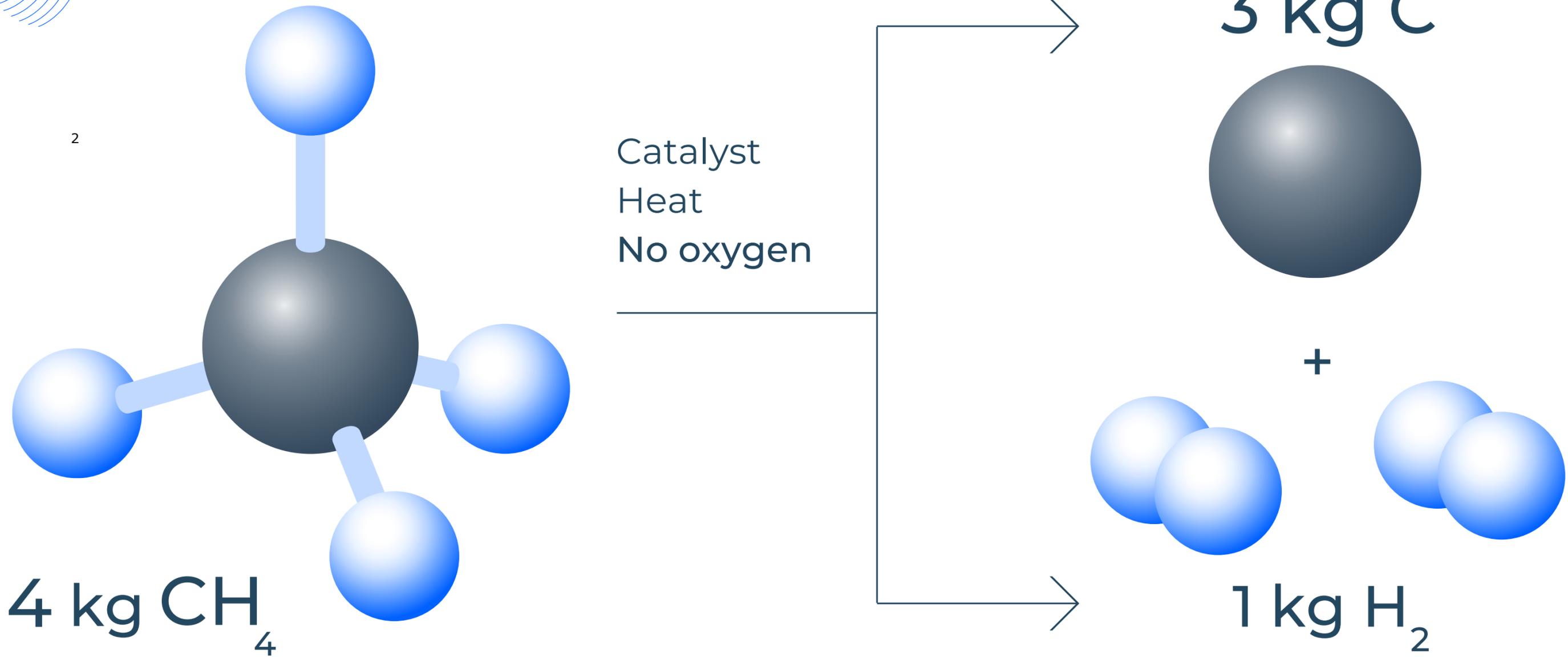




IS METHANE SPLITTING THE KEY TO DECARBONIZING INDUSTRY AND  
SECURING LOCAL PRODUCTION OF CRITICAL MATERIALS?

BIO 360 EXPO 2024

# WHAT IS METHANE SPLITTING?



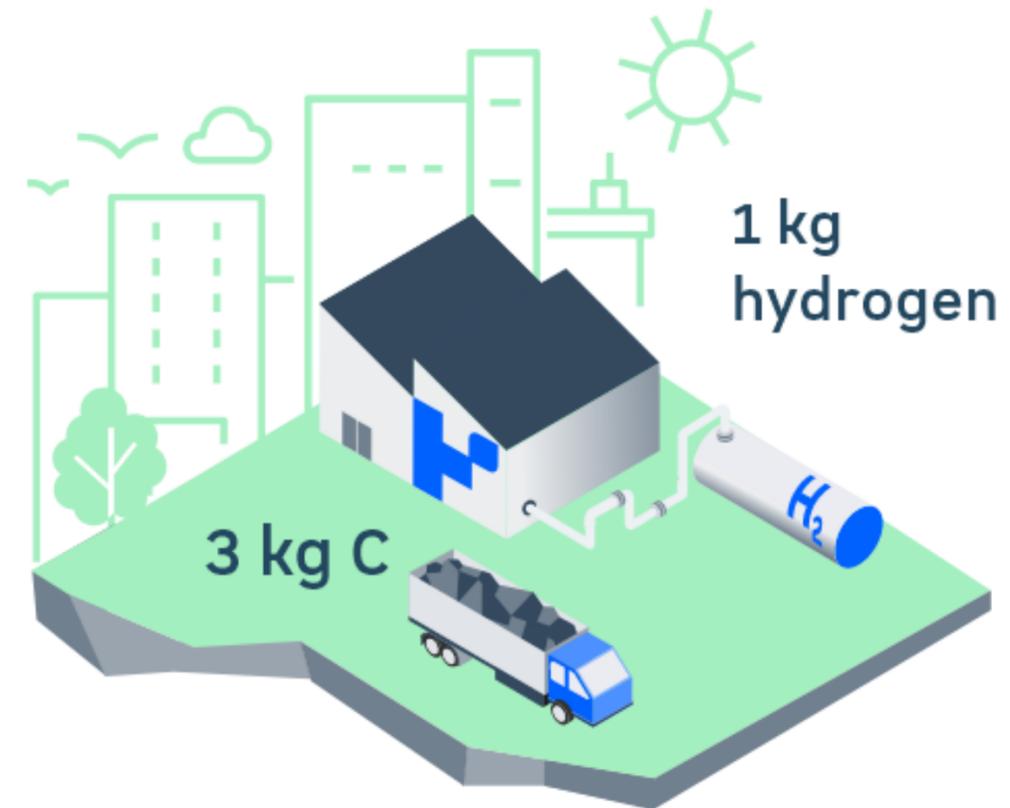
# HOW DO WE DECARBONIZE INDUSTRY?

SMR hydrogen  
production  
emissions

9 kg CO<sub>2</sub> into  
the atmosphere



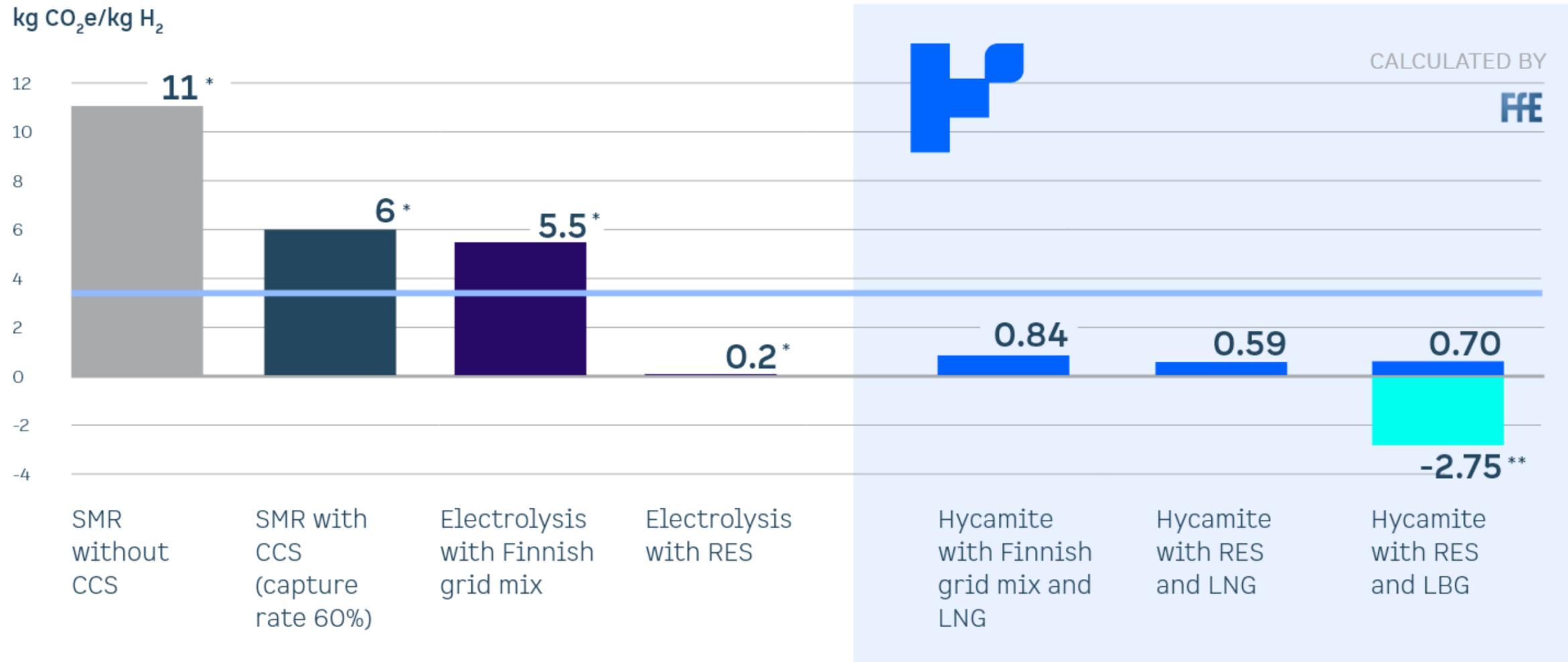
No emissions from  
Hycamite's process



**SMR:** steam methane reforming

Source: [sciencedirect.com/science/article/abs/pii/S0360319921014920](https://www.sciencedirect.com/science/article/abs/pii/S0360319921014920)

# CAN METHANE SPLITTING TURN HYDROGEN PRODUCTION INTO A CARBON SINK?



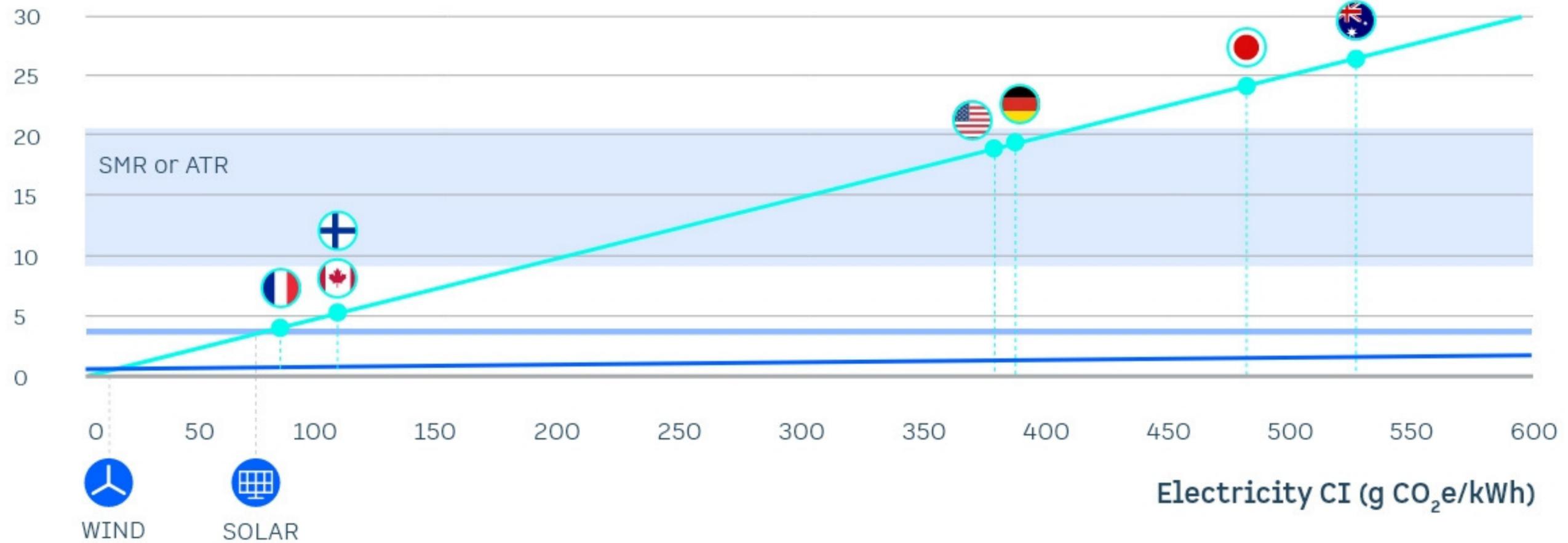
■ Low-carbon hydrogen limit (EU renewable H<sub>2</sub> and Japan: 3.4 kg CO<sub>2</sub>e/kg H<sub>2</sub>, U.S.A. and Canada: 4 kg CO<sub>2</sub>e/kg H<sub>2</sub>)

**SMR:** steam methane reforming    **CCS:** carbon capture and storage    **RES:** renewable energy    **LNG:** liquefied natural gas    **LBG:** liquefied biogas

\*Own calculations with the same inputs based in Finland    \*\*Only if the solid carbon is permanently stored

# IS GREEN ALWAYS CLEAN?

Footprint (kg CO<sub>2</sub>e/kg H<sub>2</sub>)



■ Electrolysis\*   
 ■ Hycamite\*\*   
 ■ Low-carbon hydrogen limit\*\*\*   
 ○ Grid averages

\* ourworldindata.org/grapher/carbon-intensity-electricity

\*\* Hycamite's emissions are based on the EU LNG mix (upstream) and the shown electricity CI

\*\*\* EU renewable H<sub>2</sub> and Japan: 3.4 kg CO<sub>2</sub>e/kg H<sub>2</sub>, U.S.A. and Canada: 4 kg CO<sub>2</sub>e/kg H<sub>2</sub>

**ATR:** autothermal reforming

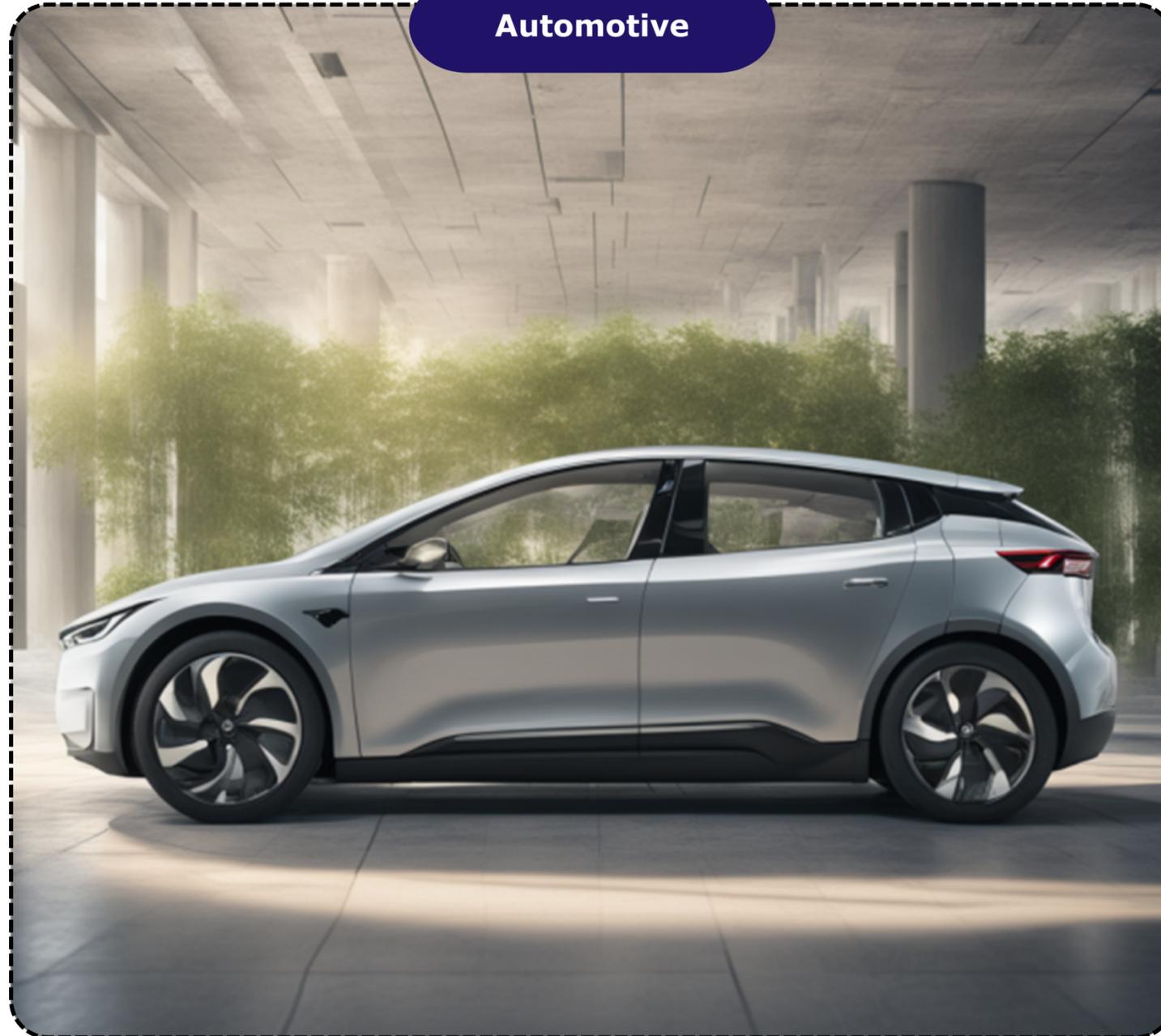
**SMR:** steam methane reforming

# CAN METHANE SPLITTING SECURE LOCAL PRODUCTION OF CRITICAL MATERIALS?

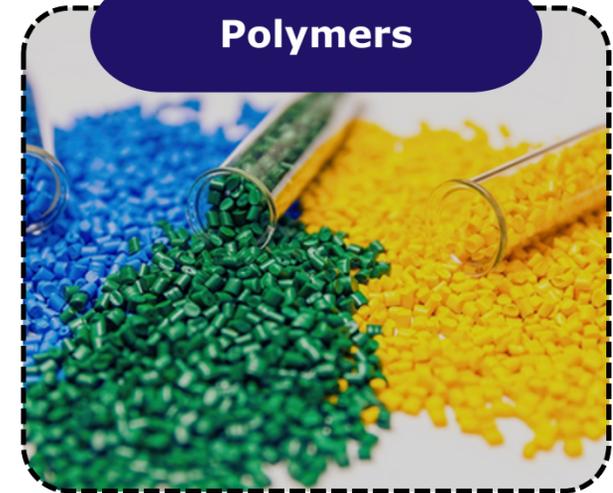
**Aerospace**



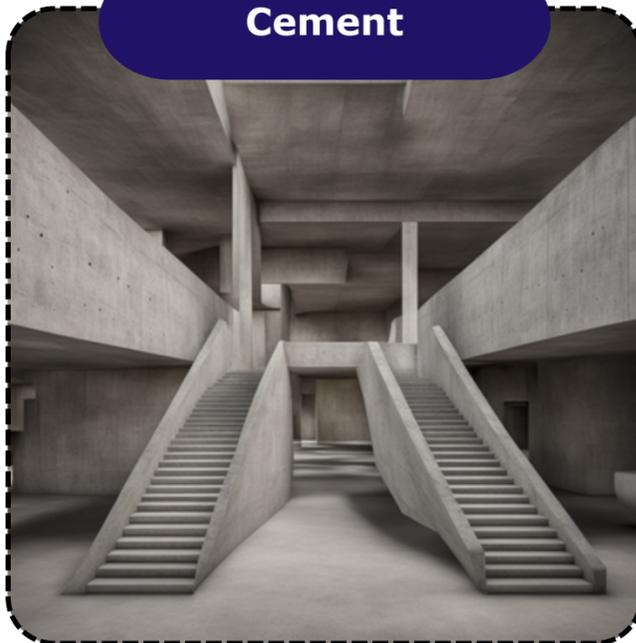
**Automotive**



**Polymers**



**Cement**



**Supercapacitors**



# WHO ARE WE?

A deep-tech startup on clean hydrogen and high-quality carbon

- Industrial-scale low-carbon hydrogen production
- Solid, high-value carbon products
- Technology based on over 20 years of research at the University of Oulu
- More than 40 hycamates with different nationalities
- International, strategic investors
- Global coverage of strategic partners
- Industrial-scale demonstration plant capacity 2 ktn hydrogen per annum

Coming:  
Customer Sample  
Facility

Offices

Pilot

Laboratory



# CUSTOMER SAMPLE FACILITY

**2 kt of H<sub>2</sub> &  
6kt of solid carbon**  
production capacity

**18 kt CO<sub>2</sub> p.a.**  
emission reductions  
(compared to SMR)

**2024**  
Operational

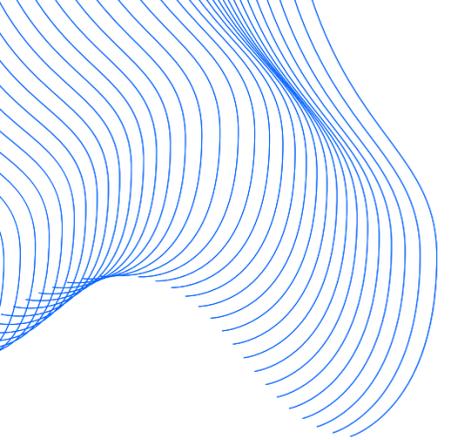
**Three different  
reactors for testing**  
2 industrial  
1 marine



**Kokkola, Finland**

## Partners



A decorative graphic in the top left corner consisting of numerous thin, overlapping blue lines that create a wavy, organic shape.

# THANK YOU

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