Korea-EU Horizon Europe Researchers Networking Forum

on Energy & Advanced Mobility

- Tae Jin Kang

- Principal Researcher

- Institute for Advanced Engineering

- Low Grade Fuel Upgrading and its Application, CCUS, H_2

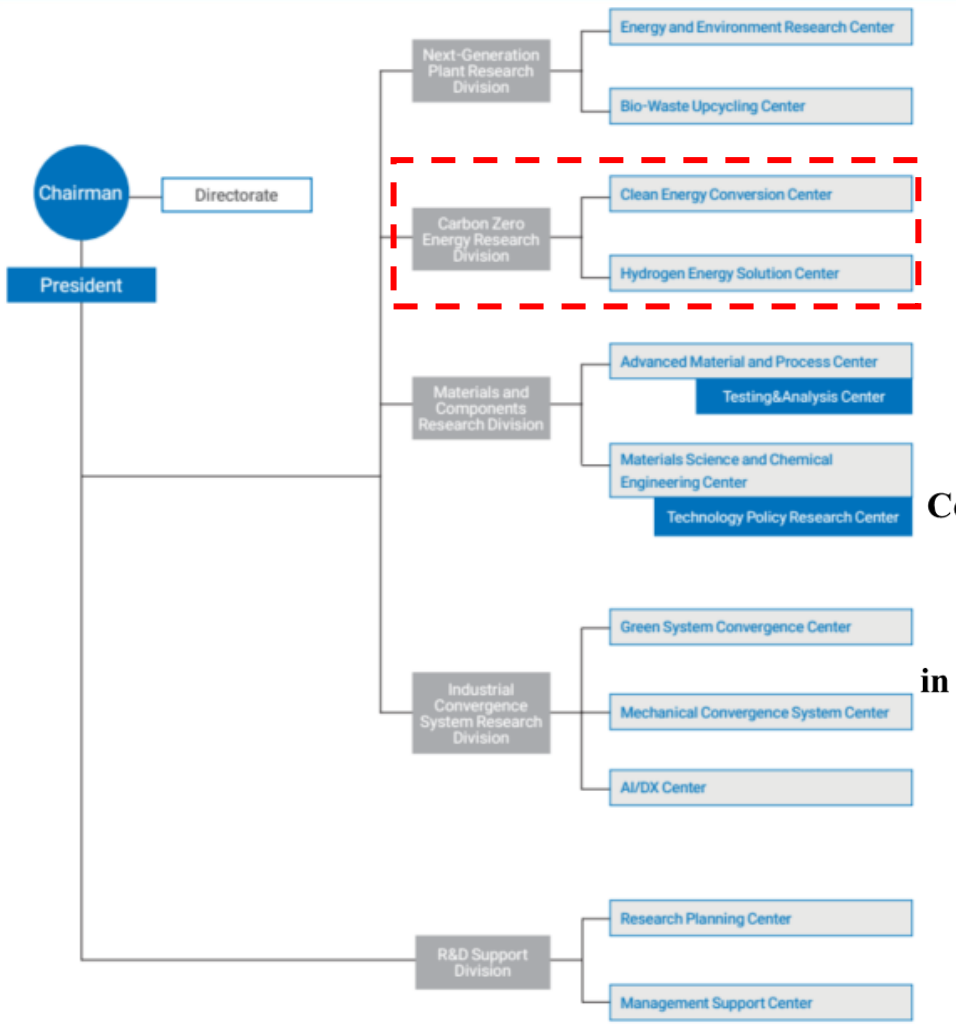
1. Short Introduction of your Organization

Non-profit and private R&D Institute certified by MSIT of the Korean government in 1992.

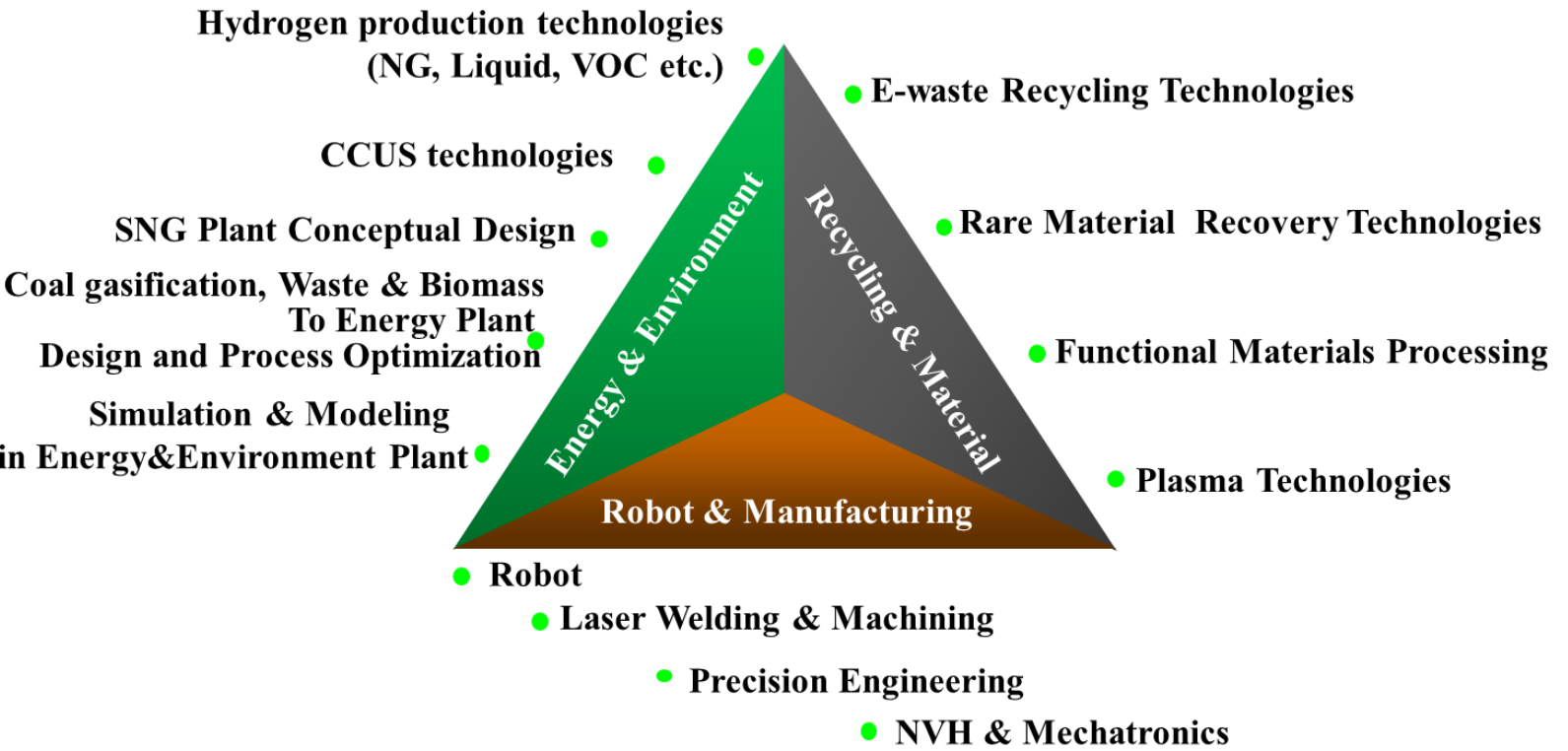
※ MSIT : Ministry of Science and ICT

- Develop core technologies for member companies and provide technical services for small and medium enterprises.
- Train and maintain quality R&D personnel in support of member company's human resources development.

1. Short Introduction of your Organization



Focus on Energy·Environment, Recycling and Manufacturing technologies.



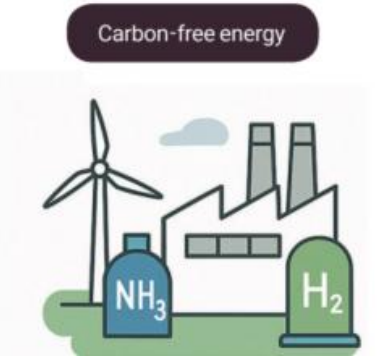
1. Short Introduction of your Organization

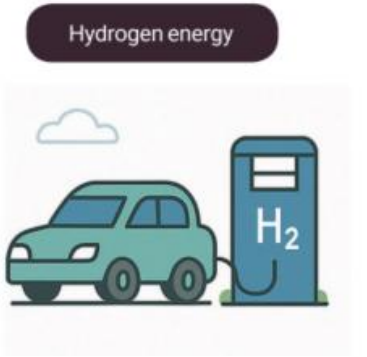
The Carbon Zero Energy Research Division

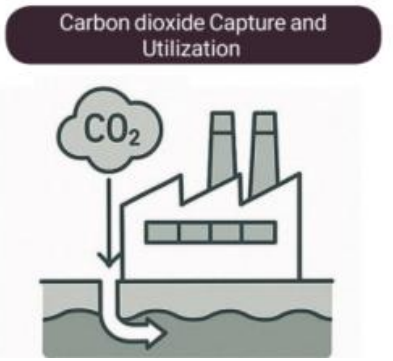
Vision & Mission

Establish a technology-driven R&D model for the private sector by developing core technologies for carbon neutrality and energy conversion, and lead the government, industry and global cooperation system
Realize climate crisis response and future energy transition through sustainable energy technology development for zero carbon emissions.

The Carbon Zero Energy Research Division is a leading research organization in the development and realization of carbon-neutral energy technology for a sustainable future. Our division promotes R&D, demonstration, policy support and industrial cooperation in various fields such as renewable energy, hydrogen energy, carbon dioxide capture and utilization (CCU), resource recycling and energy efficiency technology. Through this, we present innovative solutions for building an ecosystem of sustainable future energy.







2. Expertise

◆ CCUS(Carbon Capture, Utilization & Storage) Technology

- Carbon capture and chemical conversion technology as an element of CCUS to utilize greenhouse gases generated by carbon neutral response technology.

◆ Establishment and operation of a resource-recycling clean hydrogen production facility

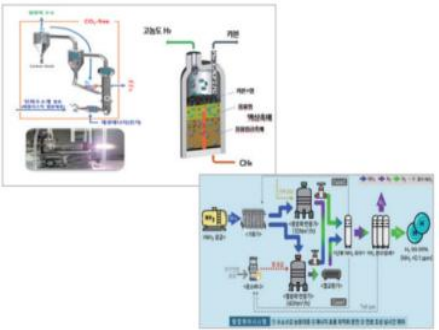
- Operation of Korea's first hydrogen mother station
- Establishment of clean hydrogen production and hydrogen refueling station linked to biogas facilities
- Commercialization of small-scale distributed on-site hydrogen refueling station
- Development of hydrogen city master plan and Clean hydrogen infrastructure

◆ Biofuel and raw material production and utilization technology

- We are conducting research on the production of carbon-neutral raw materials and the development of various technologies to produce energy and products using these materials, in order to achieve a sustainable carbon-neutral society.

◆ Energy efficiency enhancement through waste-to-energy technologies

- Fuel cell cogeneration systems utilizing agricultural by-product carbonization and gasification
- Biomass boiler-based cogeneration system development
- High-quality solid fuel production from biomass and waste
- Advanced environmental technology for hazardous substance management in industrial processes



◆ Carbon-neutral clean hydrogen production and Green hydrogen production technology based on carbon-free fuel

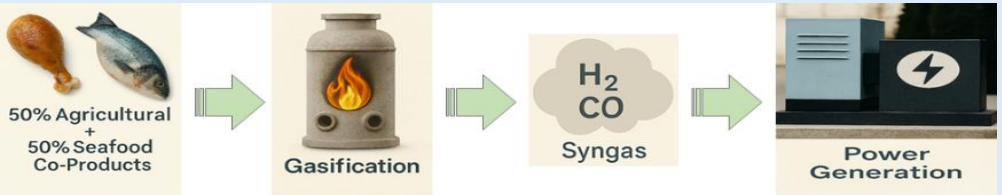
- We are conducting research on clean hydrogen production technology centered on net-zero through renewable energy-based turquoise hydrogen production technology, not the conventional gray hydrogen.
- We are developing hybrid process technology to secure the original technology in the field of ammonia-based green hydrogen production.

◆ Customized Hydrogen Infrastructure Design and Commercialization

- **[Master Plan and Basic Concept]**
  Dangjin, Paju, Boryung, Chungju, Ansan, Yongin
- **[Hydrogen production Infrastructure Development]**
  Incheon, Yongin, Cheongju

3. Your Project Idea

✓ HORIZON-CL-5-2026-09-D3-05: Demonstration of solid biofuel supply and conversion to large scale CHP from fully sustainable regional value chains



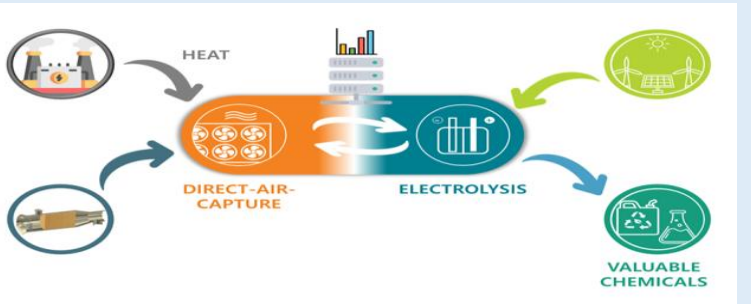
Main objectives

- Development of iVT-Based Multi-Biomass Gasification-CHP Technology

Idea briefly explained

- Development of an integrated modular fuel upgrading pre-treatment technology utilizing AI for multi-biomass resources.
- Development of AI-based gasification and CHP operational optimization, forecasting and predictive maintenance functionalities.

✓ HORIZON-CL-5-2027-03-D3-31: Advancements in Direct Air Capture



Main objectives

- Development of flexible operation systems using thermoelectric devices linked with renewable energy and next-generation dry adsorbents

Idea briefly explained

- Development of a technology to flexibly control the operation and shutdown of DAC systems in alignment with intermittent renewable energy supply, with a smart operation algorithm demonstrated to intensively capture CO_2 during surplus power availability and minimize operation during high electricity price periods.

4. Profile You are Seeking and Why

Seeking a Long-Term European Partner

To create a synergistic R&D model by combining:

IAE's Expertise: Technology Commercialization & Demonstration

Partner's Strength: Fundamental & Core Technology Research

Our Goal: To achieve breakthrough innovations through sustained collaboration.

5. Contact Details

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