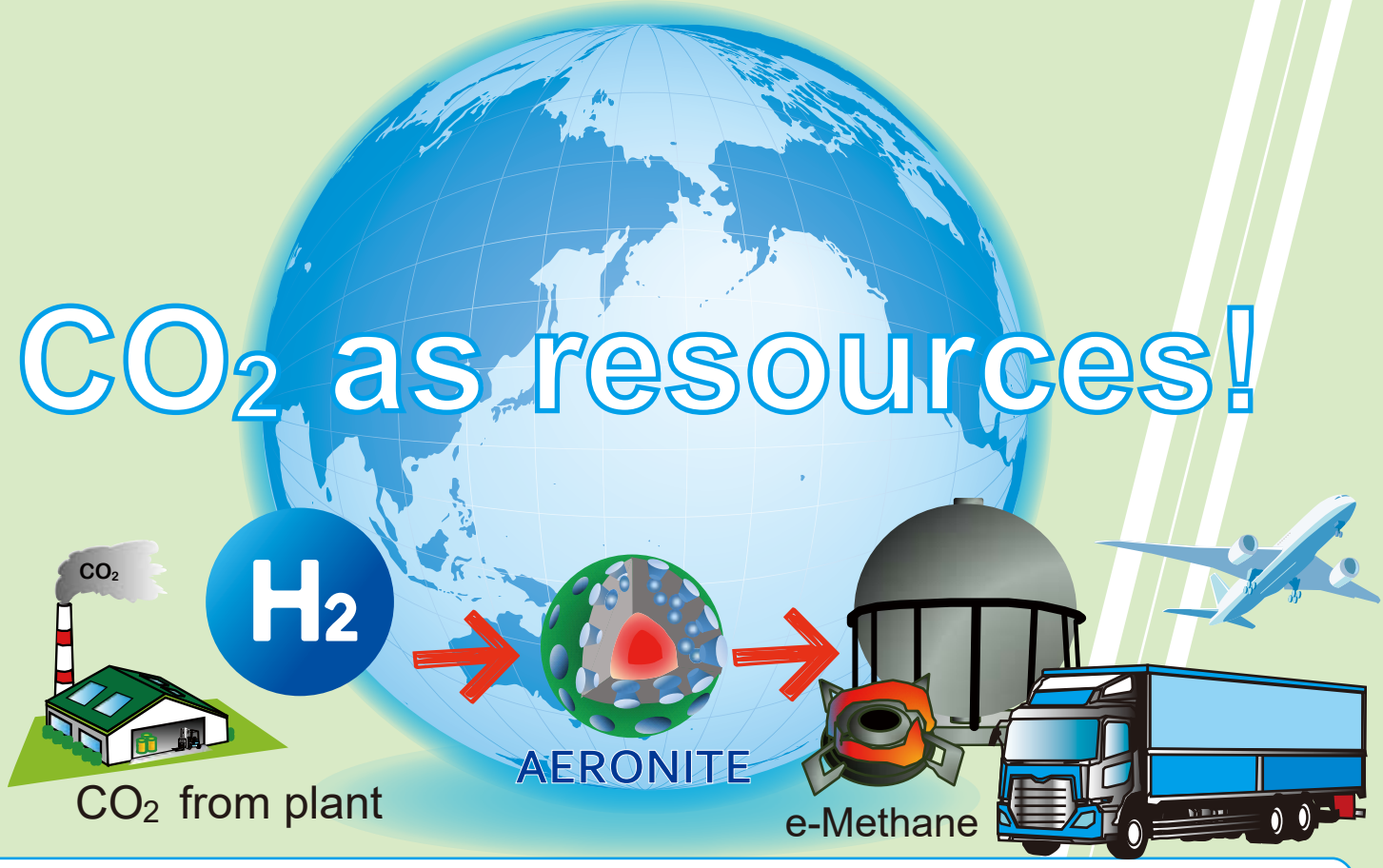
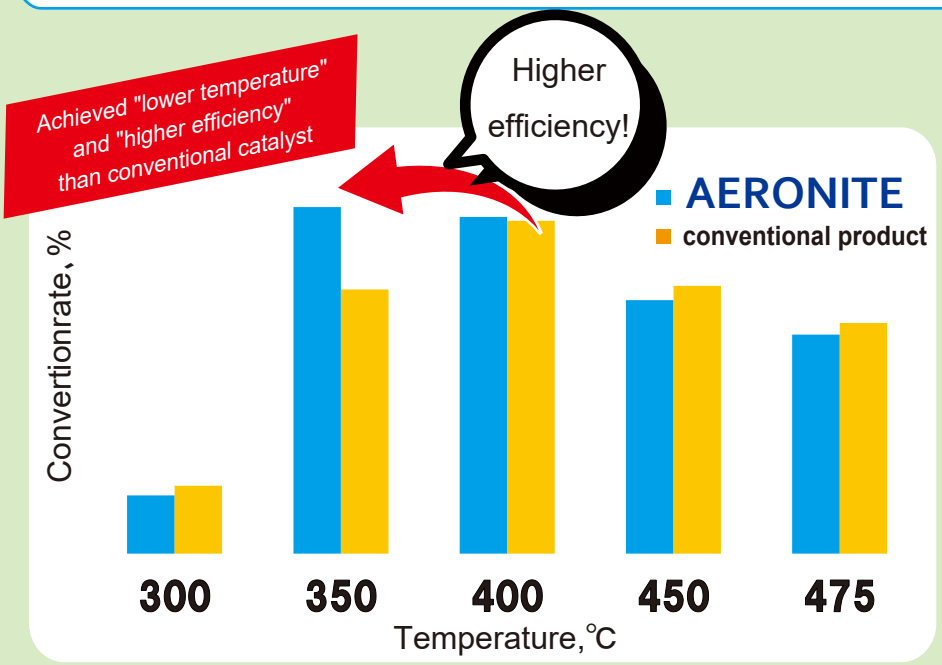
For carbon neutrality

AERONITE For Methanation

CO_2 as resources!



Unique bimodal structure realizes low temperature
& highly efficient methane conversion



Methanation performance by reaction temperatures

Ni-Pd Catalyst

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Tel : +81-90-4443-8870 Email : catalyst@itc-cera.co.jp

What is AERONITE

Aeronite is a registered trademark of our porous catalyst. Lightweight (“Aero”) + stone by Latin suffix (“ite”) = “AERONITE”, this is where Aeronite comes from. Aeronite is a ceramic that is as light as air and also as strong as stone.

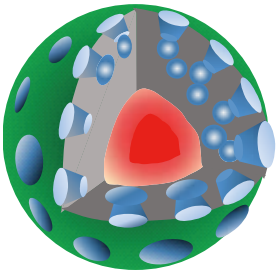
What is Methanation

A reaction discovered by Frenchman Paul Sabatier that hydrogenates carbon dioxide and produces methane by bringing a mixed gas of carbon dioxide and hydrogen into contact with transition metals such as nickel or noble metals such as ruthenium at high temperatures. This is a reverse reaction to the steam reforming reaction and is an exothermic reaction.

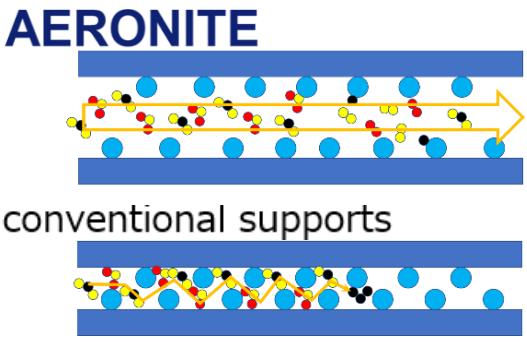
$$CO_2 + 4H_2 \rightarrow CH_4 + 2H_2O$$

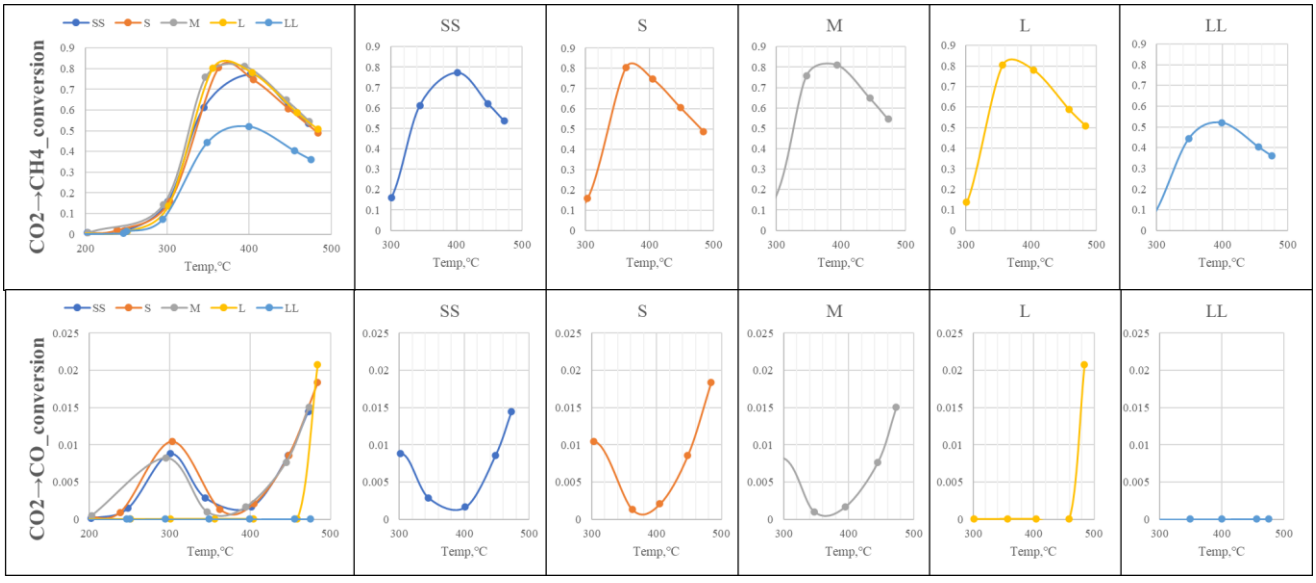
Because the temperature range is close to that of the steam reforming reaction, the steam and methane produced in the reaction tend to cause a reverse reaction due to the heat generated during formation. As a result, catalyst deactivation due to coking becomes a problem. It is known that it is difficult to control reforming because the reaction rate is extremely fast.

Methanation with AERONITE catalyst



Since the Aeronite catalyst is composed of large pores, the flow velocity of raw material gas and produced gas inside the catalyst is faster than that of conventional supports such as γ alumina, which are composed of fine pores. This structure has the effect of preventing problems such as caulking and sintering.





Differences in methanation reaction and by-product CO amount due to differences in pore size