TAKE THE SEID ROAD

Terje Hauan / CTO

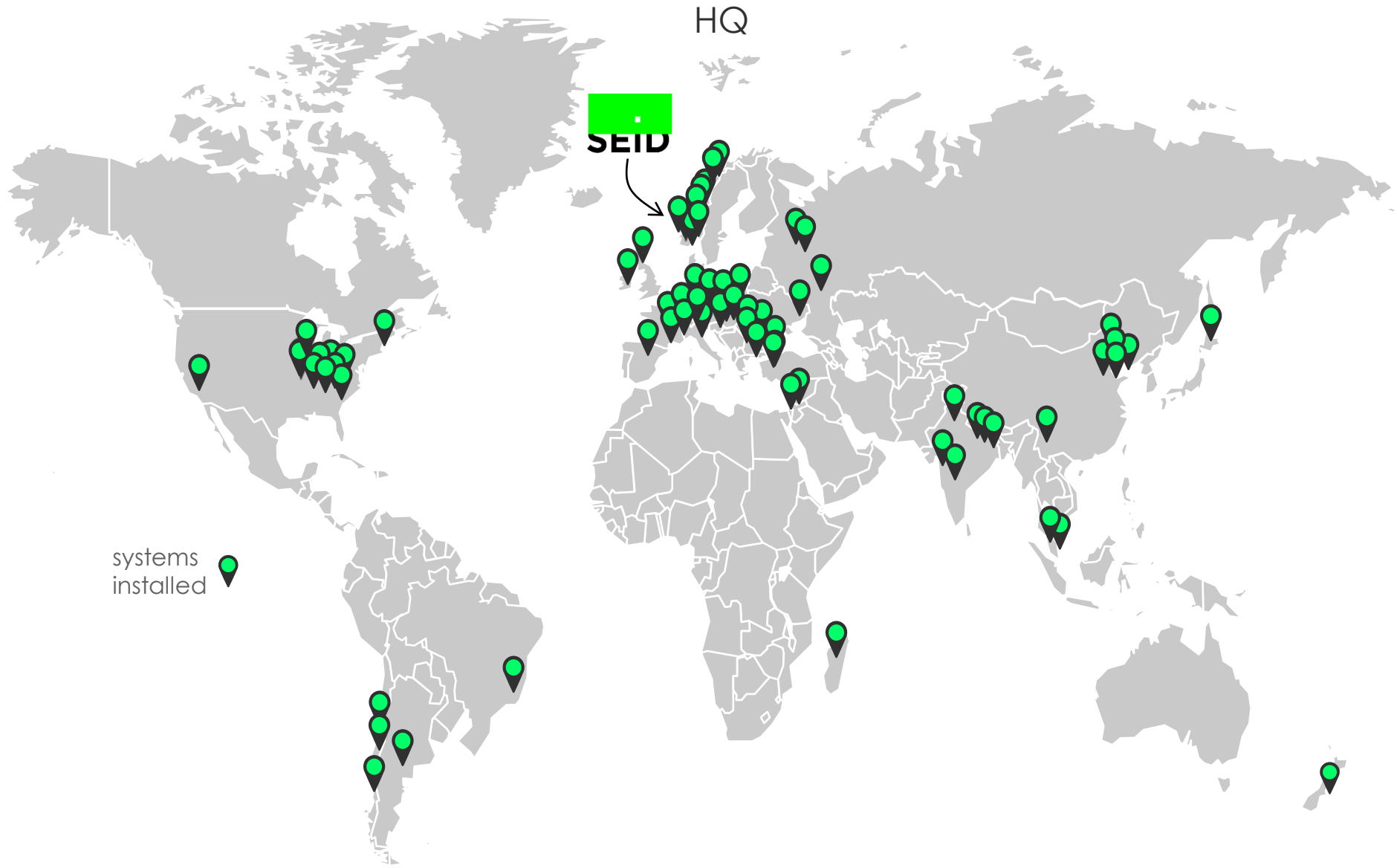
In Old Norse, SEID was a type of magic which was practised in Norse society during the Viking Era.

The practice of SEID is believed to be a form of magic which is related to both the telling and the shaping of the future

Industrial Air Pollution (APC) | We deliver clean AIR

Industrial Air Pollution (APC) | We deliver clean AIR

35 countries | since 1997



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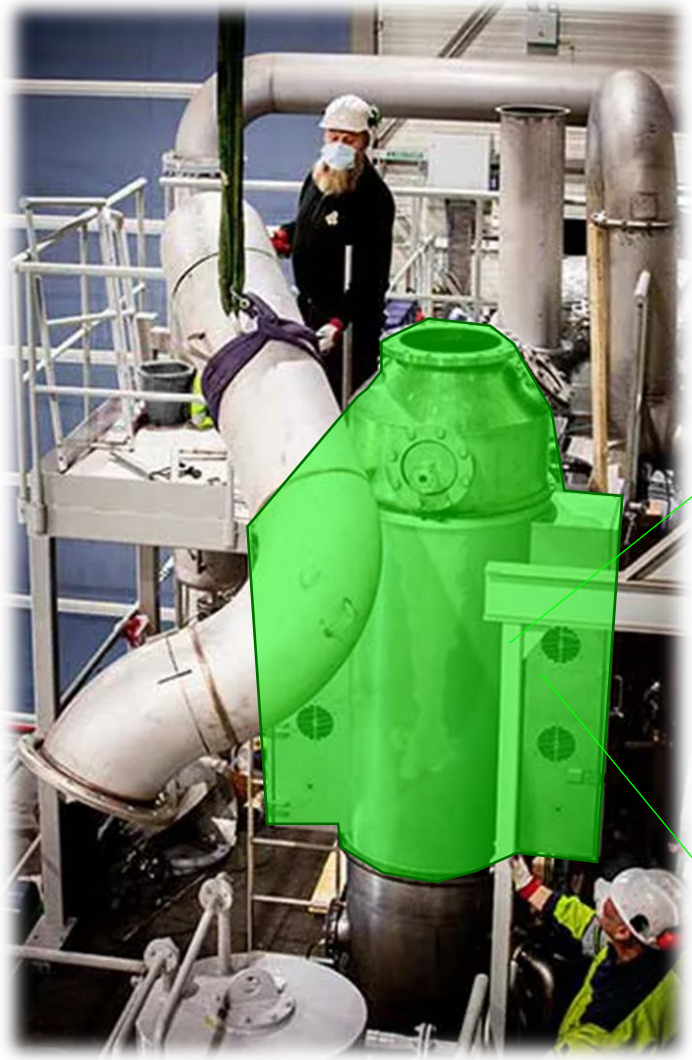
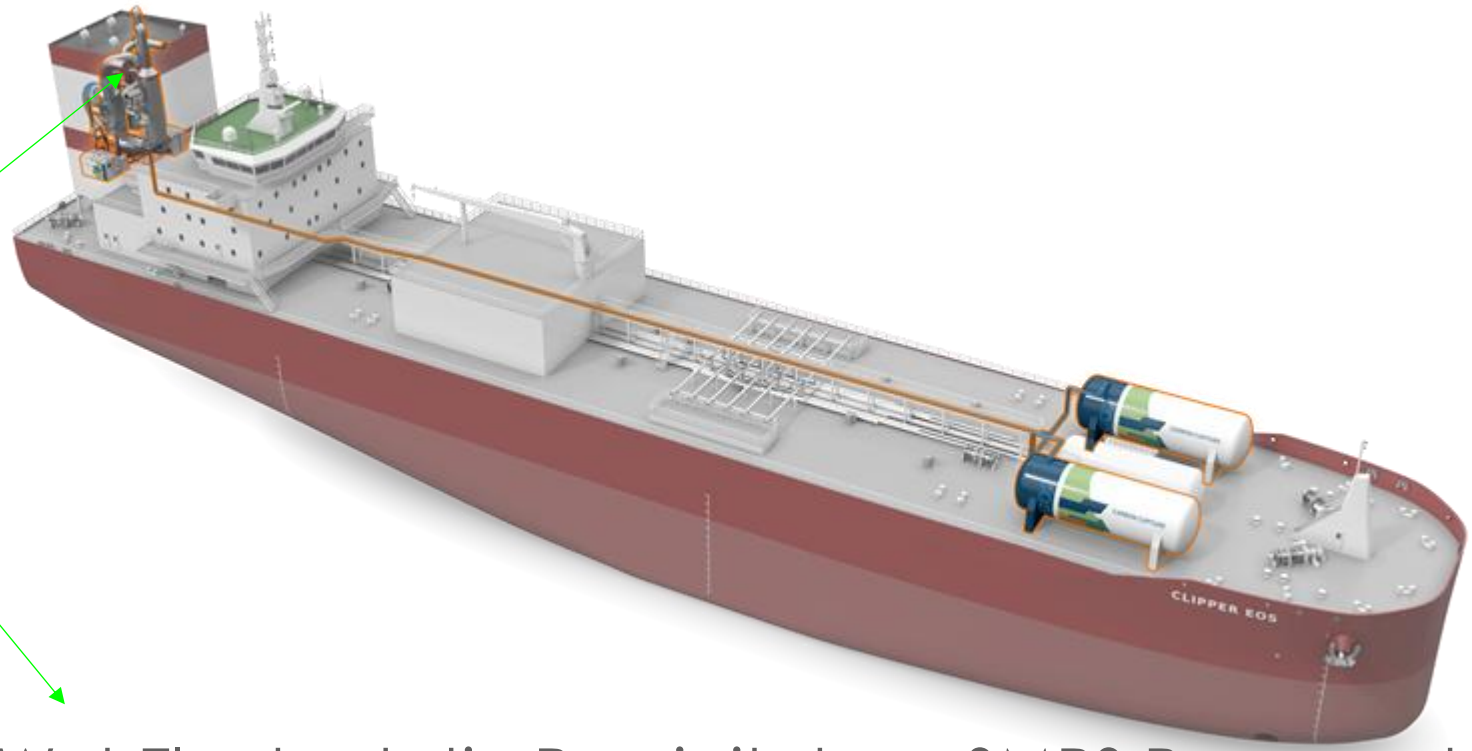
SEID



Next-generation Exhaust Gas Treatment:

- Reduction of Black Carbon emissions
- Enabling CO_2 capture/storage



Wet Electrostatic Precipitator + SMPS Power system

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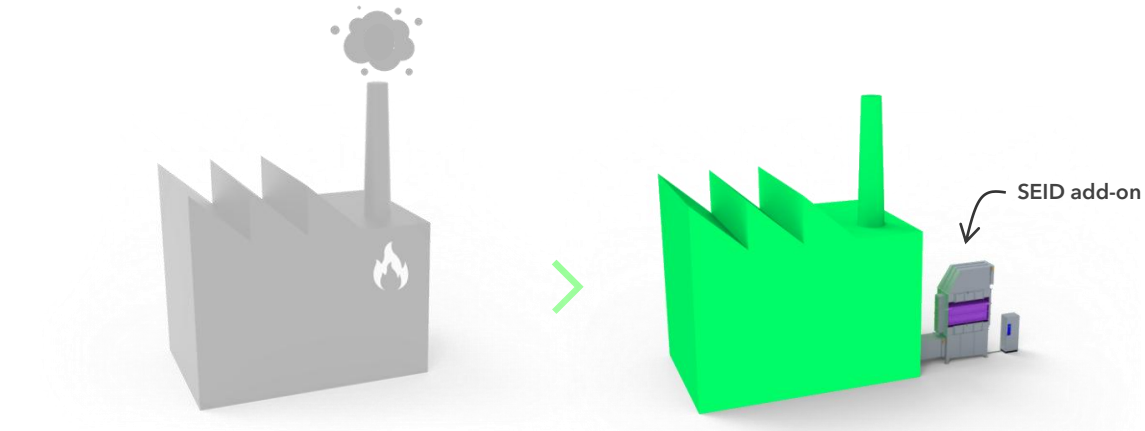
A significant base of Tier-1 customers

SEID removes odor, VOC[1] and polluting particles from industries



The industry struggles with odor and emissions

SEID helps remove up to 99% of odour and VOC[1] particles

- Industries all over the world are facing new and stringent ESG regulations. SEID's solutions help them to comply by removing polluting components from their emissions
- SEID's systems have low capex, low maintenance costs and high-energy efficacy: making them the most cost-efficient and environmental-friendly alternative in the market

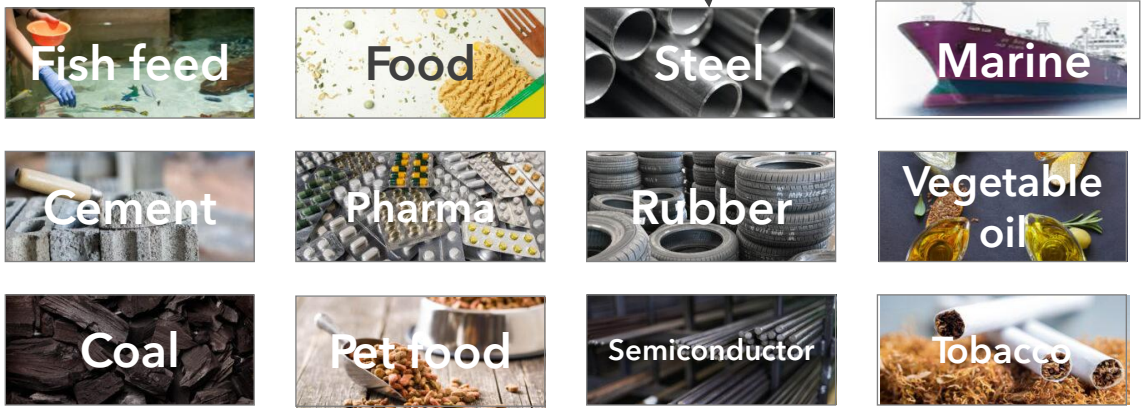
Blue-chip customer base

ROYAL CANIN · nutreco · British American Tobacco · BEFOOD · VALE · ITC Limited · novozymes · DONGYANG · TiZir · GRIFFIN CARDWELL · schenck process · Nestlé · elmubas · FIVEN · SAINT-GOBAIN · WÄRTSILÄ

SEID is a preferred supplier for all Nestlé Purina factories **since 2004**

AM/NS INDIA

Applicable industries

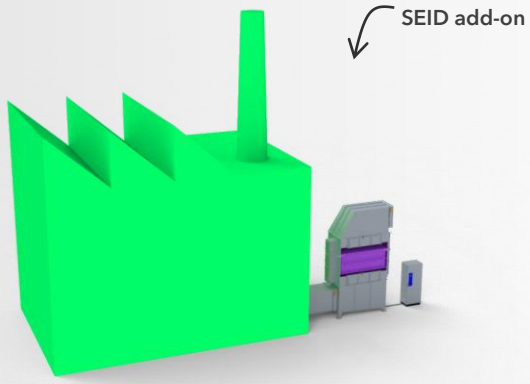


Note(s): 1) Volatile organic compounds

CORE BUSINESS

- SEID has since 1997 developed, produced and sold modular **Air Pollution Systems** to Tier1 clients worldwide.
- Commercialised proprietary plasma technology for use in the industrial organic industry by displacing gas burning to treat exhaust gases to remove odour, VOC and PMs, and deliver cost-effective, efficient, emissions-free exhaust gas treatment.

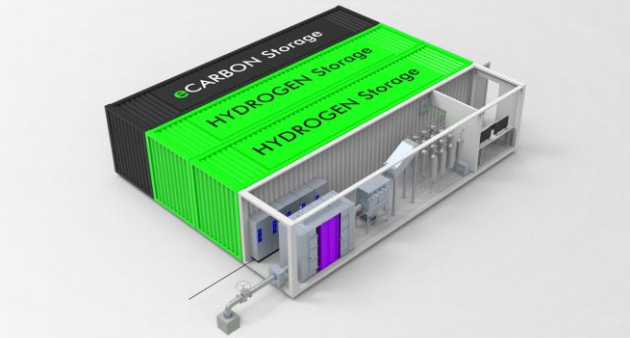
Business model: Product sales + after-market.



TRANSITION SEGMENT

- Utilising SEID's proprietary Non-Thermal Plasma technology to produce **Clean and Decarbonised Hydrogen** and **Elemental Carbon** from natural gas and/or biogas
- An alternative **energy- and cost-efficient** way of producing hydrogen versus Steam Methane Reforming or Electrolysis

Business model: Flexible.



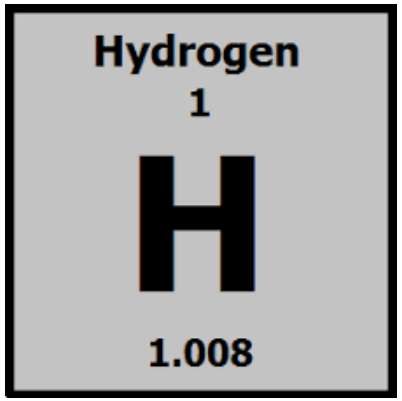
SAME TECHNOLOGY, SAME COMPONENTS, SAME COMPETENCE || DIFFERENT APPLICATIONS

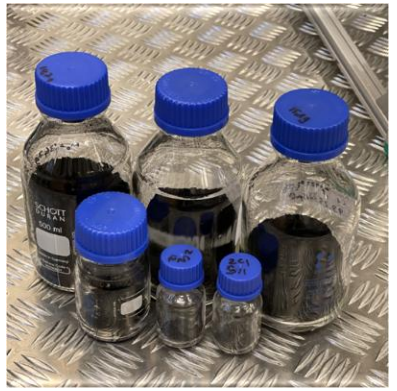

COLD
SPARK
SEID

BIOGAS / BIOMETHANE

COLD SPARK

Clean and
Decarbonised HYDROGEN





Clean and
Decarbonised CARBON

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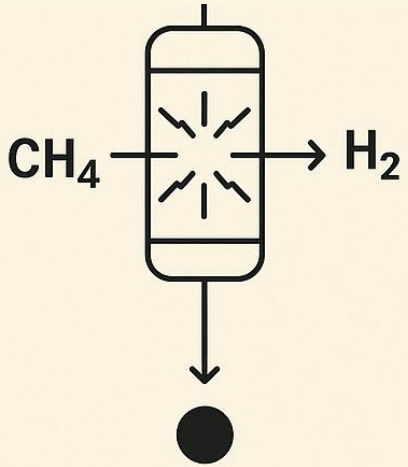
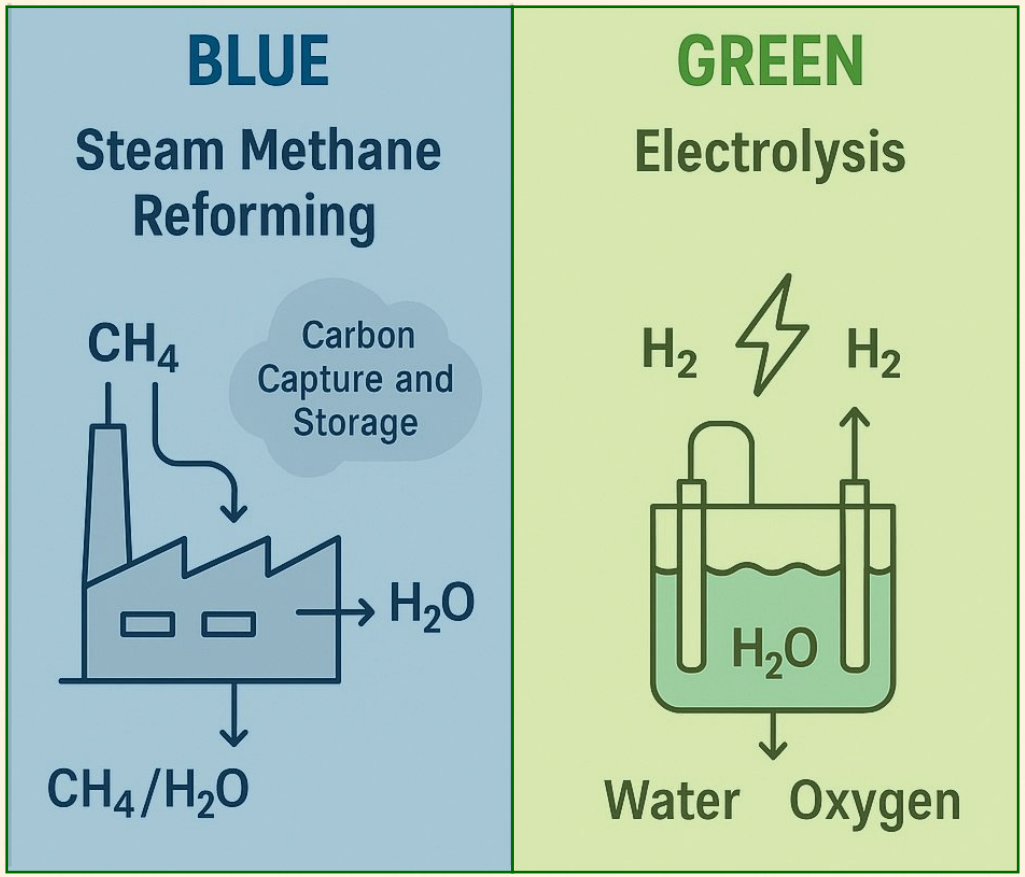
Methane Splitting
Methane Pyrolysis
Methane Cracking
Methane Plasmalysis
Turquoise Hydrogen





Alkaline
AEM
PEM
SOEC

SEID

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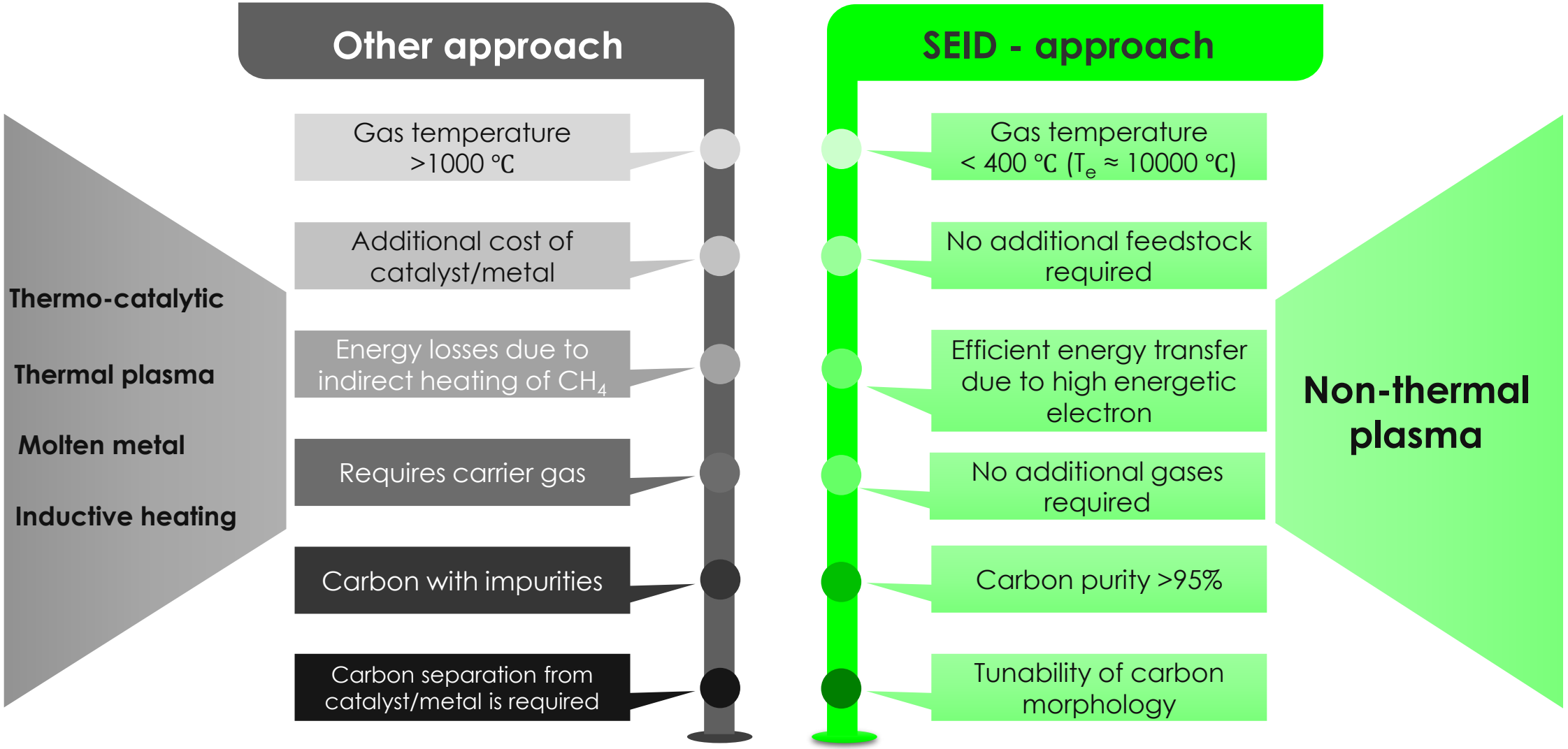
ColdSpark® – key differences



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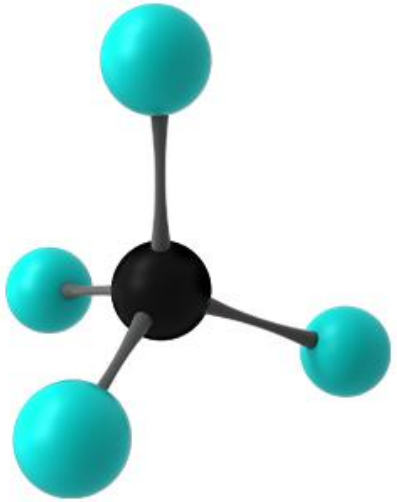
Cold Methane Pyrolysis

PROJECT COLDSPARK®

A novel approach to sustainable Hydrogen production

Project ColdSpark® has received **Euro 3 million in funding** from the European Union's Horizon Europe Research and Innovation Programme Grant Agreement ID: 101069931. Score **14.5 out of 15** points.

- Natural Gas



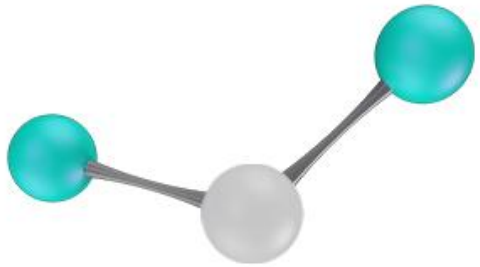
Methane Pyrolysis

Energy required per H_2: **1**

Minimum 5,2 kWh

Fundamental physics = **theoretical bond energy**

- Water



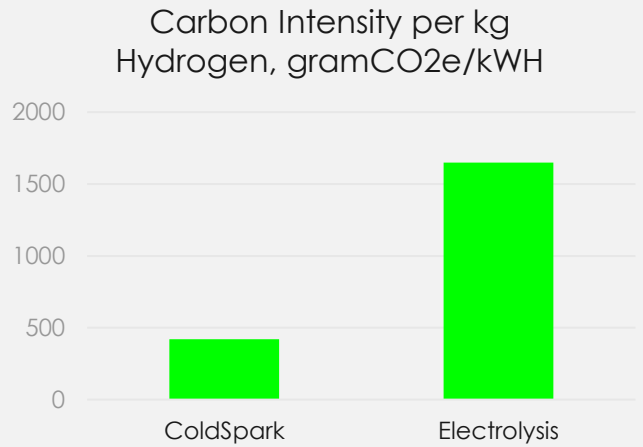
Water Electrolysis

Energy required per H_2: **7.5**

Minimum 39,4 kWh

COLD SPARK

Norway: Make 1 kg Hydrogen
~ 420 grams of CO2e/kg H_2



Norway: Make 1 kg Hydrogen
~ 1650 grams of CO_2e/kg H_2

LCA Norwegian electricity ~30 grams CO2e/kWh in 2022
https://www.nve.no/energy-supply/electricity-disclosure/

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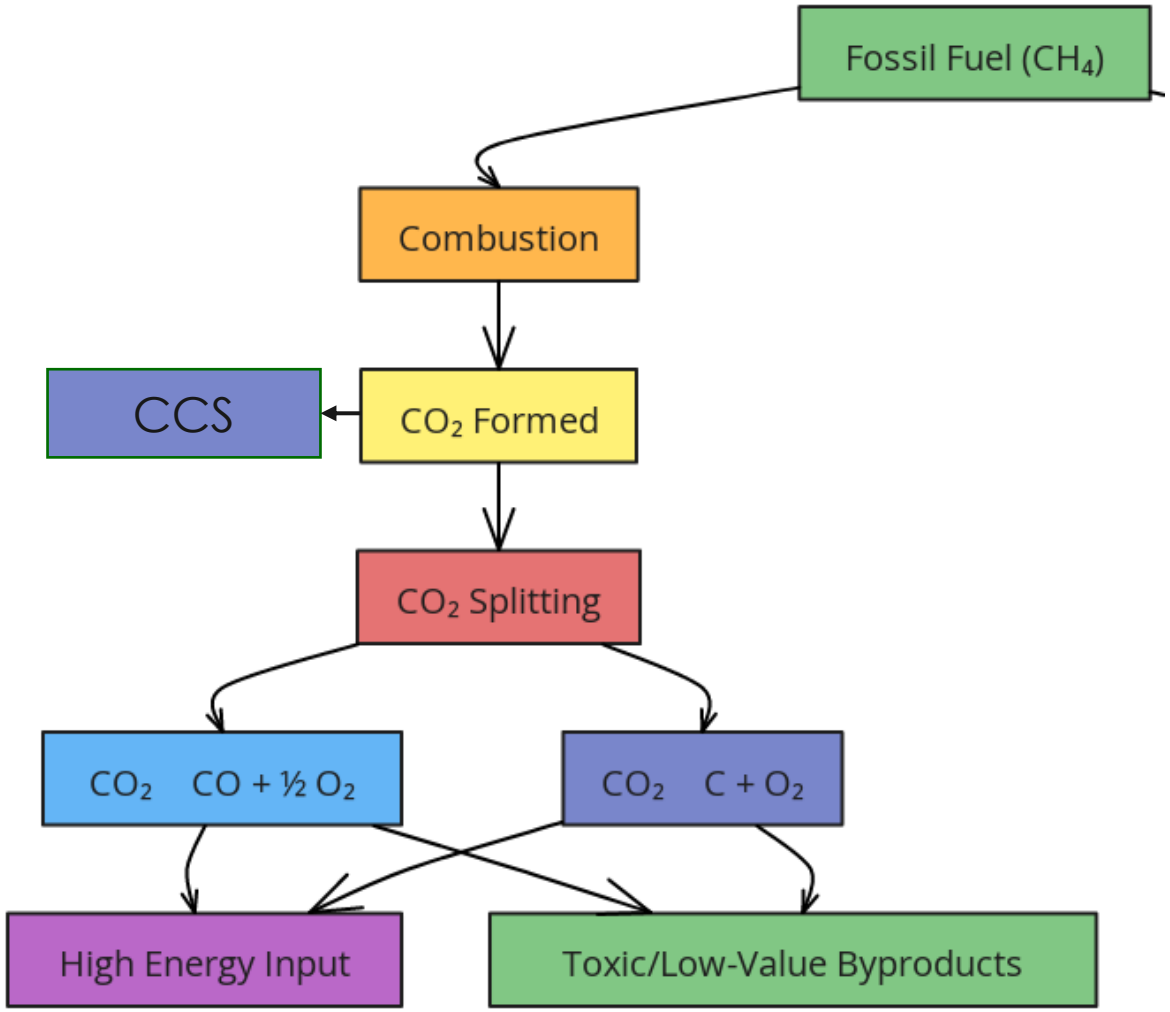
Methane from Villain to Climate Hero!



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The EU's Critical Raw Materials Act

Reducing dependency on imports, boosting innovation).

Strategic importance of carbon materials (graphite, carbon black, graphene and other advanced carbon materials)

Electricity

Wood chips/ straw

Household waste

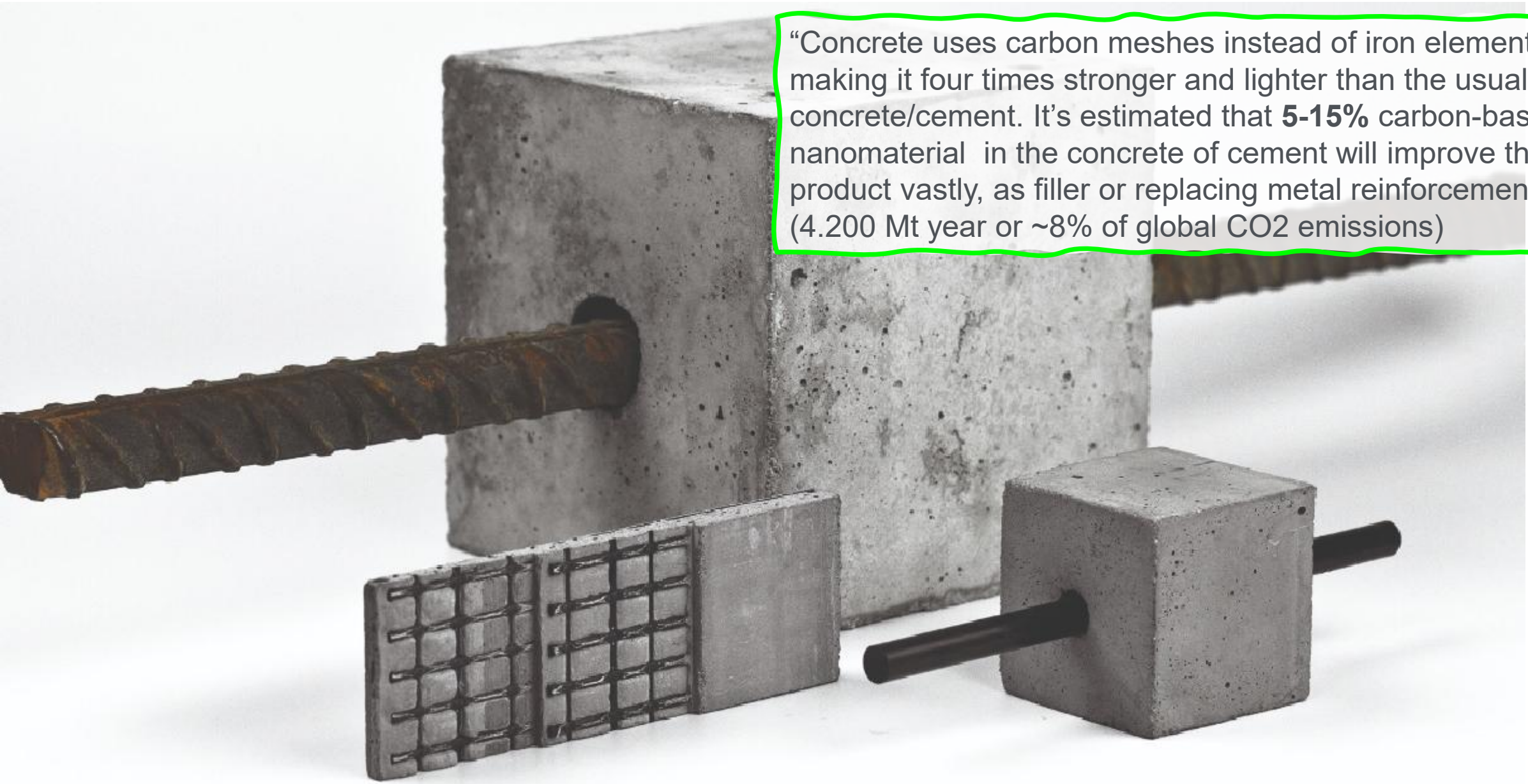
Natural gas

Wind energy

Thermal Energy Storage

Consumption

"The addition of carbon-based nanomaterial has shown to result in an increase in thermal conductivity **up to 264%** depending on the material and loading, which has resulted in enhancement of the thermal characteristics by up to 28 times, which can be attributed to the extremely high thermal conductivity of CBM within the range of 6–2,500 W/m.K"



"Concrete uses carbon meshes instead of iron elements, making it four times stronger and lighter than the usual concrete/cement. It's estimated that **5-15%** carbon-based nanomaterial in the concrete of cement will improve the product vastly, as filler or replacing metal reinforcement." (4.200 Mt year or ~8% of global CO2 emissions)

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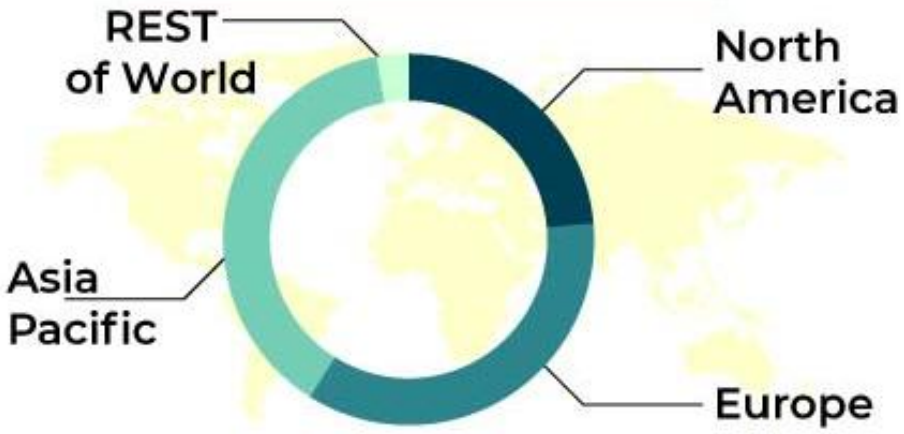
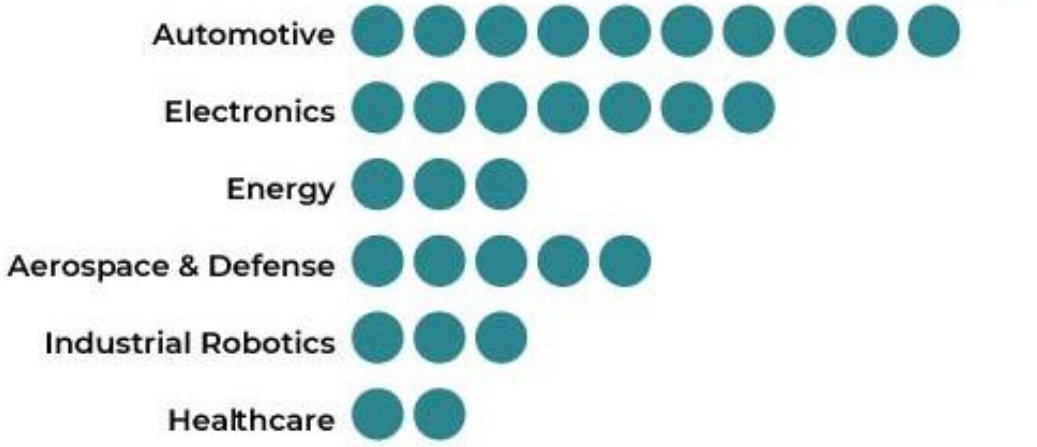
What is Carbon Concrete?

GLOBAL GRAPHENE BATTERY MARKET 2022-2026

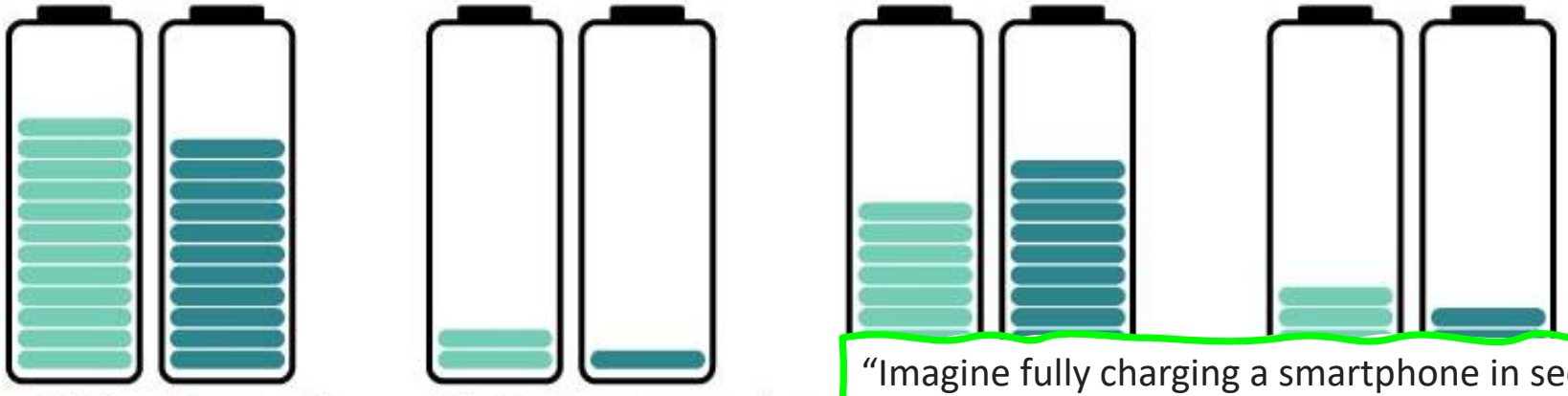
MARKET BY REGION



MARKET BY END USER



MARKET BY BATTERY TYPE



TOP COMPANIES CABOT CORPORATION GLOBAL GRAPH

"Imagine fully charging a smartphone in seconds, or an electric car in minutes. That's the power of graphene. Furthermore, graphene has the capability to boost lightweight, durable, stable, and high-capacity electrochemical energy storage batteries with quick charging time. "

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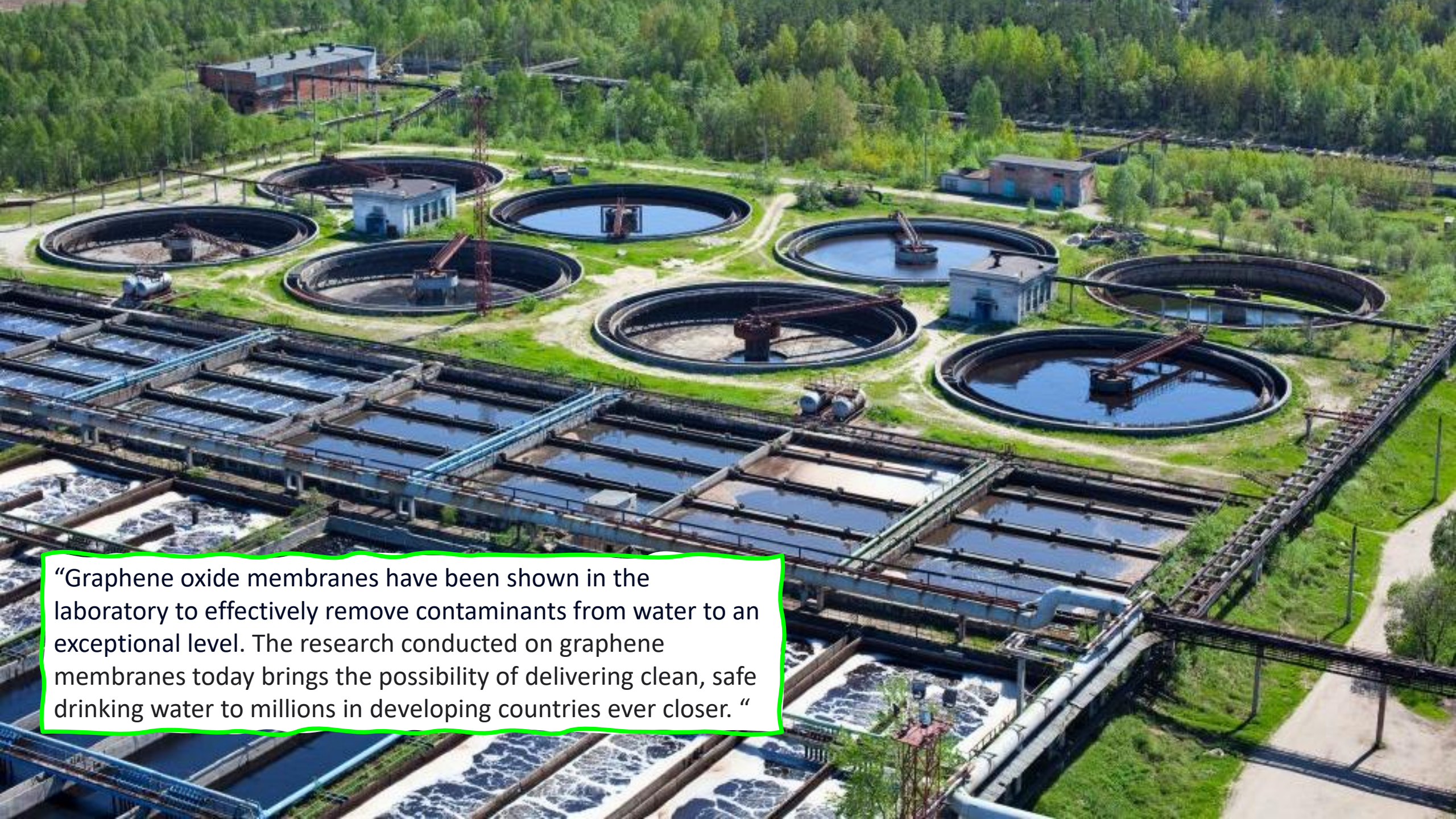
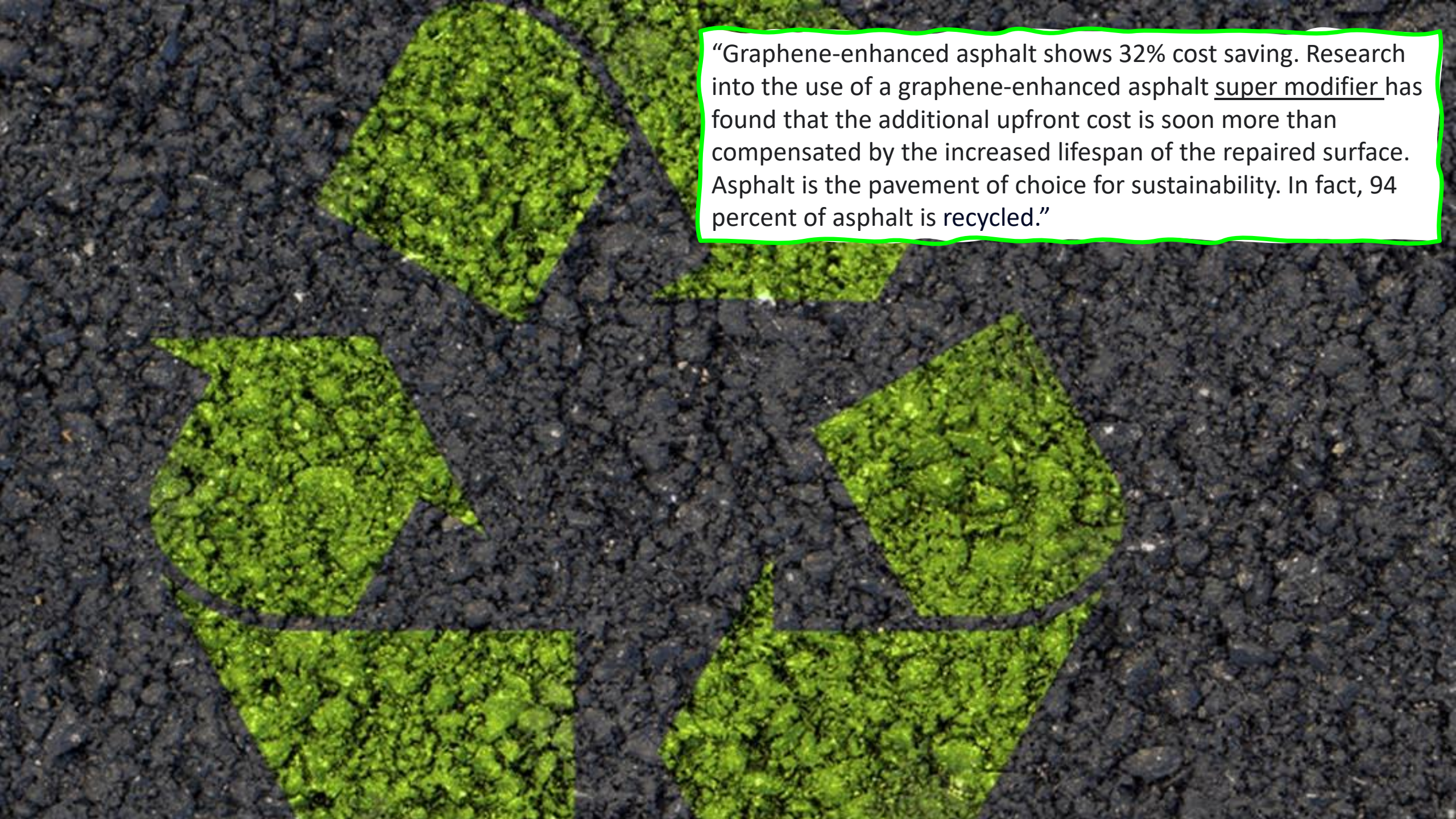


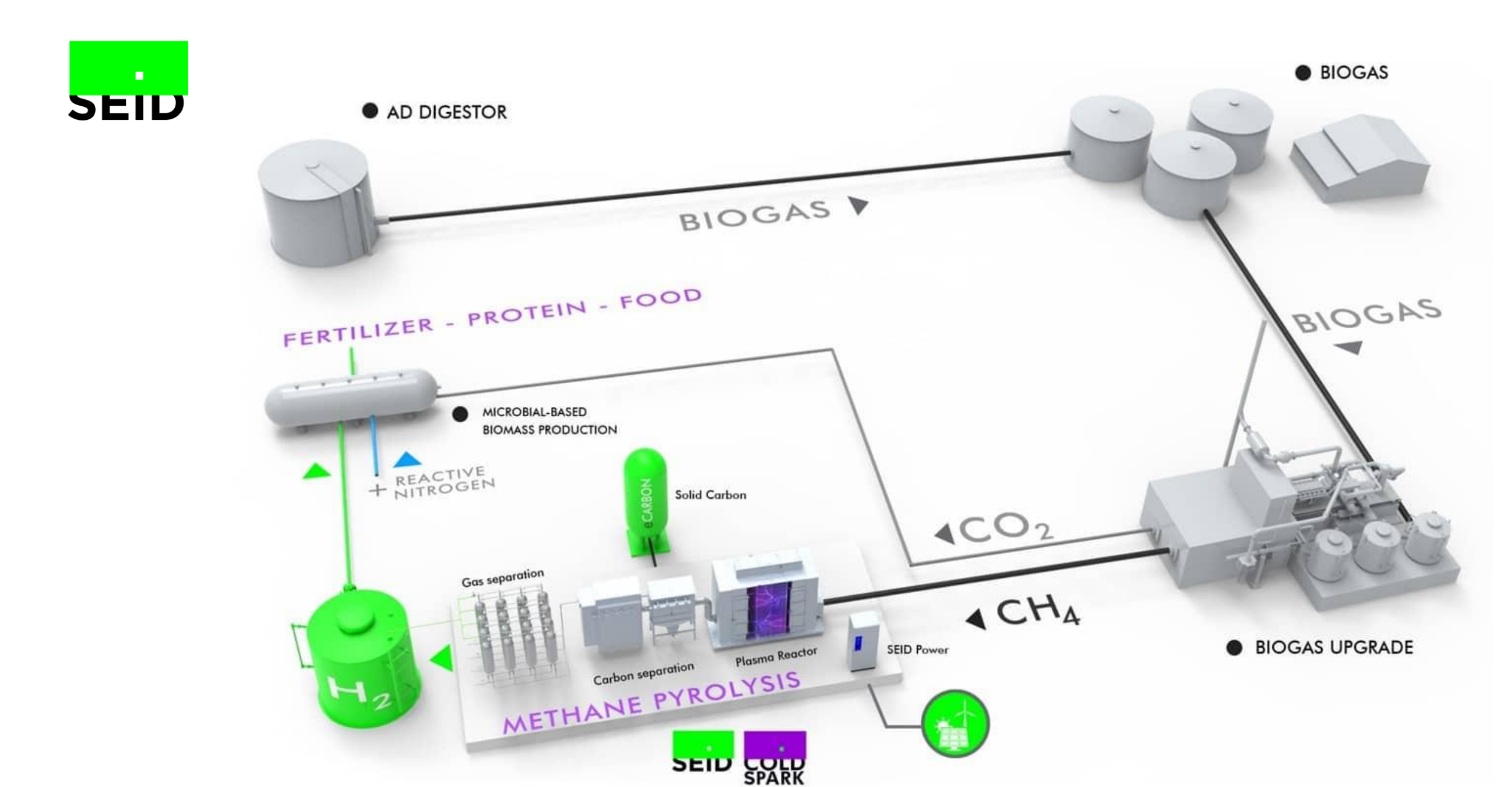
“Graphene oxide membranes have been shown in the laboratory to effectively remove contaminants from water to an exceptional level. The research conducted on graphene membranes today brings the possibility of delivering clean, safe drinking water to millions in developing countries ever closer. “

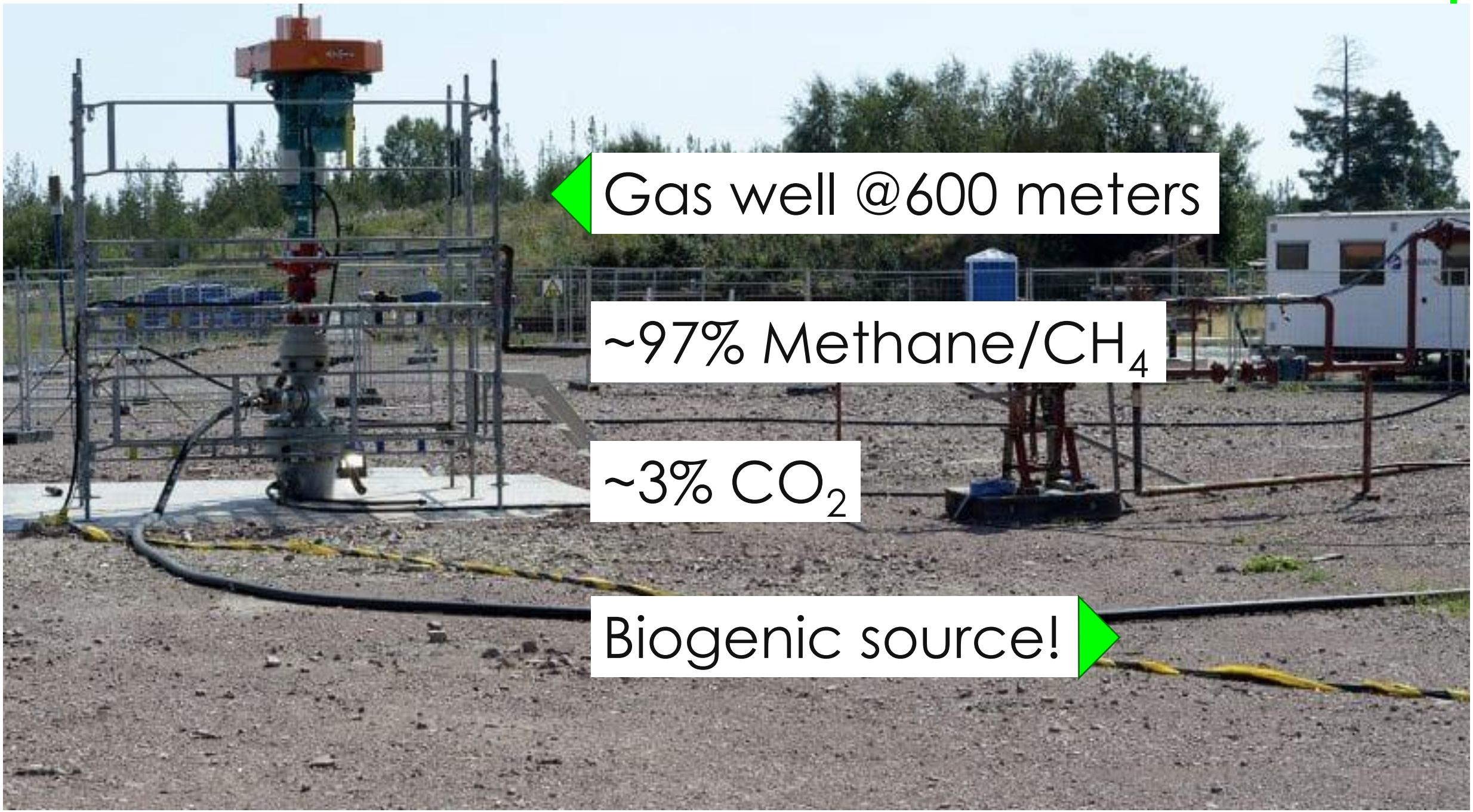


“Graphene-enhanced asphalt shows 32% cost saving. Research into the use of a graphene-enhanced asphalt super modifier has found that the additional upfront cost is soon more than compensated by the increased lifespan of the repaired surface. Asphalt is the pavement of choice for sustainability. In fact, 94 percent of asphalt is recycled.”

"Solid carbon, specifically **carbon black**, is added to rubber tires primarily to **strengthen and reinforce** the rubber compound. Pure rubber is soft and weak. Adding carbon black dramatically improves **tensile strength, wear resistance**, and **durability**. **Carbon black typically makes up 20% to 30%** of a tire's weight"

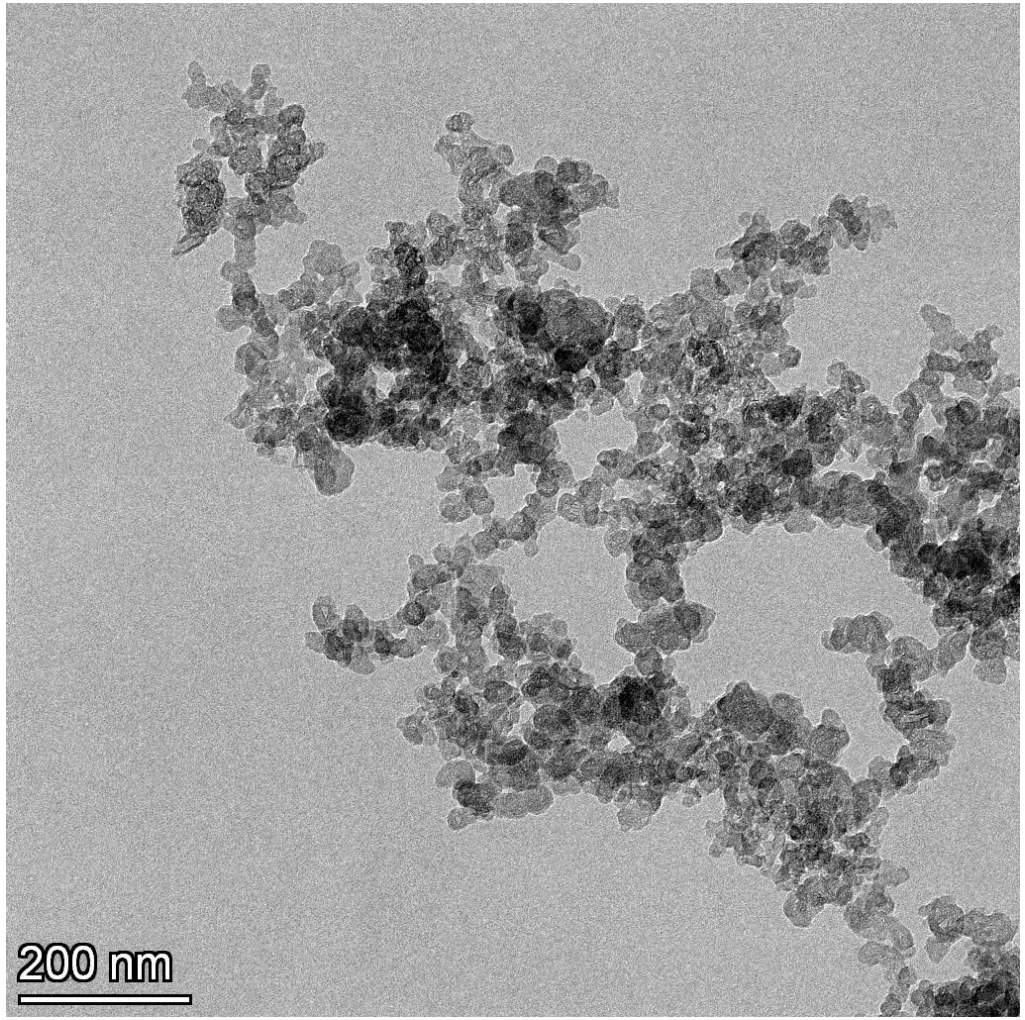
"Steel companies make nearly 2 billion tons of high-strength material. One tons of steel require around 770 kg of coal in the process. As a result, the industry accounts for roughly 8 percent of annual carbon dioxide emissions, as well as a toxic soup of air pollutants."


SEID
AD DIGESTOR
BIOGAS
BIOGAS
FERTILIZER - PROTEIN - FOOD
BIOGAS
MICROBIAL-BASED
BIOMASS PRODUCTION
+ REACTIVE NITROGEN
eCARBON
Solid Carbon
CO_2
Gas separation
H_2
Carbon separation
Plasma Reactor
SEID Power
CH_4
BIOGAS UPGRADE
METHANE PYROLYSIS
SEID COLD SPARK

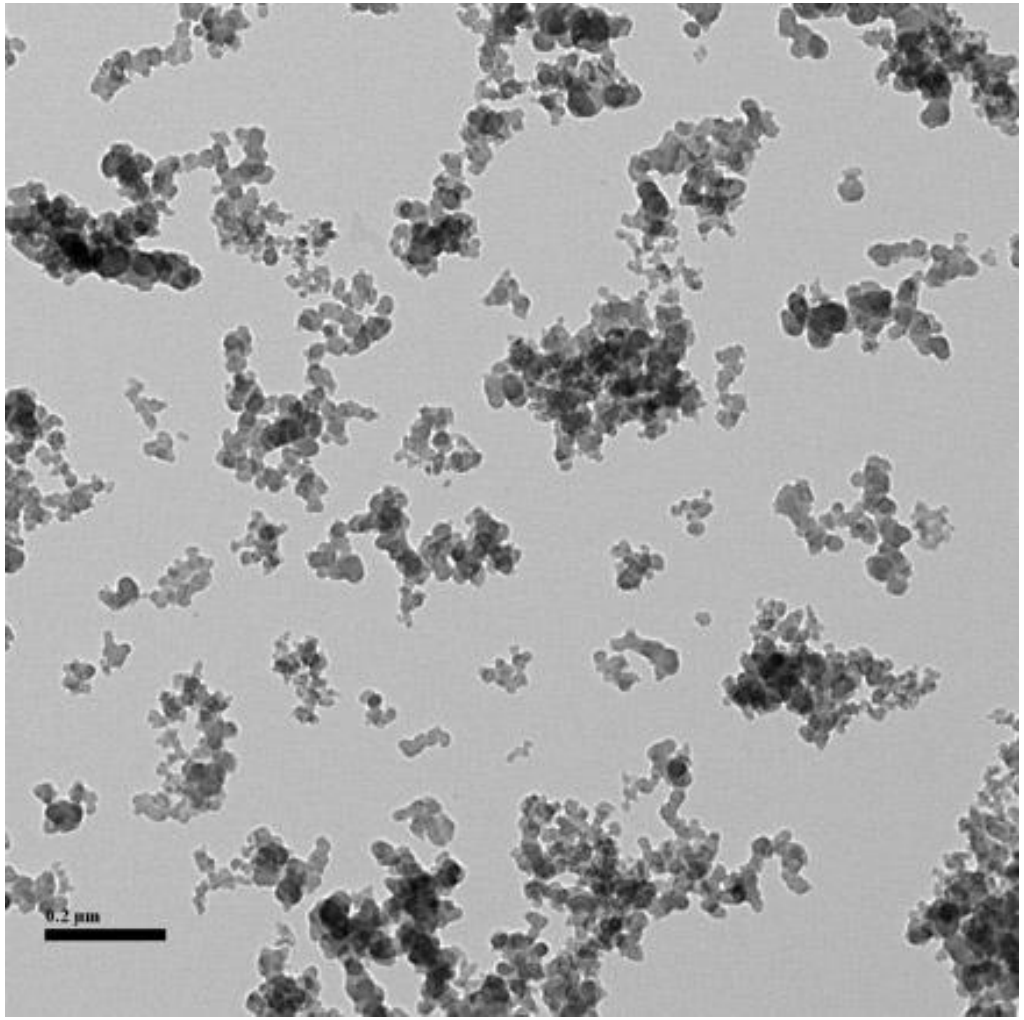

Gas well @600 meters
~97% Methane/CH_4
~3% CO_2
Biogenic source!


Status 5 March 2024

SEID



Carbon from plasma reactor[1]



N100 CB[2]

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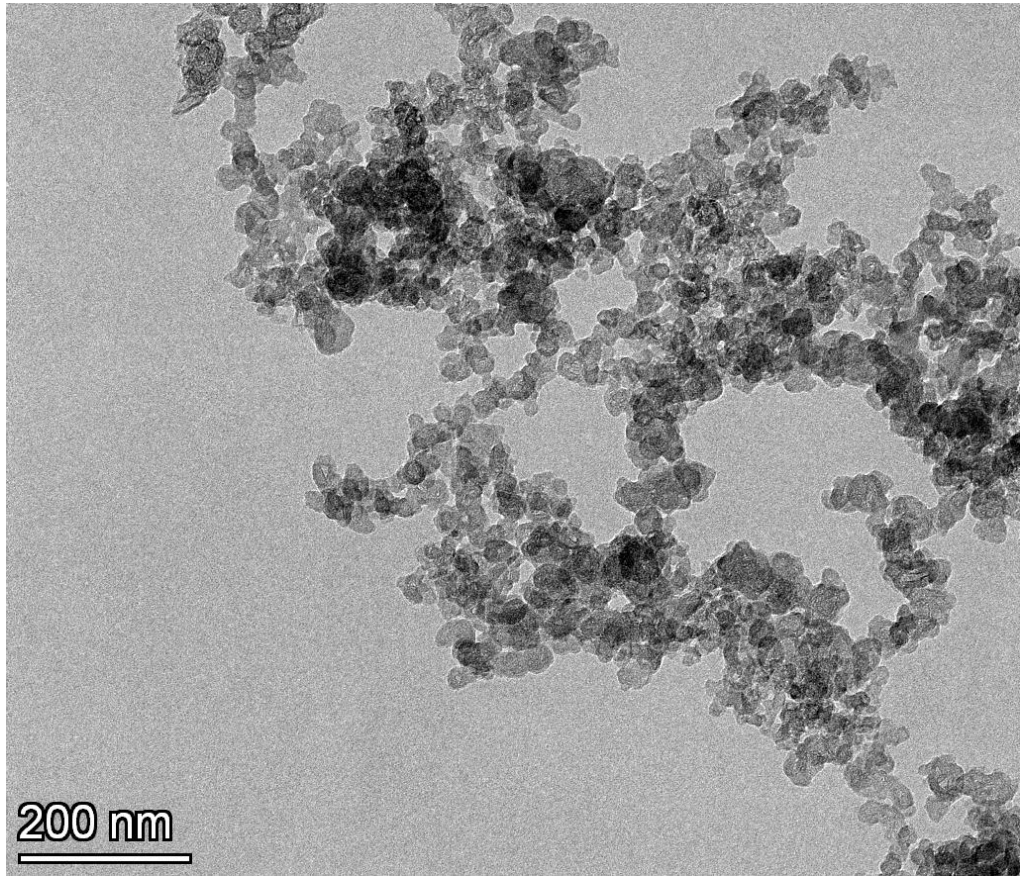
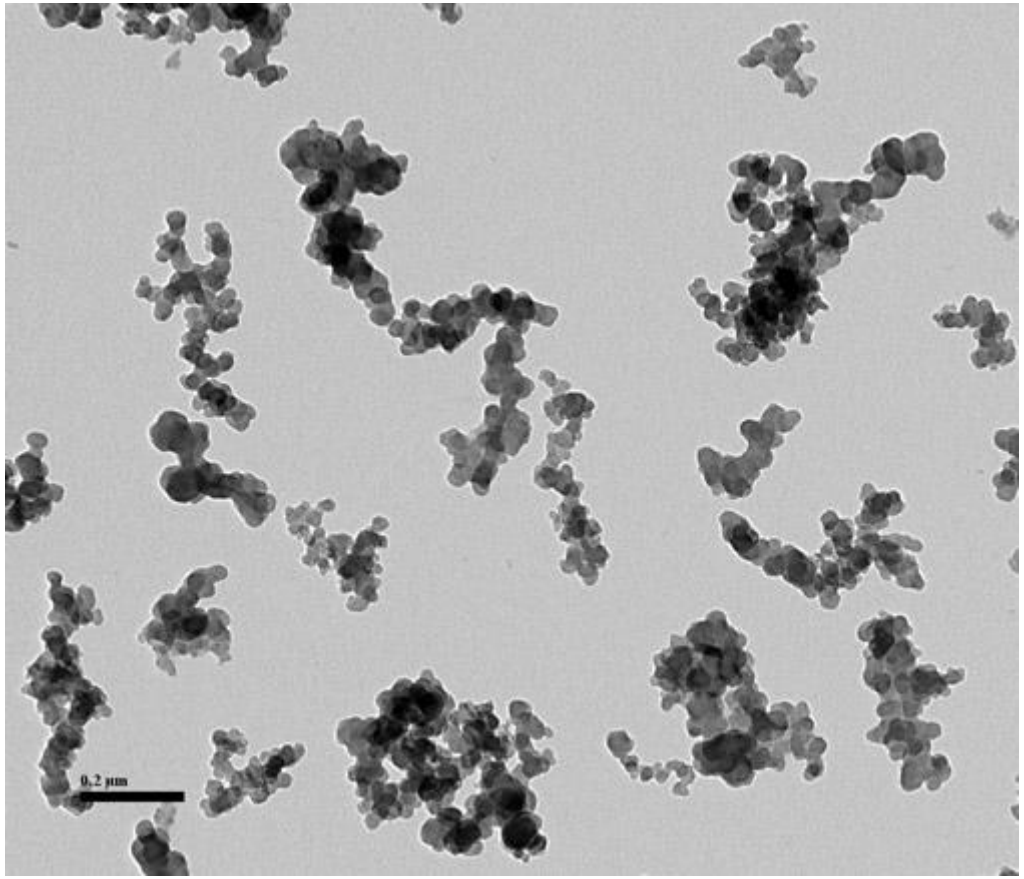


Carbon from plasma reactor[1]



N300 CB[2]

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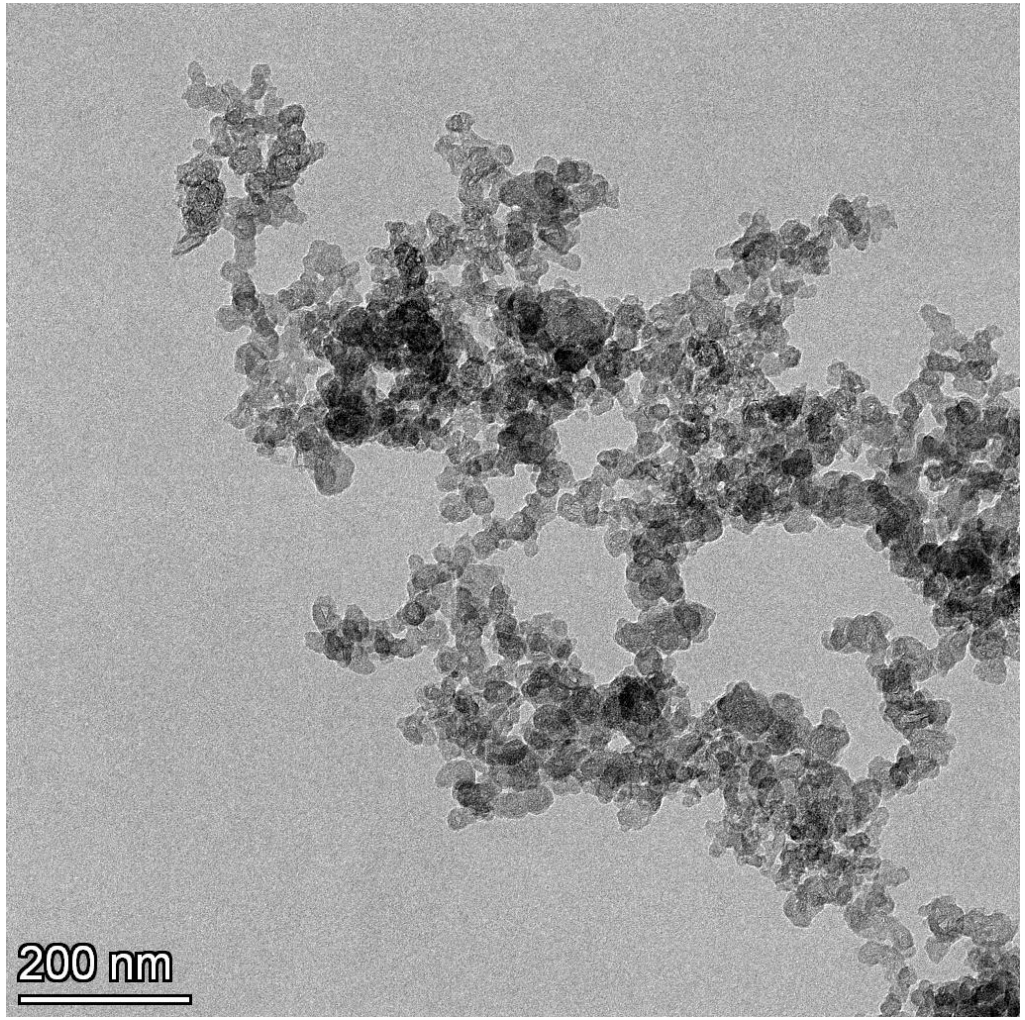
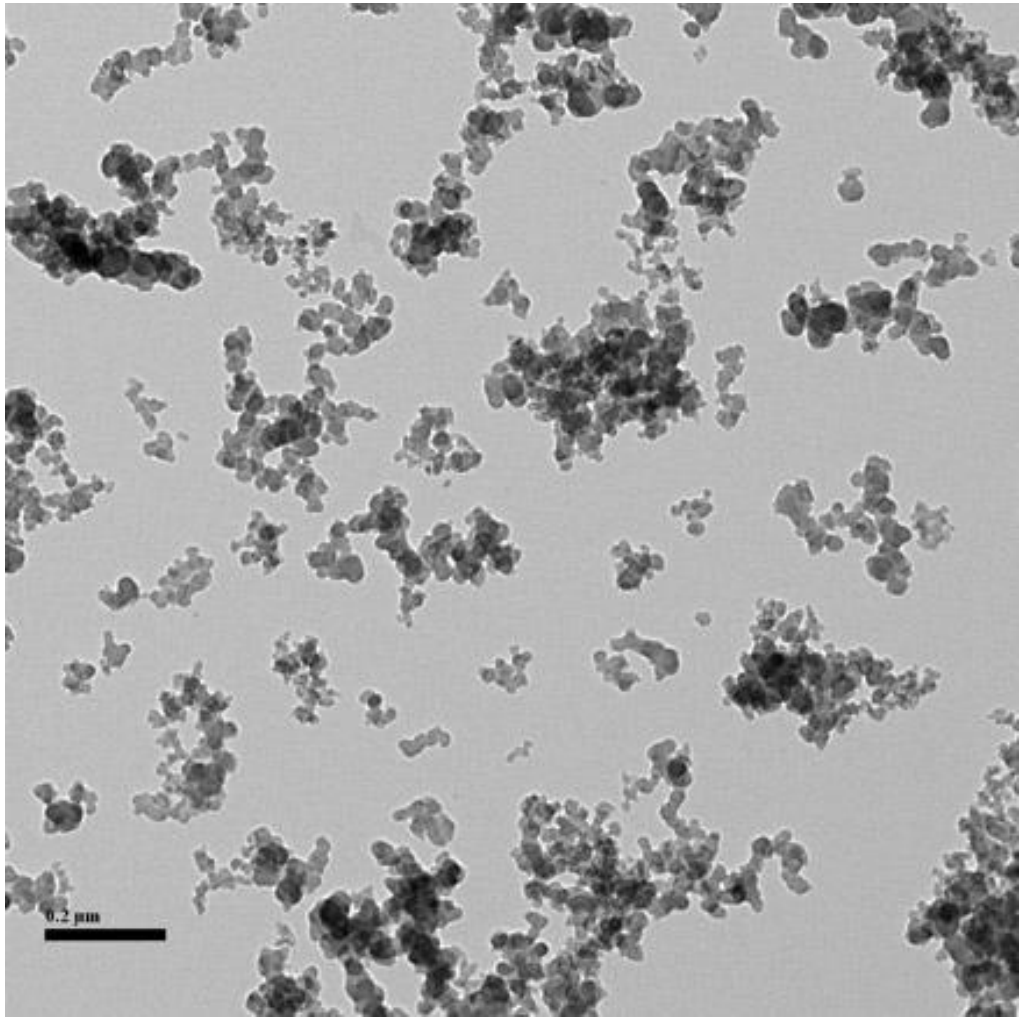
SEID



Carbon from plasma reactor[1]



N100 CB[2]

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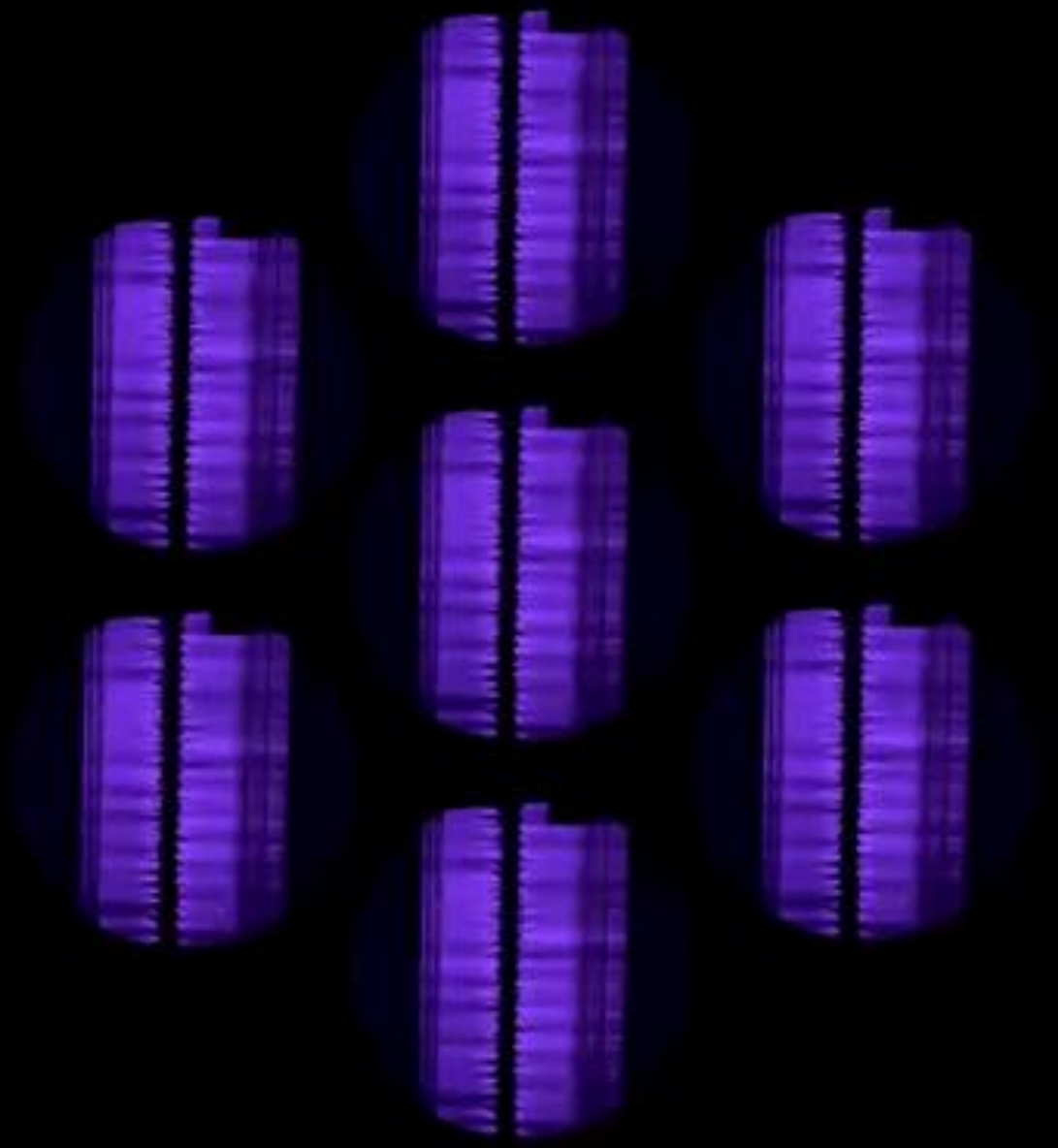
Carbon Separation

ColdSpark® reactor

ColdSpark Pulse Generator

Status 5 March 2025



Thank you!

Questions?

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www.seid.no
www.coldspark.eu