

working together to create a carbon-neutral future. a new WORLD is waiting in 2050. www.eplus32.co.jp



E-Plus dedicated team of brilliant minds, researchers, and engineers work tirelessly to create cutting-edge technologies that revolutionize the way industries operate. By pushing the boundaries of what's possible, we aim to redefine industries and set new standards for environmental stewardship.

E-Plus aspires to be at the forefront of a global transformation towards sustainable practices. Through our breakthrough decarbonization technologies, we are determined to enable businesses, communities, and governments to transition towards low-carbon and renewable energy solutions. By collaborating with partners across the world, we strive to establish a network of change-makers united in the pursuit of a healthier planet.



# **Driving Change with**



**Our Carbon Dioxide Capture Fuel Recycle (CCFR)** technology is at the heart of our vision. This innovative and sustainable in-situ decarbonization solution goes beyond convention. It reshapes industries by capturing  $CO_2$  emissions at their source and converting them into valuable fuel resources. Through our low-cost electrolysis amine chemical absorption process, we create a seamless cycle of transformation, where  $CO_2$  emissions become the building blocks for the energy we need to power our world. Moreover, our technology's by-product,  $CO_2$ , finds a new purpose as a catalyst for the manufacture of fertilizers, amplifying our commitment to a circular economy.



### Carbon Dioxide Capture Fuel Recycle (CCFR Technology)

### **Overview of CCFR Technology**





CO<sub>2</sub> absorption tower



CO₂ separation tank



E-Plus CO<sub>2</sub> to fuel Electrolysis



**E-Plus control panel** 



Rate in Life Cycle Assessment quantifying (LCA), its effectiveness in significantly lowering the carbon footprint over the entire lifecycle of the process.

addressing suited for substantial volumes of exhaust carbon dioxide emissions, making it a robust solution for industries with high

# Energy

energy demands of CCFR are minimal. making it an energy-efficient approach to carbon capture and fuel recycling, contributing to sustainable resource management.t

By amalgamating these features, CCFR emerges as a compelling strategy for industries seeking a cost-efficient, environmentally conscious, and effective method to curb their carbon emissions while simultaneously harnessing  $CO_2$  for fuel production.

emissions outputs.



Low-Cost **Electrolysis** 



# Championing Direct Air Capture with C-guard:

Our dedication to combating global warming extends to the atmosphere itself. Our unique chemical, C-guard, emerges as a groundbreaking solution for direct air capture. With its robust ability to fix  $CO_2$ , it transforms a problem into an opportunity, effectively removing carbon dioxide from the air we breathe. This technology empowers us to restore balance to our environment and mitigate the impacts of climate change at a global scale.



Large scale-DAC equipment

# **Innovative Features of Direct Air Capture (DAC)**

#### Reduction through Mineral Fixation of CO<sub>2</sub>:

DAC introduces an innovative approach by leveraging mineral fixation to capture and sequester carbon dioxide. This process enhances the permanent removal of CO<sub>2</sub> from the atmosphere, contributing to long-term climate change mitigation

#### Low-Cost Equipment:

DAC showcases a unique advantage with its utilization of cost-effective equipment, making it an accessible option for implementing large-scale carbon capture initiatives without substantial financial burdens.

### **Resource Utilization of CO<sub>2</sub>:**

DAC

DAC goes beyond mere carbon capture by opening doors to creative resource utilization. This technology transforms captured CO<sub>2</sub> into valuable products, thus turning a once harmful greenhouse gas into a feedstock for various industries.

## Expansion of Methods of Utilization:

DAC significantly broadens the horizon of CO<sub>2</sub> utilization methods, offering opportunities for industries to incorporate captured carbon dioxide into various valueadded processes, reducing waste and fostering sustainability.

#### DAC Facilities for Fertilizer Production:

**Compact in-room DAC equipment** 

One of the groundbreaking applications of DAC lies in the production of fertilizers. By using captured CO<sub>2</sub> as a vital ingredient, DAC contributes to the creation of fertilizers that enrich agricultural practices and support global food security.

With these pioneering features, Direct Air Capture demonstrates its potential to revolutionize carbon capture technology. It not only effectively addresses carbon emissions but also offers pathways to resource optimization, eco-friendly product creation, and innovative solutions for sectors such as agriculture.



### - Harnessing CO<sub>2</sub> for Fertilization and Demonstrating its Potential



Green Carbon Fertilizer



Compared with other chemical fertilizers



Radish using Green carbon fertilizer





Cyclamen revival after using the Green Carbon Fertilizer

### - Unlocking the Potential of CO<sub>2</sub> Conversion to Fuel: Demonstrations and Applications





Amine

Low-Cost Electrolysis

Converts Amine into CO<sub>2</sub> Rich – Amine.



CO<sub>2</sub> Rich - Amine



Flammable Product



# Making a Meaningful Contribution?

E-Plus plays a pivotal role in the costeffective extraction of carbon dioxide from exhaust gases. This process of separation and recovery has farreaching implications, resulting in substantial reductions in carbon emissions.

E-Plus extends its impact to the realm of agriculture by facilitating the use of recovered CO<sub>2</sub> for fertilizer production. This dual-purpose approach contributes significantly to the wider CO<sub>2</sub> utilization landscape.

Fertilizer

Application

Utilizing

**Recovered CO2** 

Efficient CO<sub>2</sub> Recovery from Exhaust Gases at Low Cost Innovative Low-Cost Mineral Fixation of Atmospheric CO<sub>2</sub>

E-Plus introduces an innovative approach to carbon capture through lowcost mineral fixation of atmospheric carbon dioxide. This strategy not only mitigates environmental impacts but also promotes the effective utilization of CO<sub>2</sub> resources. Revolutionizing Fuel Conversion Technology

E-Plus's pioneering efforts encompass the conversion of recovered CO<sub>2</sub> into alternative fuels. This technology not only addresses petroleum dependence but also holds promise for applications in the production of construction materials, road materials, and paper manufacturing processes.

E-Plus stands as a proponent for diverse CO<sub>2</sub> utilization methods, presenting novel opportunities in fields like construction, road infrastructure, and paper production.

> Proposing Novel Uses for CO<sub>2</sub>

Through these innovations, E-Plus demonstrates its commitment to driving positive change by optimizing CO<sub>2</sub> recovery, promoting resource utilization, and spearheading advancements in alternative fuel technologies and sustainable material production.





### **ABOUT US**

is a Research and Development company works to provide decarbonization technologies. Envision a future where sustainability and technological advancement converge to pave the way for a cleaner, greener, and more resilient world. Our relentless commitment to research and development fuels our journey towards becoming a global leader in pioneering decarbonization technologies. E-Plus believes that innovation is the cornerstone of progress.

