, smaller scale solutions are welcome. For example, production scales at 1 tonne / year are still interesting.
- Looking for methane pyrolysis processes and technologies that optimize for the production of hydrogen, not carbon black (though solid carbon is an expected realized byproduct).
- This challenge excludes solutions for localized domestic heating, or blue hydrogen production (i.e. SMR with CCS)

**Next Steps:**

If interested in responding to this challenge and participating in this session, please contact Dylan Groven at the Foresight Cleantech Accelerator: [dgroven@foresightcac.com](mailto:dgroven@foresightcac.com).