LowCarbon

Current Status And Challenges of CCUS Technology, The Center of The Climate Tech Industry

- **Shingol Kang - LowCarbon**

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LowCarbon

Presentation Summary

Carbon Capture Utilization and Sequestration Technology are overruling the Climate Tech industry.

Explore the MRV control center, CCUS & DACCS technology, and the experience how LowCarbon built the efficient methodology that can obtain accredited Carbon Credit.

Table of Content

No.1 a Leading Climate Technology and Solution Partner

CCUS & DACCUS(Direct Air Carbon Capture Utilization & Sequestration) Technology Based Company

Establishment	Sep.12. 2016 [Incorporated for research purpose in 2005]
Employees	150
Headquarter	Gangjin, Jeonlanam-do, Republic of South Korea
Research & Engineering Center	Daejeon and Seoul
American Corporation	Unites States
Offices	EU Italy & Asia Vietnam

LowCarbon is constantly innovating

Climate Environment Technology

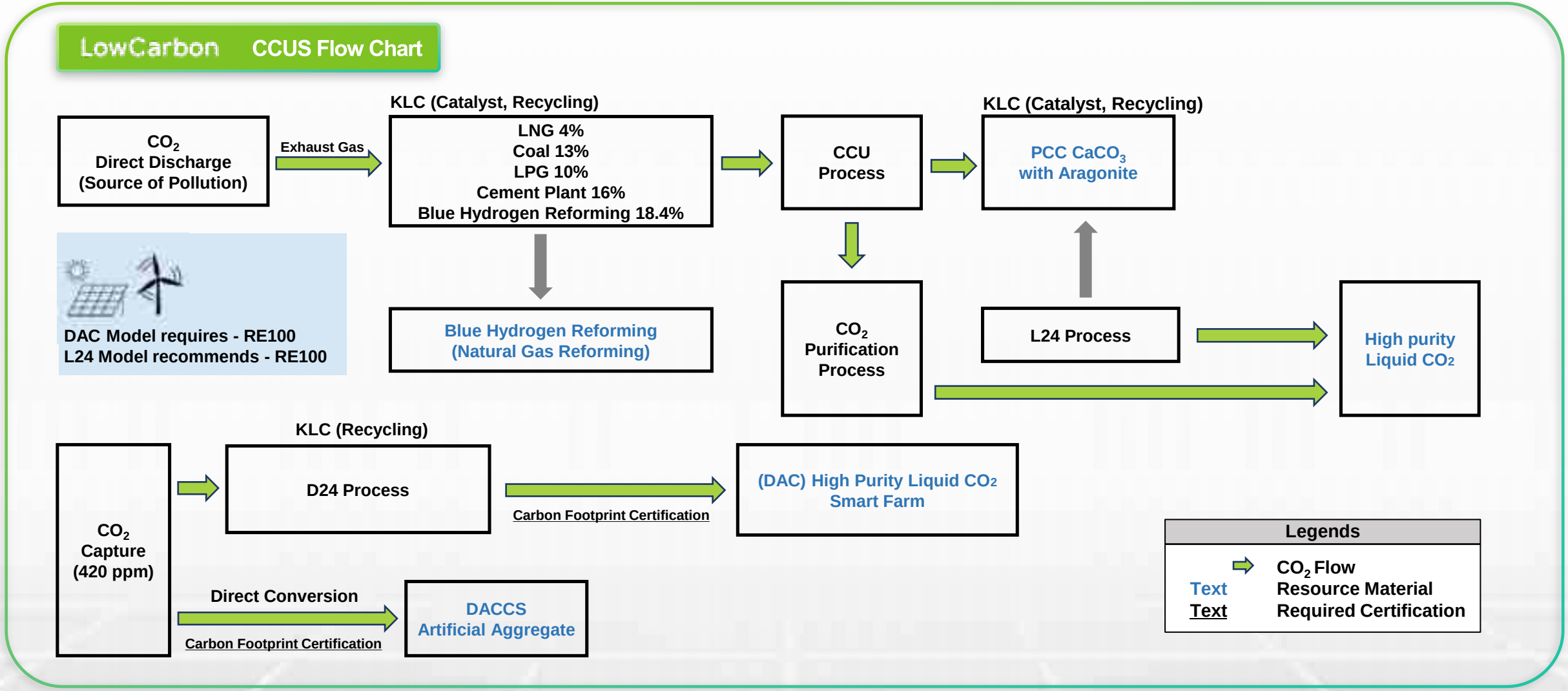
LowCarbon innovative CO_2 capture and absorbent

Business Area & Technology

Carbon Capture Utilization & Sequestration		Carbon Free Energy BlueHynus	Capture & Sequestration	Measurement Reporting Verification	Platform Trading
		BlueHynus 	CO_2 ZeroC DACCS RESOURCELIZATION		CARBON CREDIT
CCUS	DACCUS	Blue Hydrogen	Methodology	MRV	Carbon Credits

CCUS – Net Zero

Carbon Capture Utilization Sequestration



DACCUS – Carbon Negative

Direct Air Carbon Capture Sequestration

CO_2 Capture (420 ppm)

→ D24 Process

→ Carbon Footprint Certification

→ (DAC) High purity Liquid CO_2 Smart Farm

Direct Conversion

→ Carbon Footprint Certification

→ DACCS Artificial Aggregate

→ Artificial Aggregate

Transform to Resource

CCS

Artificial Bricks

Reclamation projects like Caisson

DACCUS – Carbon Negative

Direct Air Carbon Capture Utilization & Sequestration

50K

Model	Zero-C 50K Tree
Dimension	7(L) x 4.5(W) x 3.3(H, Meter)
CO2 Capture	50kg/Month
Power	260 W
Status	Installed and Operated in Korea
Plan	To be installed in Kennedy space center in Florida

15T

Model	Zero-C 15T
Dimension	6.6(W) x 10.7(L) x 8.2(H, Meter)
CO2 Capture	15,000kg/Month
Power	Max 23.5 KW
Type	Easy to extend as module format
Plan	100K Ton/Year system to be installed in Florida

DACCUS – Carbon Negative

Direct Air Carbon Capture Utilization & Sequestration

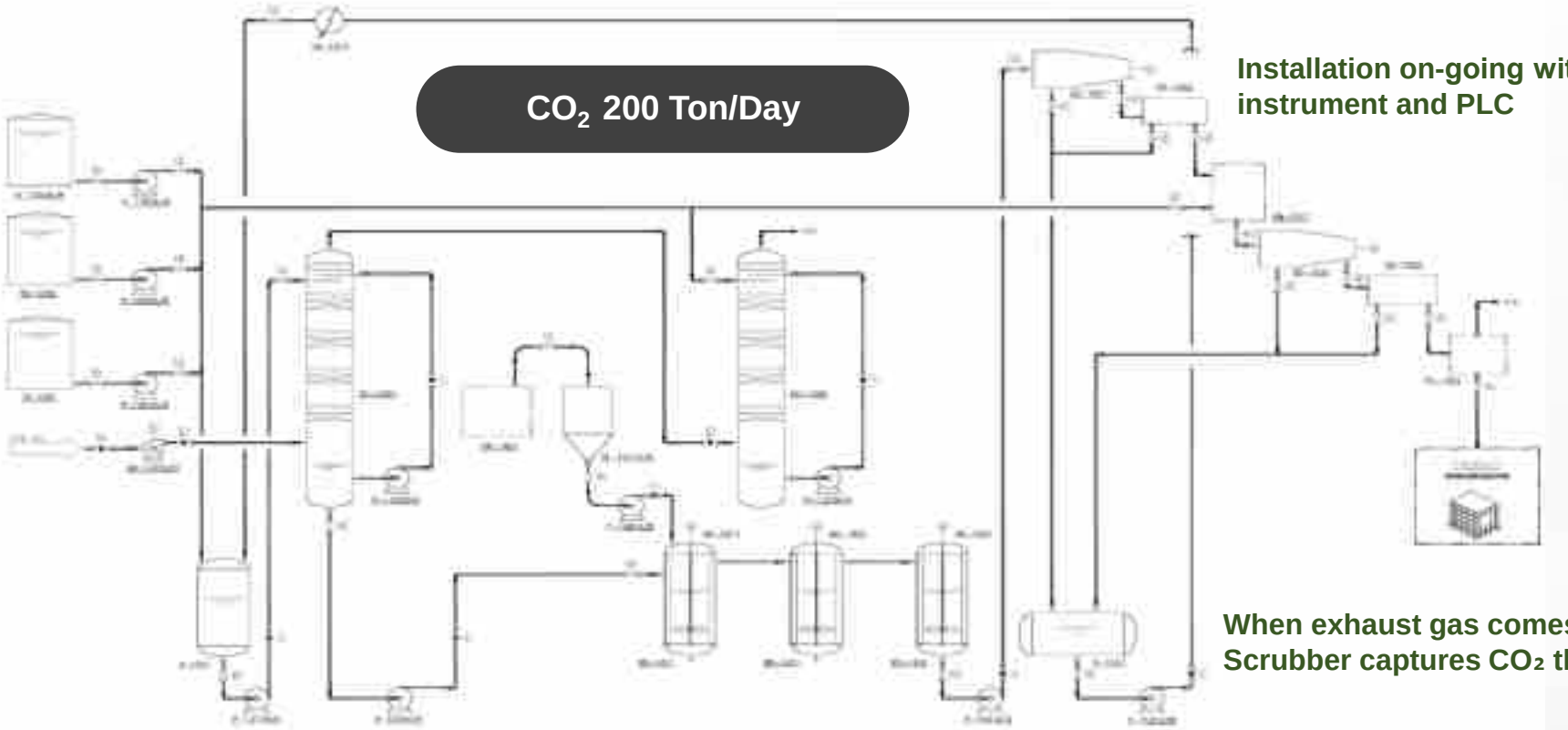
In case of Concrete,
CO2 captured amount is 4.8 weight %

Ecological Theme Park Sidewalk Block

- Produced and delivered sidewalk blocks to Gangjin-gun in Korea.
- Used in ecological theme park.
- Sidewalk blocks to be supplied to Korea as well as the world soon.

CCUS

CCUS Tech Application to CO_2 Emission Sources



Installation on-going with Emerson's instrument and PLC

When exhaust gas comes out of the stack, the Scrubber captures CO_2 through a wet process

Hillsborough County Incinerator Facility CCUS Process Flow Diagram

CCUS

CCUS Tech Application to CO_2 Emission Sources

- Under construction in Hillsborough county with 200 Ton/Day & 73K Ton/Year.
- Designing and building in the form of CCU, CCUS in the form requested by Hillsborough County.
- Cooperating with Emerson to make compatible system from previous ones.

Hillsborough County Incinerator Facility

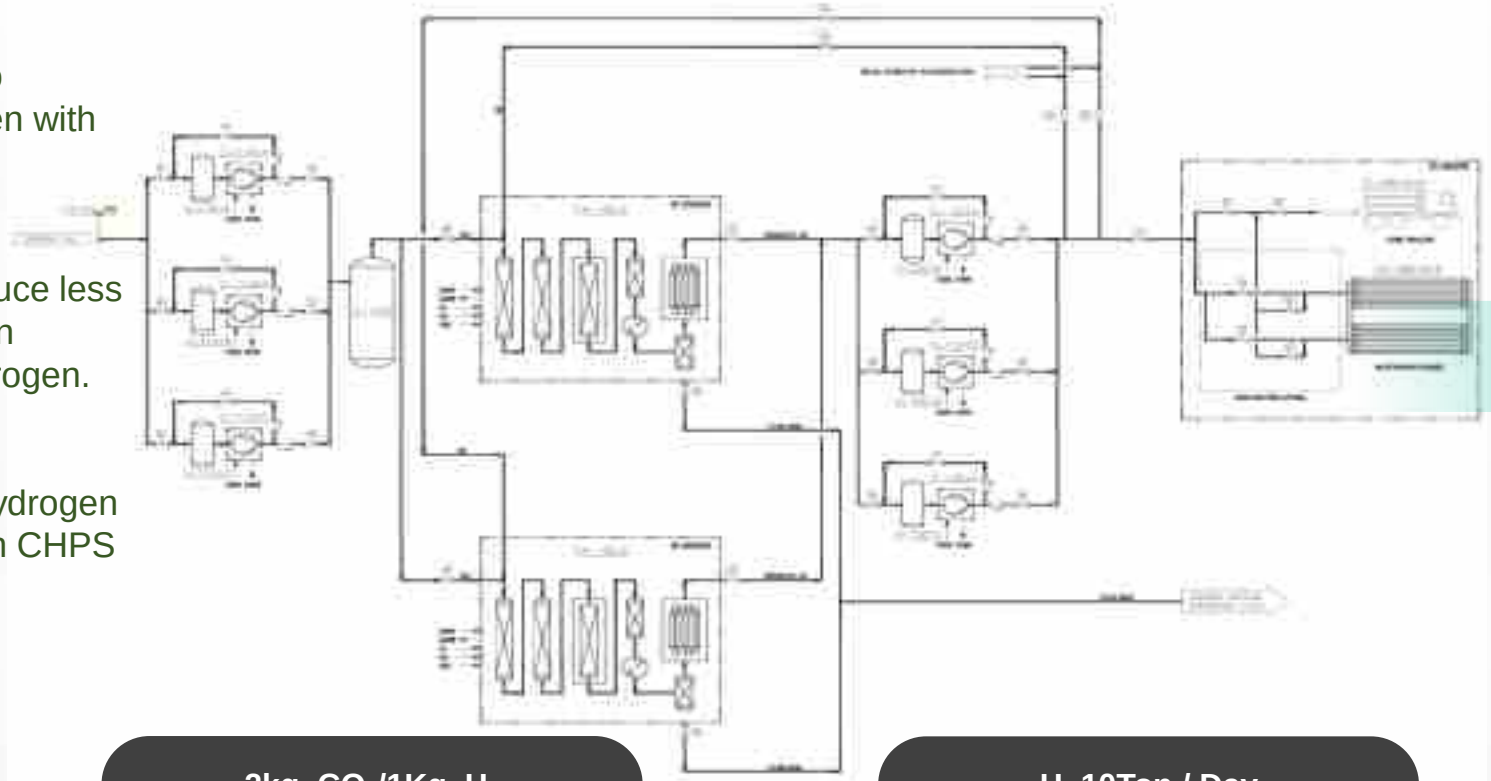
Clean H_2

Clean Hydrogen Using CCUS Tech

- Preparing the plant to produce blue hydrogen with CCUS tech.

- LowCarbon can produce less than 2kg of CO2 when producing 1kg of hydrogen.

- Can produce clean hydrogen at the lower level than CHPS standard.



2kg_CO_2/1Kg_H_2

H_2 10Ton / Day

Polk County CCUS for Clean Hydrogen PFD

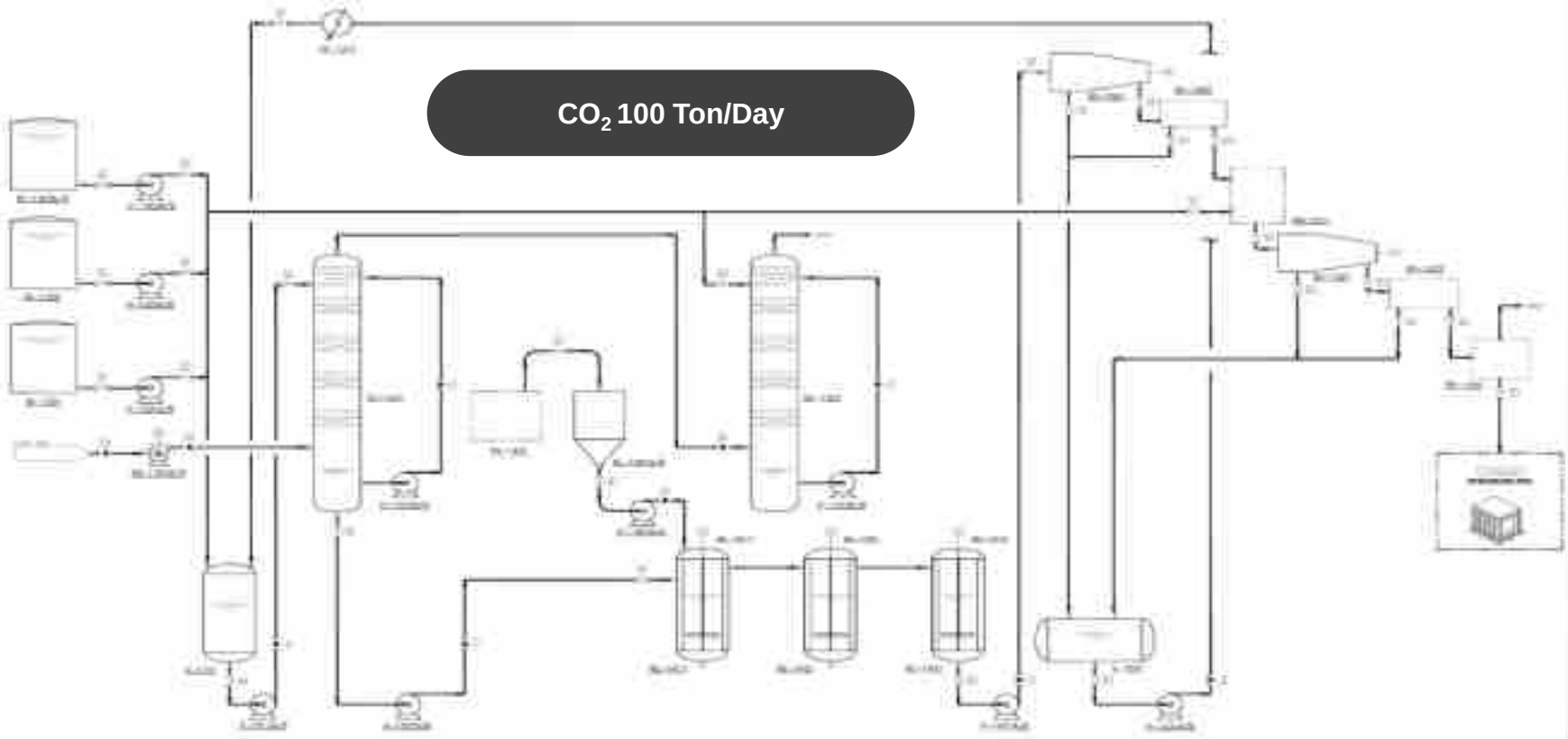
CHPS is the standard for clean hydrogen in US, refers to hydrogen produced at facilities that generate less than 4kg of CO2 when producing 1kg of hydrogen as clean hydrogen.

CHPS : Clean Hydrogen Production Standard

Clean H_2

Clean Hydrogen Using CCUS Tech

- The picture is a process flow diagram of a CCUS facility that removes CO2 from the reformer.
- The Reformer generates 10 tons of hydrogen per day and 100 tons of CO2 as a byproduct.
- All of this hydrogen is supplied to space Florida and the CO2 generated at this time is removed through our CCUS facility.
- Hydrogen produced through CO2 removal becomes clean hydrogen.



Polk County CCUS for Clean Hydrogen PFD

Clean H_2

Clean Hydrogen Using CCUS Tech

1. We received permission from Polk County, Florida to establish the plant, and completed the Groundbreaking Ceremony on June 6 last year.

2. The event was attended by many people, including Chairman Frank, CEO of Space Florida, Florida state officials, and politicians.

3. We have a lot of expectations for the construction of Florida's first hydrogen production plant, and the state has promised generous support to us.

4. We are under construction of the Clean Hydrogen production facility with the target of hydrogen production in 2025.

5. In the construction of this clean hydrogen plant, we will also work with EMERSON to build a whole system automation and a safe plant.

Clean H_2

Clean Hydrogen Using CCUS Tech

MOA Signed with Florida Governor Ron Desantis (April 23, 2023)

MOA Main Contents

- Collaboration in partnership and development activities of the clean hydrogen hub in Central Florida
- Collaboration in the installation of carbon capture utilization and direct air capture in space and aerospace industrial complexes in Central Florida
- Collaboration in the supply and distribution of clean hydrogen and provision of reliable, predictable clean hydrogen
- Collaboration in the work plans and joint promotion of the Project activities
- Collaborate on business development and financial tools and resources available for Project activities regarding opportunities of mutual interest

SMART Farm

Eco-Friendly Strawberry Farm Using DAC Tech

Application of Eco-Friendly Smart Farm in the city

Launched Smart Farm in the city center and in apartment complexes using DACCS technology.

The Smart Farm is a facility that collects CO2 from the atmosphere and supplies CO2 to plants. CO2 is needed for photosynthesis supplied to plants, which helps them grow.

AI System Control

Through AI system control, optimal crop production is possible through CO2 concentration, UV lamp irradiation, humidity, and temperature control in Smart Farm.

MRV Zero-C

Carbon# (MRV Database Center)

Kennedy Space Center Zero C

Ulsan Port, Korea – Zero C

Gangjin Gun, Korea – Zero C

Global Wireless
Roaming Connection

Cloud Server
Data Collection

REAL TIME MONITORING IN MOBILE

PC Android iOS

DATA STORAGE CENTER

MRV

Clean Hydrogen Using CCUS Tech

Real Time Monitoring	Transparent Verification	Data Storage	Rights to Carbon Emission

Carbon # monitors all data from CCUS and DACCS facilities in real time → All data to be used for MRV → Through this MRV, Carbon credit can be issued.

Smartphone App

Real-time Monitoring

Methodology

For Generating Carbon Credits

Methodology

For Generating Carbon Credits

Artificial Aggregate

Intellectual Property Rights

For Generating Carbon Credits

Certificates

- Ministry of Oceans and Fisheries NET New Technology Certificate
- Certificate of designation of innovative product by Public Procurement Service
- Global IP Star Company
- Certificate of Companies Specializing in materials, parts, and equipment
- Certificate of Outstanding technology Competency(T3)
- ISO 9001/14001/45001
- Technology Innovation Small & Medium Business confirmation
- Business Innovation Small & Medium Business confirmation
- Certificate of Designation of Excellent Product by Public Procurement Service
- Approval In Principle(AIP) by Lloyd's Register

Award – IR52

For Generating Carbon Credits

LowCarbon Reduction of Fine Dust

- Company Name : LowCarbon
- CEO : Lee Cheol
- Product Name : Fine Dust Reduction
- Development Technology : High-performance pretreatment desulfurization Technology of pretreatment method that satisfies emission gas regulatory response
- Selected Fields : Technology Innovation

Jang Young-Shil
- One of the greatest inventors in the Korean history.

This award is to honor and encourage engineers who accomplished a prominent job in technologically innovative activities of private companies, result of which was successfully commercialized into a new product or process during the last two years

LowCarbon received the IR52 Jang Young-sil Award for Technology Innovation Award as a leading technology in climate tech

Jang Yeong-sil Award is given to companies with the best technology in Korea, LowCarbon has the highest T1 in technology evaluation criteria.

Product Overview - 1

Zero-C 50K Tree

Zero-C 50K Bus Station

Zero-C 50K Standard

Zero-C 10K Standard

Zero-C Smart Shelter

Product Overview - 2

Zero-C Streetlight

Zero-C Illumination


LowCarbon
We make the world’s sky blue again !

Questions?

Thank You

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https://blog.naver.com/lowcarbon1

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