

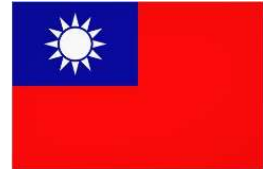


13th Edition of GreenCo Summit 2024 | Conference Theme: Unlocking the Transformation to Net Zero

26 & 27 JUNE 2024 : ITC GRAND CHOLA, CHENNAI

# Smart Green Technology for Climate Mitigation - Forging Net Zero Future

## Designing green products for net zero growth



### Andrew Chen-Yeon CHU Ph.D

Professor, Ph.D. Program of Mechanical and Aeronautical Engineering / Master's Program of Green Energy Science and Technology, Feng Chia University, Taiwan  
President, Rotary Club of Taichung Light-Up 23-24, D3461  
Executive Secretary, APEC Research Center for Advanced Biohydrogen Technology (ACABT)  
Associated Researcher, Institute of Atmospheric Pollution Research (IIA), CNR, Italy  
Director, Institute of Green Products, Feng Chia University, Taiwan

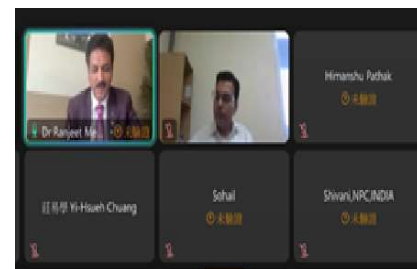
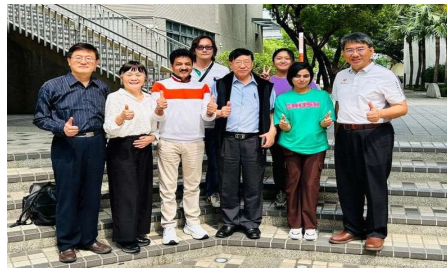
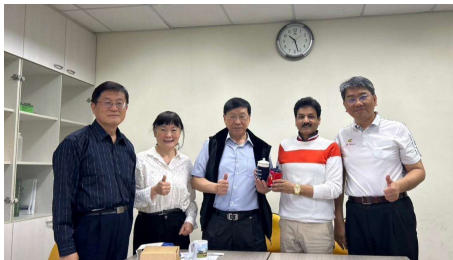




# 2023-2024 India and Taiwan Concrete Partnership

## Eco System on Forging Net Zero Future

Enabling Sustainable Innovation and Business Model



### 2023 MOU Signed : Smart Green Technologies Innovation and Integration for Sustainability Growth at India & Taiwan Industries Collaboration Summit in Taipei, Taiwan





# 2024 Forging a New Strategic Concrete Partnership , India -Taiwan Embracing Net Zero

## I. Series Webinar Conference and B2B Online Meeting:

- #1 April 26, 2024 Friday, IST 10:30-17:30 Face to Face at PHD Chamber of Commerce and Industry (PHDCCI) New Delhi (IST 10:30-13:30 On line with Taiwan at IGP)
- #2 May 24 2024 Friday, IST 10:30-17:30 Face to Face at At Green Business Centre (GBC) Confederation of Indian Industry (CII) Hyderabad (IST 10:30-13:30 On line with Taiwan)

**2. Bilateral Visit Strengthening Partnership:** Associations, Academic Institute, B2B Connection for Enabling Sustainable Capacity Building and Business Model Resource Resiliency and Energy Efficiency /Biomass/ Wastewater Treatment, Eco Plastics Industries Applications, Biotechnology Smart Green Factory.

## 3. Taiwan 8 organizations + APO COEGP mission to India June 23 -30

**2024 New Delhi and Chennai:** Taiwan 8 Organizations led by IGP to visit New Delhi NPC, PHDCCI,CII, IIT-Madra/ICCW, Uflex. Vyomraj, and attend Chennai CII Green Co Summit 2024 India –Taiwan NetZero Pavilion – International Alliance

## 4. 2024 Bilateral Industries Collaboration Summit October in Delhi





# Fostering Well-being via Sustainable Energy, Water, Sanitation, and Empowerment through Adaption of Green Technology and Educational Social Influence

## Eco System Partners **India** X **Taiwan**

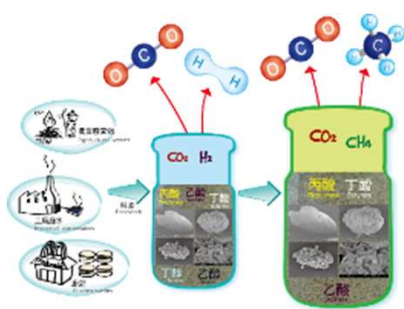
1. CII Green Business Center
2. International Centre for Clean Water (ICCW)
3. IIT- Madras, ICCW  
(Mr. E. Nandakumar, Chief Executive Officer International Centre for Clean Water (ICCW),
4. International Foundation for Crime Prevention and Victim Care(PCVC)
5. Vyomraj Renewables ( Eco Plastic and Green Energy)
6. Nikmed
7. SR ASIA
8. UFlex Limited for Eco Packagings

1. Institute of Green Products (IGP), Feng Chia University
2. Rotary Club of Taichung Light-Up 23-24, D3461.
3. Providence University, Department of Cosmetic Science Cosmetics Products and Technologies:
4. Taiwan Silk Association(TSA)
5. Water Affairs Organization, Taiwan(WAOT)
6. Taiwan Environmental Manufacturers Association (TEMA) Aiemo Eco Biotechnology Partners:
  - ✓ Dr. Andrew, Chen-Yeon Chu, Director of IGP.FCU
  - ✓ Prof. Gen-Hung Chen, Managing Director of Taiwan Silk Association(TSA)
  - ✓ Dr. Kwong-wai Chen, MD, PhD. MacKay Memorial Hospital, Taipei (Former Dean of Graduate Institute of Integrated Medicine, Taiwan China Medical University, MD. ChunYuYang. Lianhua Dermatologist Clinic, Tungs, Taichung Metro Harbor Hospital(Integrative diagnosis and treatment combining both Chinese and Western medicine, skin disorders, pediatric allergies, acupuncture therapy, common cold, and respiratory infection)
  - ✓ Ever-Clear Environmental Eng. Corp.(EC) Wastewater Partner Team of ITRI, and Water Affairs Organization, Taiwan(WAOT)
  - ✓ Free Power Biotechnology Co., Ltd (Cosmetics)
  - ✓ Quanta Engineering & Consulting Co., Ltd.( Eco Materials for Food, Biotech & Pharma, Green Building Materials
  - ✓ Eason Wang Co., Ltd .( Eco Plastic)
  - ✓ Agronic International Co., Ltd CTCN Member/Smart Machinery System



# A Path from Nothing to Something

1. From Biowaste to Bioenergy to Bioeconomy
2. From Lab to Pilot to Commercial
3. From Regional Disaster to Revitalization (Applications)



**Biogas**  
1.5 m<sup>3</sup>/day

**Bioelectric**  
3 kW

**Biofertilizer**  
2 m<sup>3</sup>/day

**Energy Impacts**

**Environmental Impacts**

**IMPACTS**



# 1. From Biowaste to Bioenergy to Bioeconomy

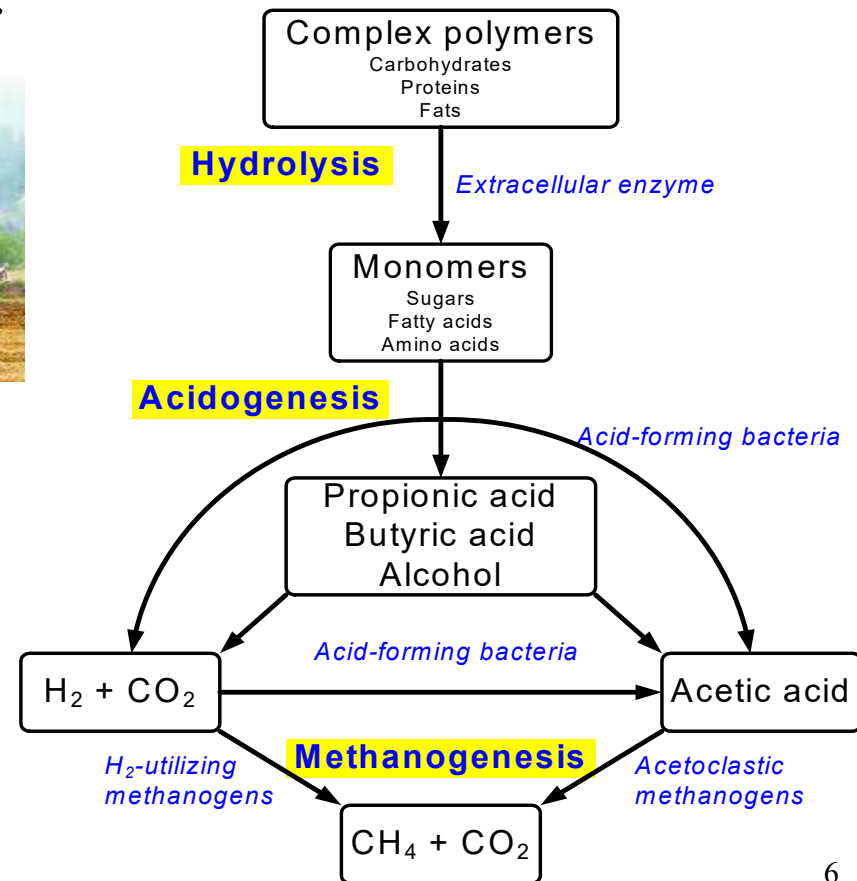
- Organic wastes are abundant in India and ASEAN region which mainly from cellulosic materials and liquid type of wastewaters. Their treatment process is a big issue.



- Air pollutions caused by burning agro-industry organic wastes
- Water pollutions caused by discharging high organic content wastewaters without post-treatment

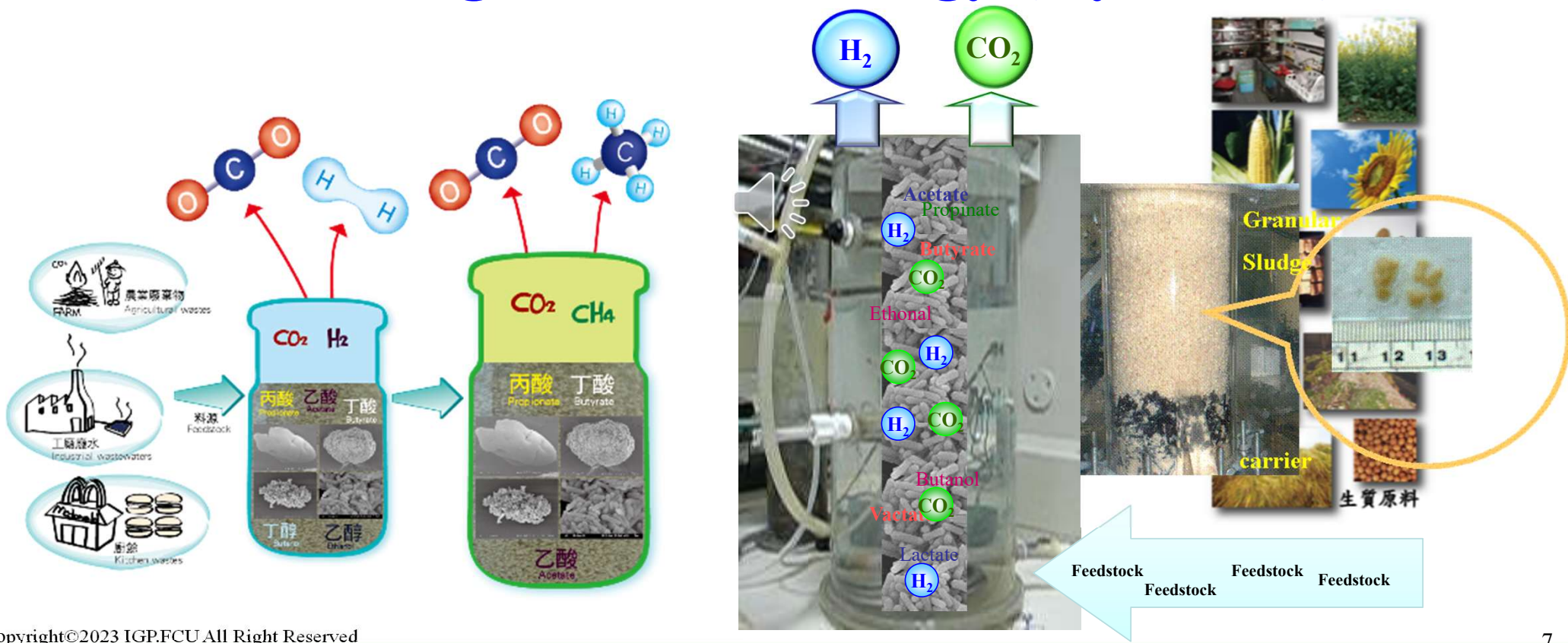


## Anaerobic Digestion



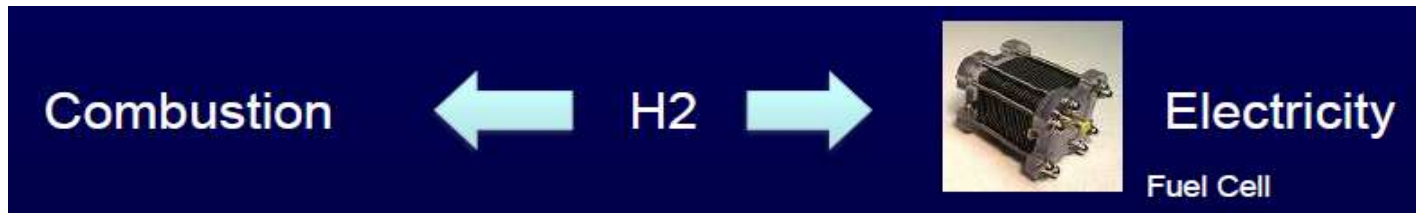
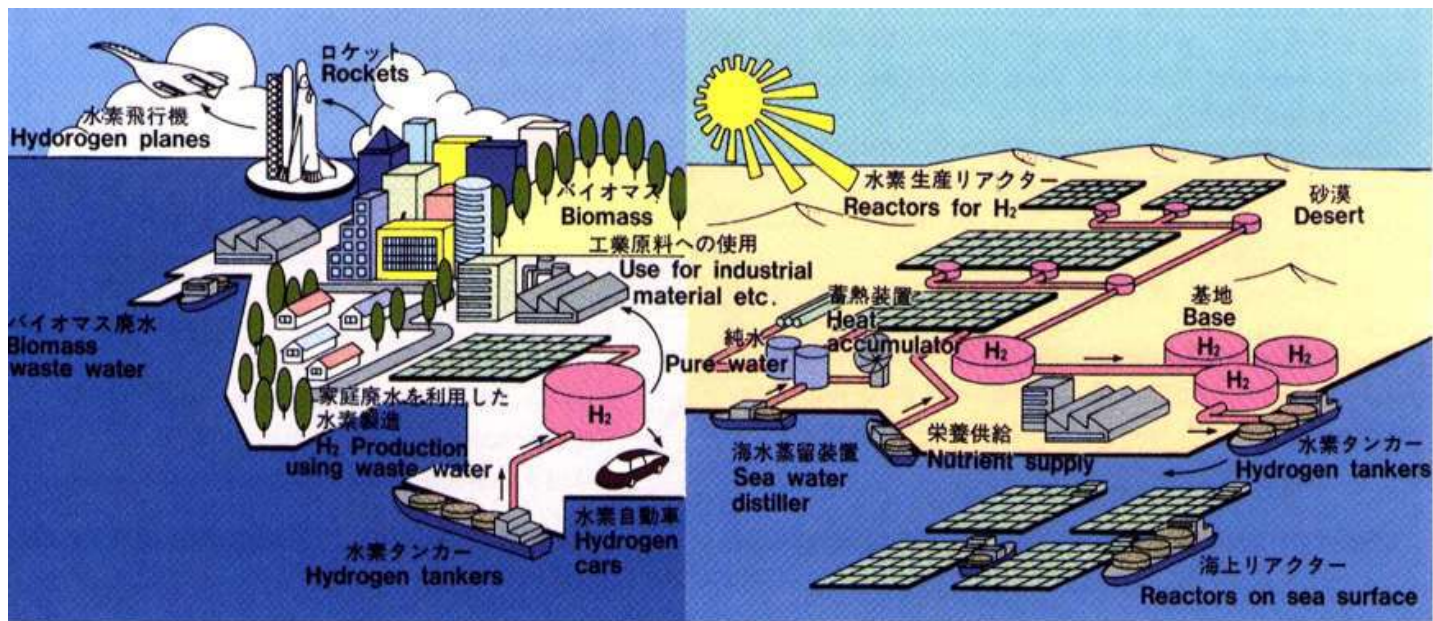


# Our Core Technology: Innovative Hydrogenesis & Methanogenesis Technology (HyMeTek)





# Scheme of BioHydrogen Production





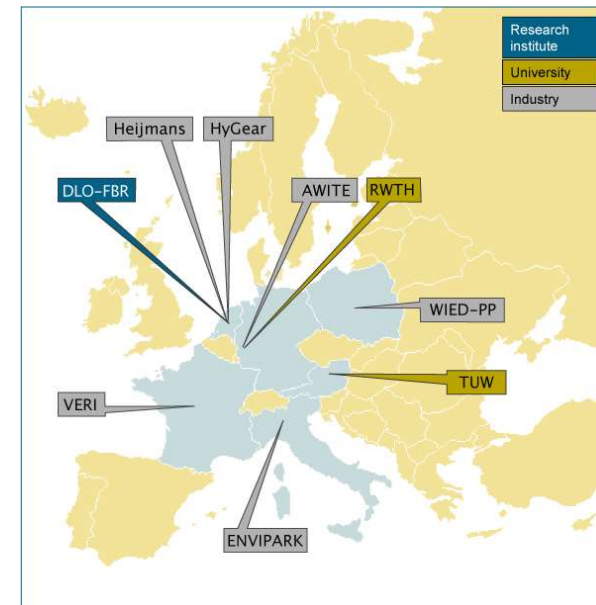
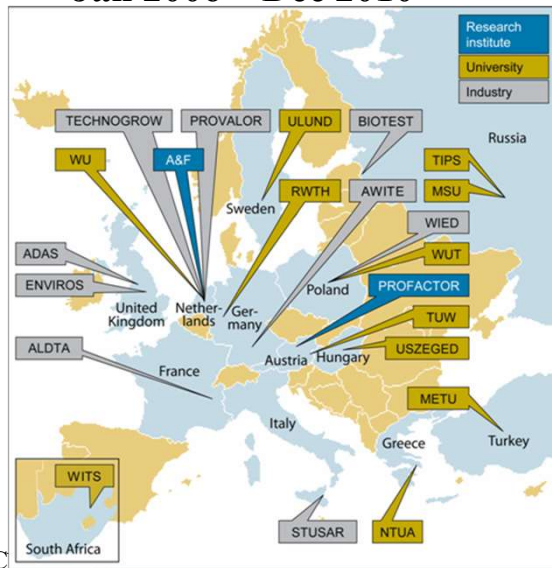


## From HYVOLUTION to HyTIME

### Aim

**Blue print for a bioprocess for decentralized hydrogen production from biomass**

**22 partners, 13 countries  
Jan 2006 – Dec 2010**



### Aim:

**The overall objective of 'HyTIME' is to accelerate the implementation of an industrial bioprocess for decentral hydrogen production systems using 2nd generation biomass.**

**9 partners, 6 countries  
Jan 2013 – ??**



# From Lab to Pilot to Commercial

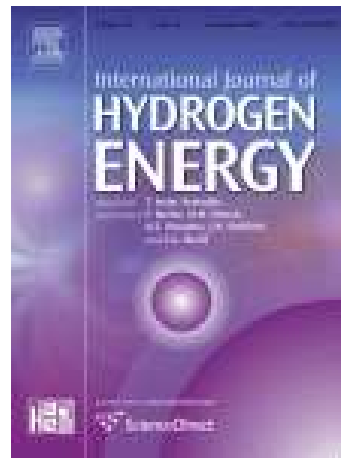




## Feng Chia University has successfully constructed benchmark model

**In 2006-2015, the research groups of Canada, Britain, Singapore, South Korea, Malaysia, Russia and other countries have pointed out that FCU is the first record in biohydrogen production rate in the world .**

**(15 m<sup>3</sup> H<sub>2</sub>/m<sup>3</sup>-h )**





# Reactor Design STRATEGY



**Phase holdups and microbial community in high-rate fermentative hydrogen bioreactors**  
 Chen-Yeon Chu<sup>a</sup>, Shu-Yii Wu<sup>b,1</sup>, Ying-Chih Wu<sup>b</sup>, Bistuarup Sen<sup>a,c</sup>, Chun-Hsiung Hung<sup>a</sup>, Chin-Hung Cheng<sup>d</sup>, Chiu-Yue Lin<sup>c</sup>



**Aspect ratio effect of bioreactor on fermentative hydrogen production with immobilized sludge**  
 Shu-Yii Wu<sup>a,c</sup>, Chen-Yeon Chu<sup>a,k,g</sup>, Wei-Zhi Yeh<sup>b</sup>

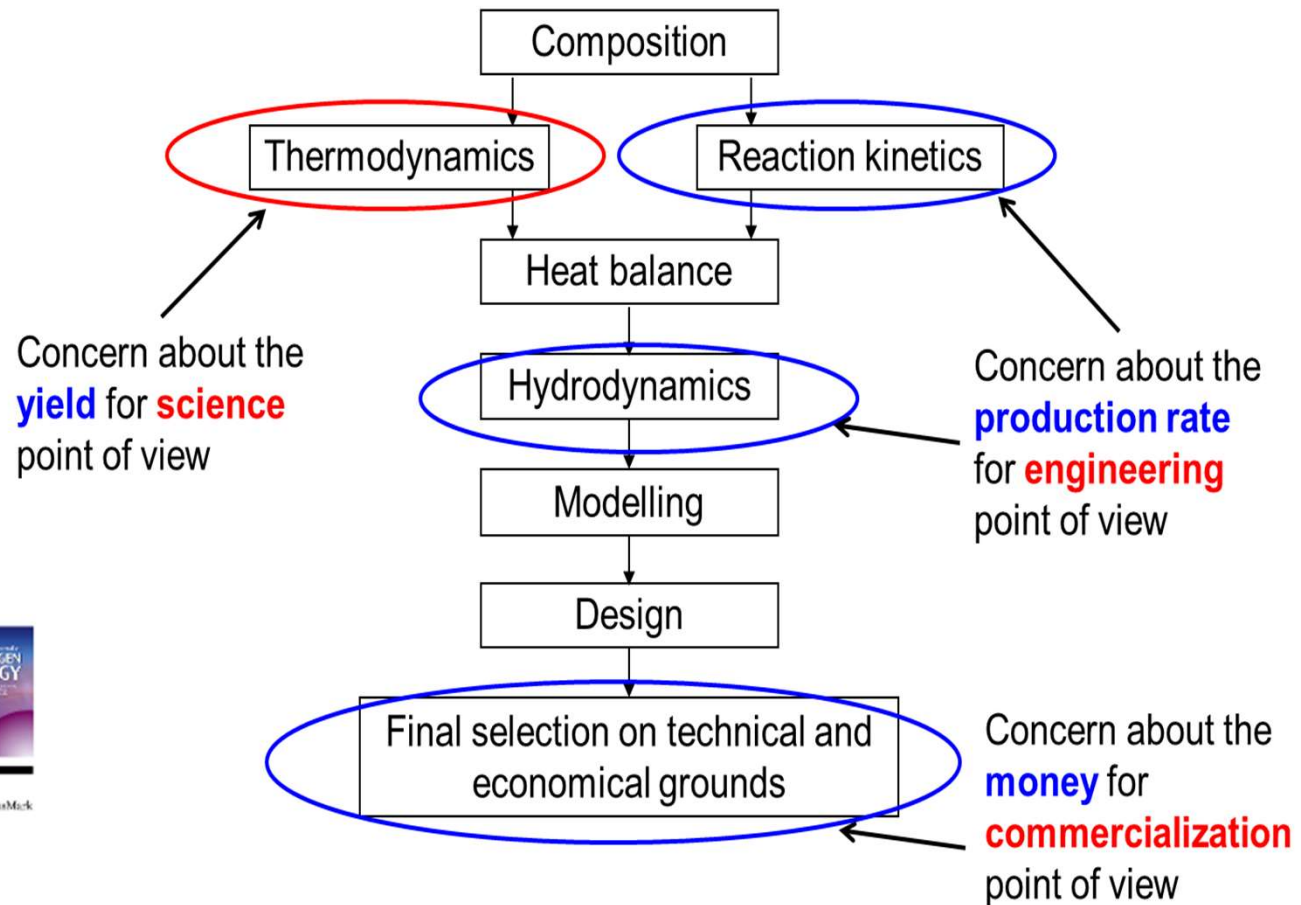


**Hydrodynamic behaviors in fermentative hydrogen bioreactors by pressure**



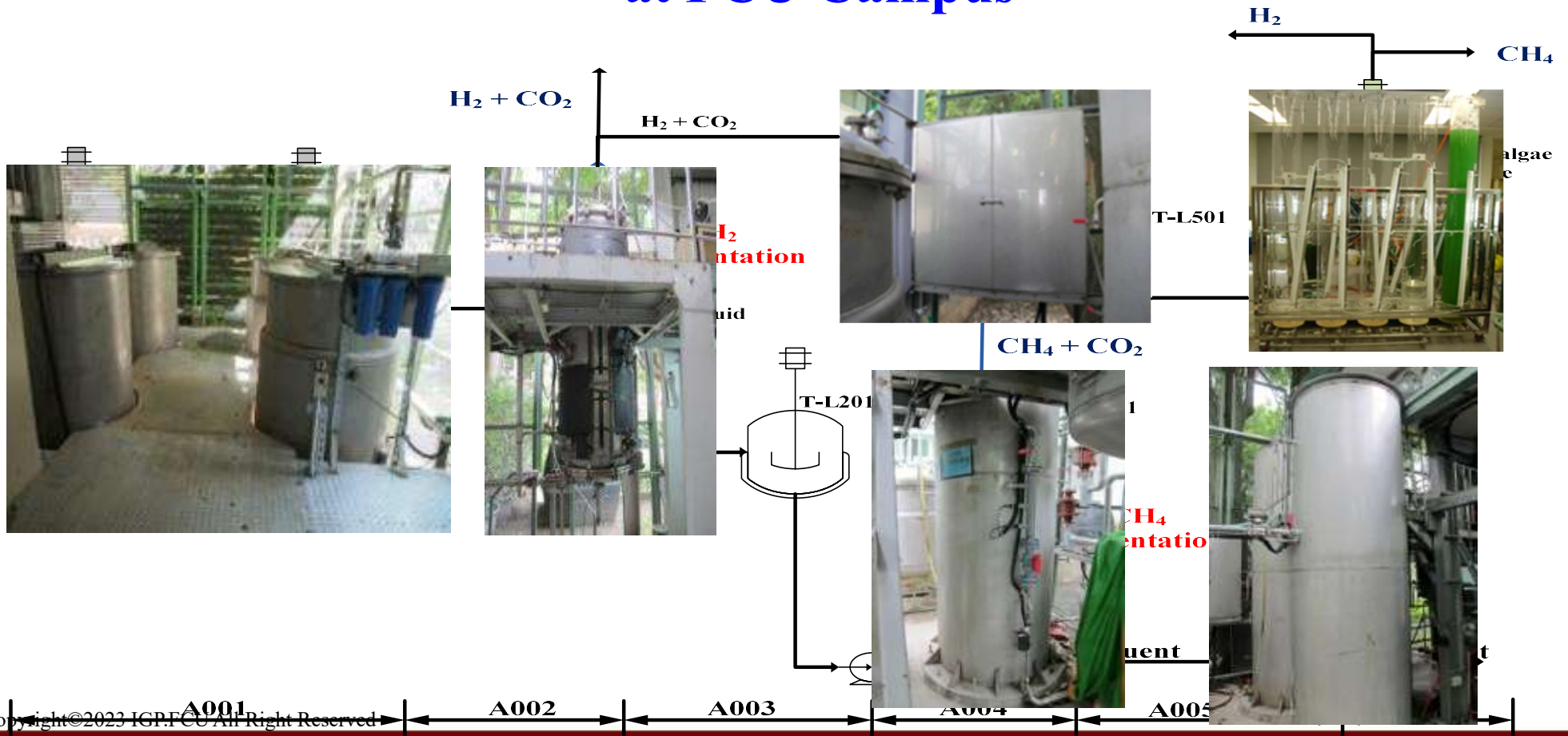
**Hydrodynamic properties in a hydrogen production fermenter using sugary wastewater**

Chen-Yeon Chu<sup>a,b,c,d,e</sup>, Hsin-Lo<sup>b</sup>, Zih-Fen Wang<sup>b</sup>





# Pilot Plant of HyMeTek and Algal CO<sub>2</sub> Fixation System at FCU Campus





## Bio-H<sub>2</sub> Fuel-gas Station at FCU Campus





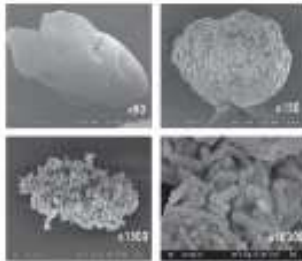
## Bio-H<sub>2</sub> gas-Fuel Station and mini-Fuel Cell Car



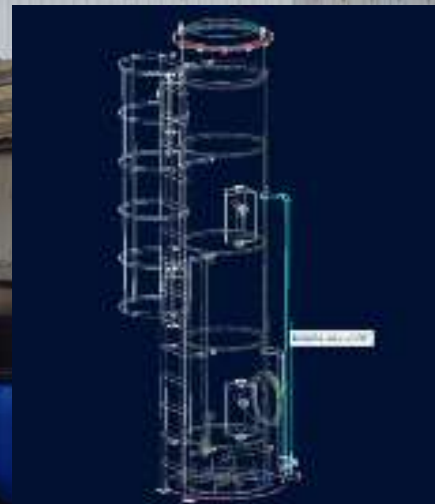


## HyMeTek Applications in food industry Wastewater

- We have established a cost-effective large-scale pilot plant
- We have established the key technology of design and SOP instructions



Granular Bacteria

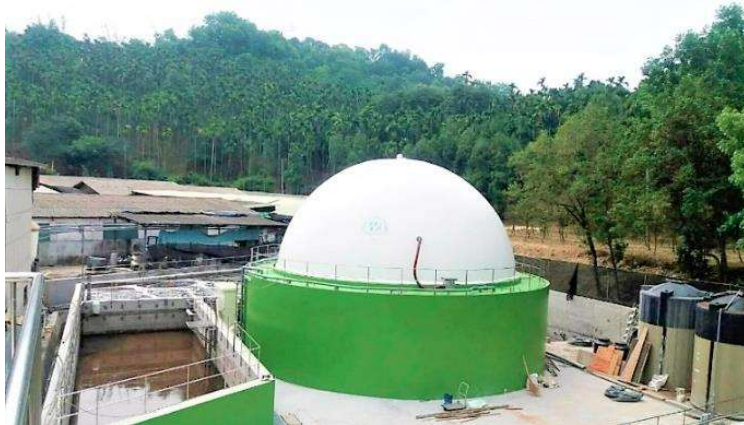






# HyMeTek system established in Central Taiwan

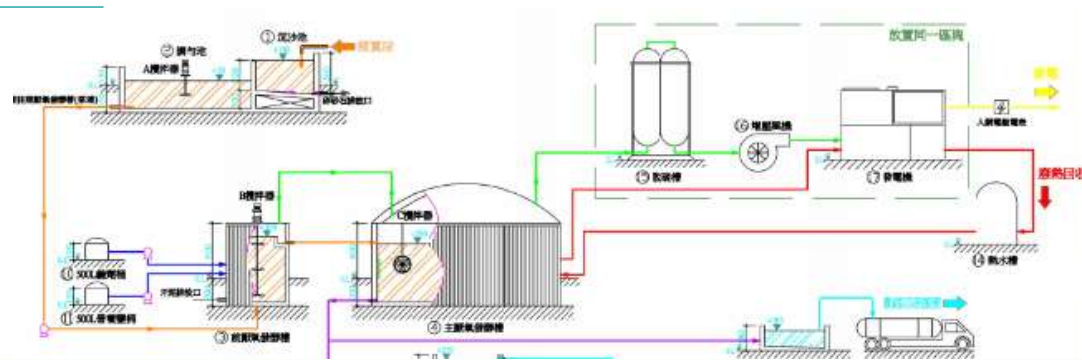
## (1500 pigs/30 CMD/25 kW)



[Generator work video](#)



[Video](#)





## HyMeTek in Xin-He Sin Piggy Farm





## From Regional Disaster to Revitalization (Applications)

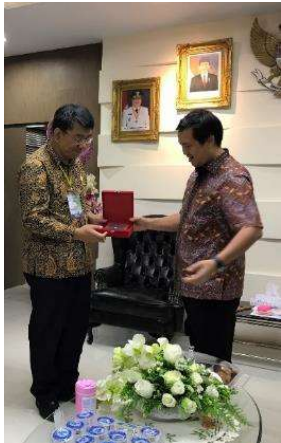
### Demo and Training Power Station of Two-stage Biohythane Production (HyMeTek) Manado Pilot Project





## BASIC OF PROJECT IMPLEMENTATION

- APEC EWG 54 meeting at Wellington November 22, 2017.
- Attended by Prof. Shu-Yii WU, Dean of College of Engineering (CEO of APEC ACABT),
  - Prof. Chen-Yeon CHU, Director of Institute of Green Products (Executive Secretary of APEC ACABT) Feng Chia University (FCU).



- Watched the presentation of **North Sulawesi Vice Governor : Mr. Steven Kandouw**, stated : North Sulawesi Province, a Promising Land of Renewable Energy to be utilized and to be conserved.

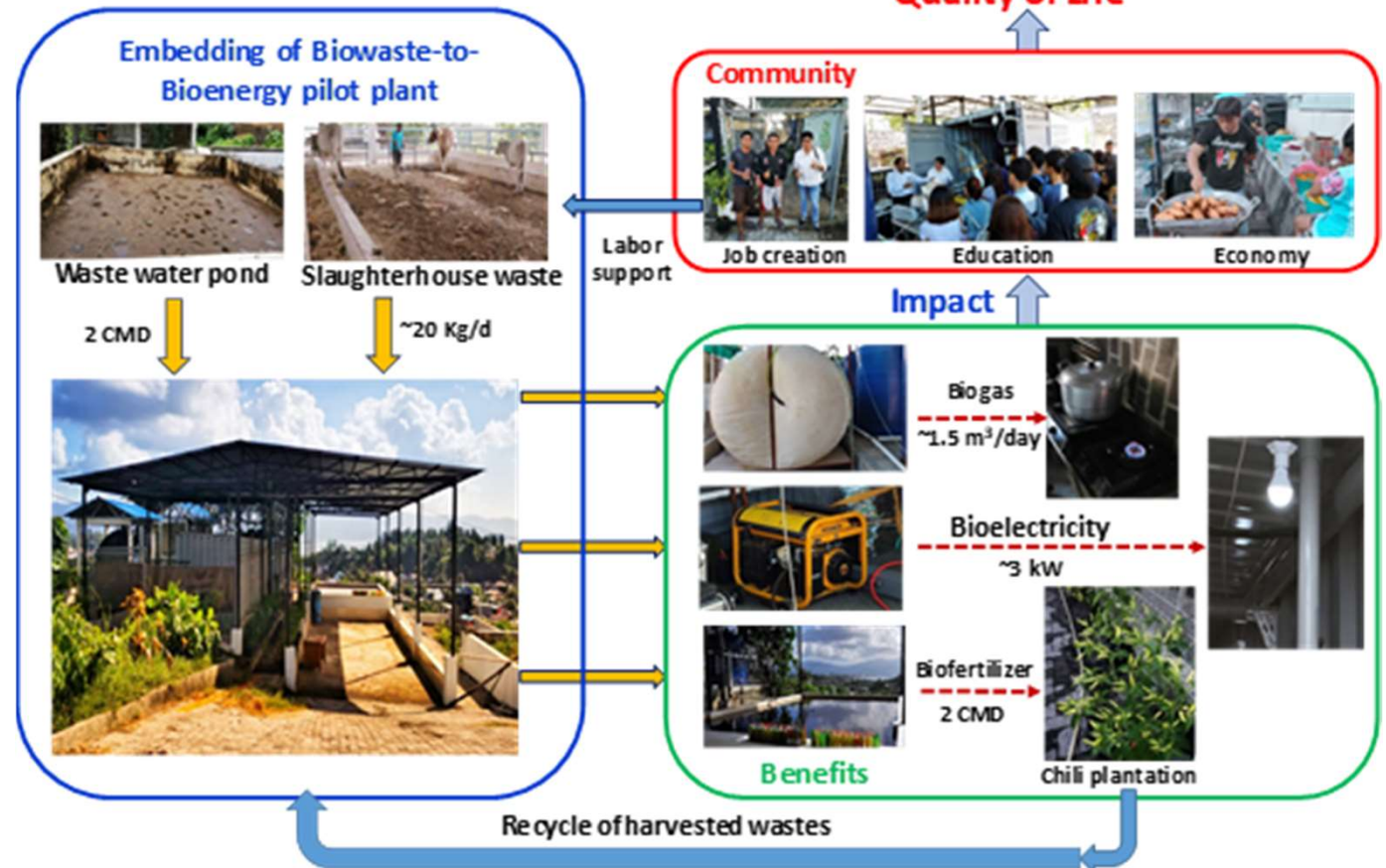
## FLOOD DISASTER 2014

- Data from the Regional Disaster Management Agency (BPBD) of Manado City 2014:
  - 101 houses were lost;
  - 18 died, 2 were missing,
  - 86,355 people or 25,103 families were displaced by the floods.





# Innovative symbiosis energy (Symnergy) model for developing a rural community



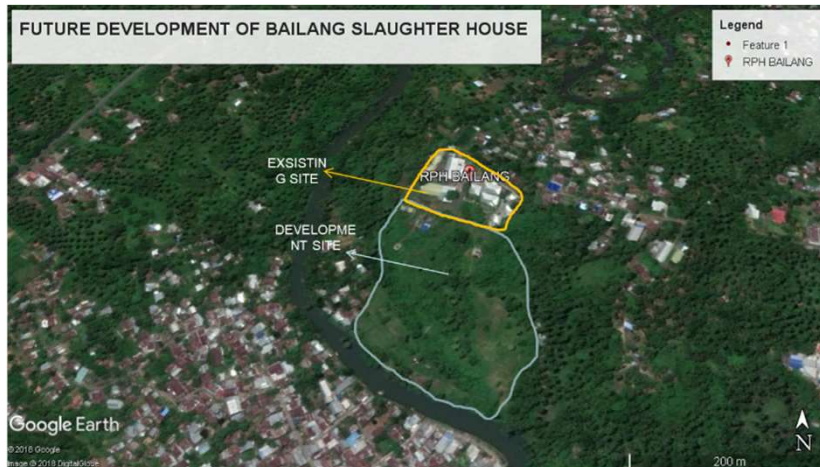


# IMPLEMENTATION by Collaboration between FCU & UnSRAT Students





# Process for Area Revitalizing





## Self-Sustained Community by Bioenergy + Solar Energy + Chili products





# Toward Future Net Zero Sustainability 2024-2025

Hand in Hand India and Taiwan Co-Creation Green Innovation and Sustainability

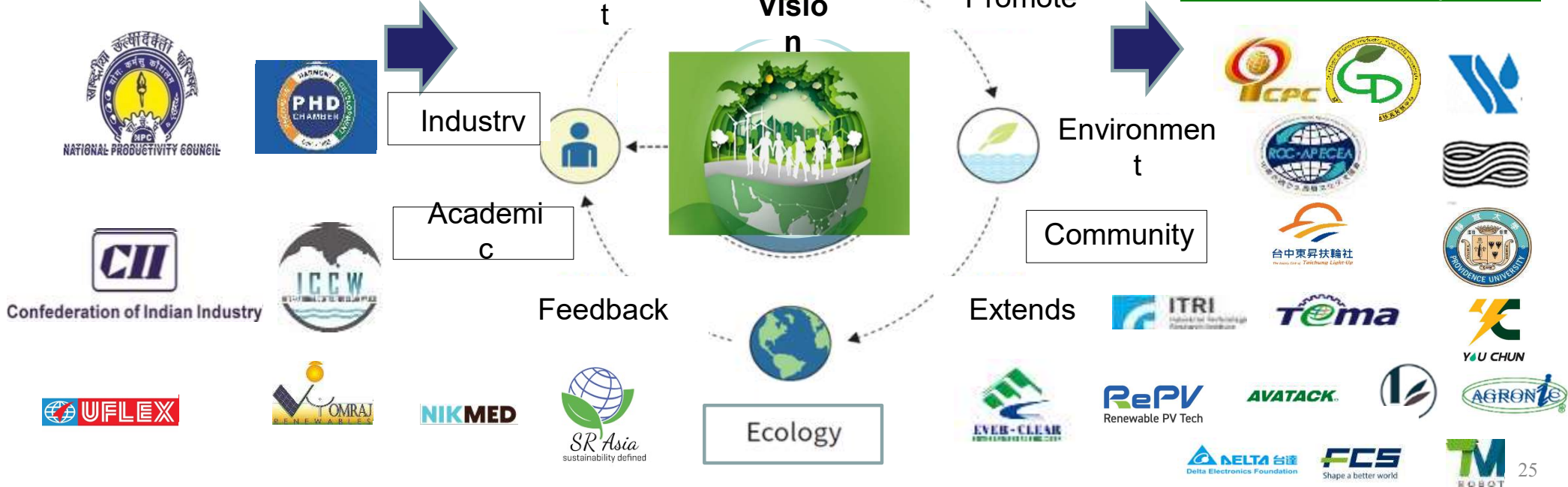


Net Zero Eco System

India X Taiwan



Net Zero Eco System





# 2024 Forging a New Strategic Concrete Partnership India -Taiwan Embracing Net Zero

## Collaborative Smart Green Technology Topics

- Resource Resilience
- Energy Efficiency
- Biomass Water Treatment
- Eco Plastics Biotechnology
- Green Factory
- IoT Smart Solution



TM SMART FACTORY



Biomass  
Wastewater Treatment  
IoT System

Green Energy – Micro Grid  
Energy Storage  
Green Building Smart Factory

Eco Plastics  
Industries Applications  
Biotechnology



# Quanta Engineering & Consulting Co., Ltd.



Quanta



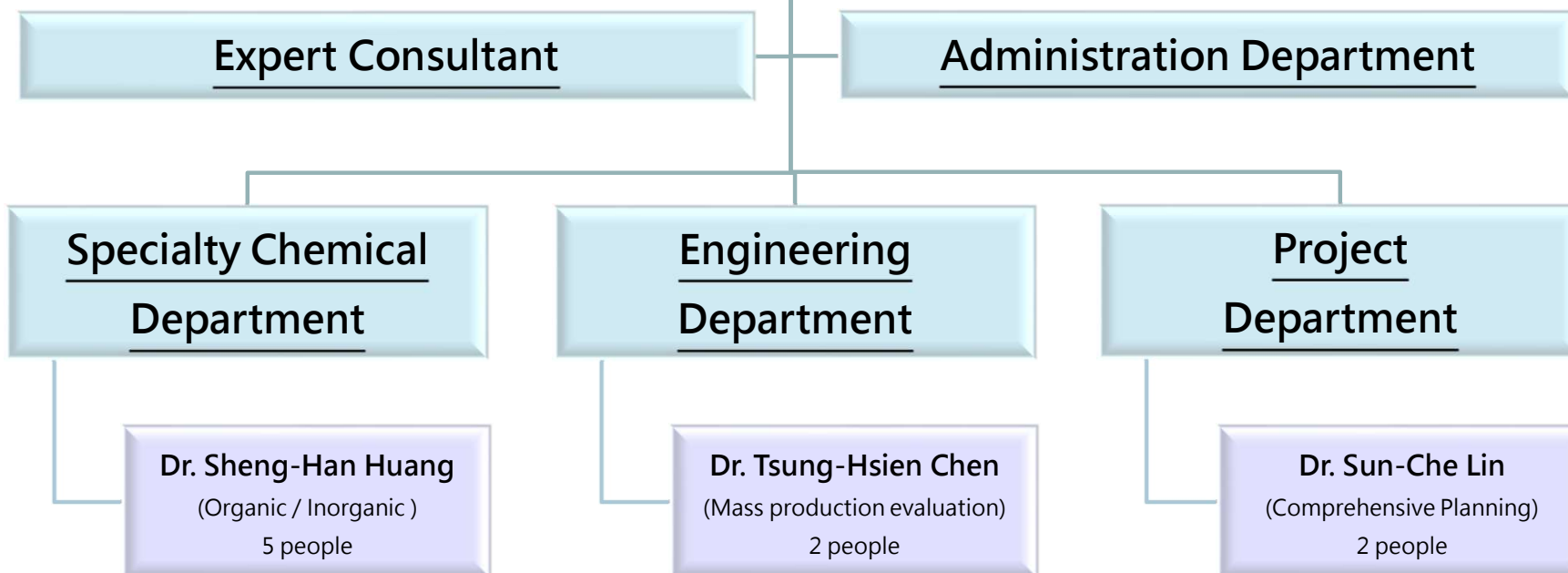
## Prof. Dr. Teh-Pei Lin

- PhD, Chemistry, Göttingen University, Germany
- Chief Scientist, Institute of Green Products, Feng Chia University
- Consultant, Acelon chemicals & fiber corp.
- Consultant, ProLogium Technology



**C.E.O.**  
**Prof. Dr. Li Teh-Pein**

Setup a number of **fine chemical manufacturing** and trading companies, specialized in **flame-retardants** and **functional additives** in fiber and plastics





# Core Technology

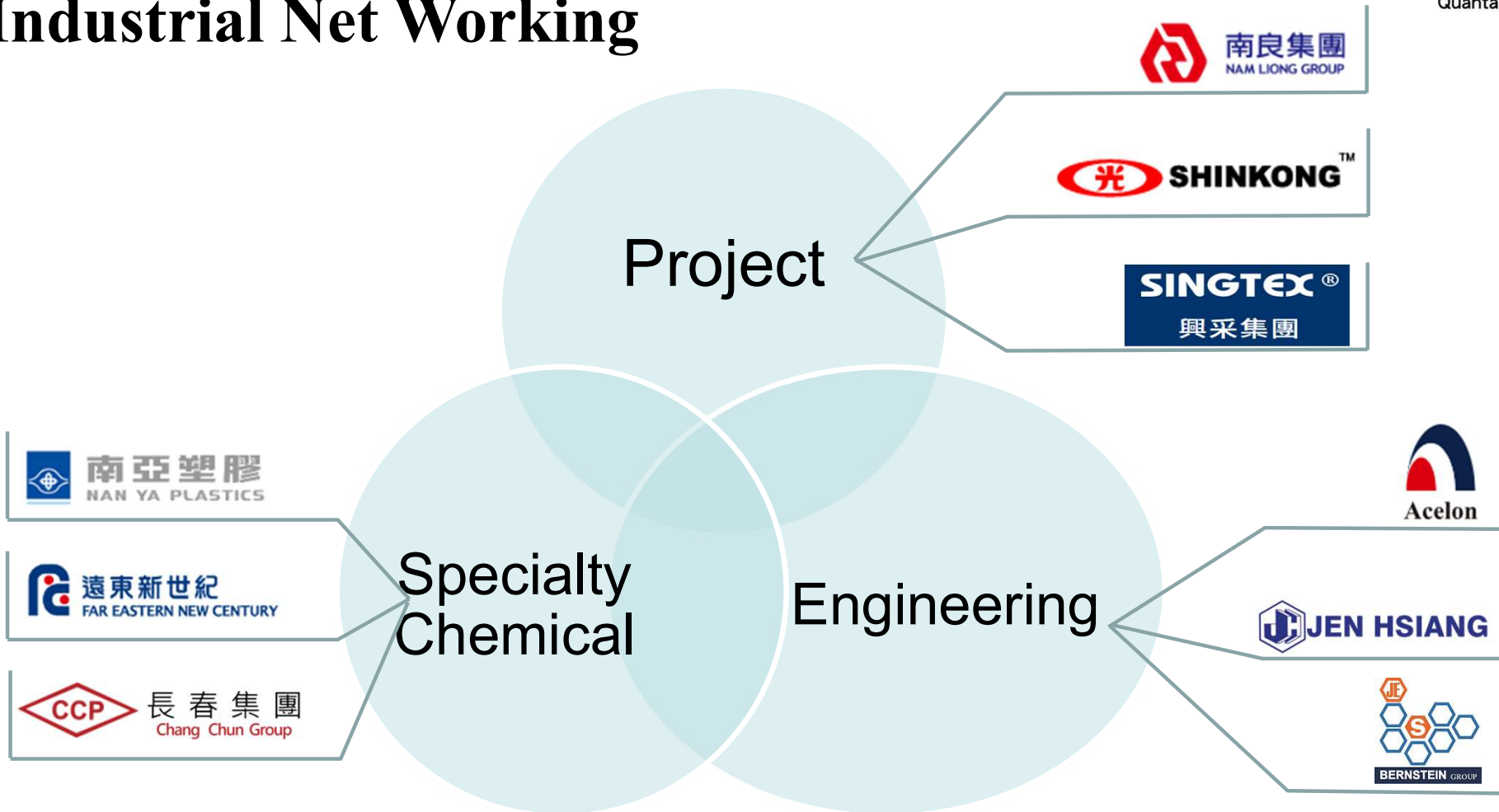


- Molecular design and synthesis of polymer functional additives ( **flame retardant** etc.)
- Synthesis of organic F、 P、 Si .
- Post-Consumer Recycled (**PCR**) technology
- Development and synthesis of lithium battery additives.
- High-efficiency reaction & separation technology.
- Chemical analysis.
- Green manufacturing Engineering.





# Industrial Net Working



# Eco System on Forging Net Zero Future



## Ever-Clear Environmental Eng. Corp.(EC) Wastewater treatment Solution System integration



**Partner Team : ITRI, TEMA and Water Affairs Organization,  
Taiwan(WAOT)**

**Dr. Yu-Jen Huang, PhD, Env. Engineering**

**President, India Ever-clear Environment India Pvt. Ltd**

**Director, Ever-Clear Environmental. Eng. Corp. HQ Taiwan**

**Associate Director, India Collaborative WAOT**

### Professional

- Expert in water and wastewater treatment, especially in industrial wastewater treatment with 10+ years of experience in biological and chemical oxidation treatment process design.
- Dedicated in R&D Innovation for the wastewater bench-scale/pilot-scale tests, innovative water treatment technology/equipment integration and feasibility study of treated water reuse and valuable ions recovery.
- Dr. Huang was awarded the India's Most Promising Water Technology Award in 2023.

Promote zero-carbon wastewater treatment and water resource resilience, serving as an expert to integrate WAOT, TEMA, and ITRI solutions for advancing circular water treatment technologies, smart monitoring, as well as Eco-Biotechnology Co-Creation with AIEMO and Delta Electronics' energy efficiency smart solutions.

Invite India partners for emerging technologies research and development, integrate equipment improvements, and increase industry capabilities and establishment of pilot and innovative technology demonstration projects for wastewater treatment plants (CETPs), rivers, lakes, and industrial wastewater for smart urban, industrial and rural areas to tackle the crucial issues of zero-emission and water resilience.

### Achievement in India:

- 30 MLD project acceptance, GESCSL Vatva CETP, Ahmedabad, Gujarat. **Awarded 2023 Promising Water Technology of the Year**
- Distinguished invited speaker of India-Taiwan Forum
- ETP/CETP upgrade advisor



## Eco System on Forging Net Zero Future

# The World's First Circular Solar RePV Tech, Inc.



**Founder & Chairman**

**Dr. Alex Y.M. Peng**

**A PV to PV, Renewable PV Technology**



- Ph.D., & M.Sc., Material Science, Manchester University, UK
- Executive Vice President & Director of Net-Zero Sustainability Strategy Office, ITRI
- General Director, Material and Chemical Research Laboratories, ITRI
- President, Chinese Society for Management of Technology



**Dr. Kevin Chang,  
Co-Founder & COO**  
kevinchang@repvtech.com



**Prof. Martin Charter (FRSA)  
Sr. Strategic Adviser**

- Director of Center of Sustainable Design, UCA Co-founder, Sustainable Innovation Lab, SILAB
- Global chairman of ISO 14006 (Eco Design standard)
- Expert committee of World Resource Forum
- Member, International advisory board of CARE green electronics network



**Executive Advisor  
Dr. Stan Shih(ITRI Laureate)**

- Co-founder & Honorary Chairman, Acer Inc.
- Laureate, ITRI
- Founder and Chairman, StanShih Foundation
- Founder and Chairman, CT Ambi Inc.



# IGP Innovation and Sustainability: Technology and Products

## Eco System on Forging Net Zero Future



Mr. BoSheng Liu  
Assistant Professor

### Education/Associations

- Master of Architecture
- Member of National Council of Architectural Registration Boards, USA.
- Founder of MAO.JIN.DAO Building Design & Consultants
- Assistant Professor at University of Louisiana at Lafayette from 2018-2022.

## School of Architecture, Feng Chia University(FCU)

Assistant Professor

Collaborating Partner with IGP at Feng Chia University, TW

Collaborating Partner with Department of Applied Chemistry at ITRI, TW

Collaborating Partner with CAED at Kent State University, USA

BoSheng Liu, a distinguished architect holding a graduate degree from Kent State University, boasts a rich professional background, having worked at esteemed firms such as DLR Group/Westlake Reed Leskosky and Bohlin Cywinski Jackson. Renowned for his **award-winning designs, which have garnered multiple American Institute of Architects (AIA) Merit and Honorable Mention awards**, BoSheng is celebrated for his innovative approach and unwavering commitment to excellence. In addition, as the youngest assistant professor at the University of Louisiana at Lafayette, he specializes in pioneering research, particularly in the utilization of **dredged materials in building components, bamboo mycelium thermal panels and biochar mineral foam**, thereby contributing significantly to sustainable architecture and environmental conservation efforts. BoSheng Liu's fervent dedication to design and sustainability continues to shape the architectural landscape, serving as an inspiration to colleagues and future generations alike.



# Designer of Green Buildings: Environment and Material

## Green Architecture Planning & Design



Mr. PeiChen Tsai  
Architect

### Architect, R.O.C. (Taiwan)

Green Architecture, Green Infrastructure and Green Factory  
Eco-Friendly Landscape  
Low-carbon Materials Development



#### Education/Associations

- Master of Architecture
- Architect Registered in Taiwan.
- Member of The National Architects Association of R.O.C.(Taiwan)
- Head of TCAA Structural Committee

Specialize in low-carbon aesthetics and the reuse of green building materials. Our commitment lies in eco-friendly design, aiming to achieve net-zero carbon emissions, reduce environmental impact, and promote sustainable decarbonization. focus on public projects, advocating for green architecture that harmonizes with nature. Successfully overseen social housing projects, combining green architecture with smart building technologies to embody a more proactive vision of zero emissions.

# Eco System on Forging Net Zero Future



## Creator Green Energy Technology Co. Ltd



**Mr. Michael Shen (Hung Wen Shen)**  
**General Manager, Creator Green Energy Technology, Co. Ltd**

MS in Environmental Chemistry, Rutgers University, USA

- Expert in activated carbon applications for municipal drinking water, industrial wastewater treatment, and activated carbon reactivation close loop service.
- Consultants for several activated carbon manufactures and home water filter companies in Asia.
- 20+ years experience in Asia Pacific market and application development.
- Ex. General Manager and Technical Director of Calgon Carbon Asia.

### Core Technology- Multiple Hearth Furnace (MHF) for :

**Activated Carbon Manufacturing**

**Activated Carbon Reactivation/Reuse**

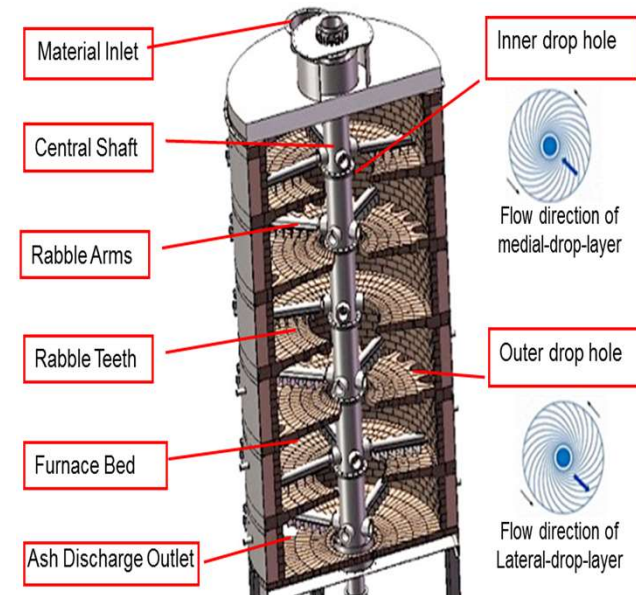
**Biomass Torrefaction/Carbonization/ Activation**

**Sludge Pyrolysis/Mass Reduction**

**E-Waste(Lithium Ion Battery) Pyrolysis / Metal Recovery**

**Fermentation Products**

**Decolorization Adsorption/ Reactivation**



Eco System on Forging Net Zero Future

## Wastic Plastic Terminator

Plastic recycled diesel is the best solution to plastic pollution

CLEAN  
ENERGY



**Mr.Hsu,Hung-Shen**

Chairman Of Republic of China  
Asia-Pacific Economic and  
Cultural Exchange Association  
Chairman of You-Chun  
International Energy Technology



**Mr.Liu,Kai-Ming**

You-Chun International Energy  
Technology Co., Ltd  
Vice Chairman



**You-Chun International Energy Technology Co., Ltd**

<https://www.youchun-tw.com/>

MAIL:service@youchun-tw.com TEL: +886-8-7965888



### Solve pain points

**1. Sustainable Carbon Reduction Pressure in the Environment** -- ESG advocacy, EU CBAM, US CCA, government requiring enterprises to use renewable energy to achieve carbon reduction goals.

**2. Plastic Waste Pollution** -- Marine plastic waste pollution affecting ecosystems, EU imposing plastic taxes, UN legislating for a global plastic convention, countries advocating for plastic reduction goals..

### Business Opportunities

**1. ESG Mega Trend** -- Resource reuse, turning waste into energy, creating a circular economy.

**2. Demand for Green Energy** -- Strengthening the supply of renewable energy, but mainly focused on green electricity supply, making renewable fuels very scarce.

**3. Carbon Reduction Value** -- Creating massive carbon reduction benefits, assisting enterprises in reducing their overall carbon emissions.

**4. Investment Opportunities** -- Market domination, rapid return on investment, high investment value..



## Eco System on Forging Net Zero Future

# Delta Group, Smarter. Safer. Greener Provider

a global leader in power electronics



**Mr. Saurabh Walia**  
**Business Head for ISPBD** ( Intelligent Solution Platform ), Delta Electronics India Pvt Ltd



ISP covers Process Automation Solutions /FMCS/EMS / IIOT4.0 softwares for Injection moulding , CNC machines / Warehouse logistics management .



**Mr. Jim Chen, Principal Sales**  
Delta Electronics, Inc

### About Company:

Delta, a global leader in power and thermal management solutions, launched pioneering energy-efficient infrastructure technologies with a thriving portfolio of smart energy-saving systems and solutions in the fields of smart city solution, industrial automation, building automation, telecom power, data center infrastructure, EV charging, renewable energy and energy storage to nurture the development of smart manufacturing and sustainable cities.

### Products :

1. Industrial Automation
2. Building Automation
3. Telecom power
4. Data center Infrastructure
5. EV Charging/ Renewable Energy.

Website: [www.deltaww.com](http://www.deltaww.com)

# Eco System on Forging Net Zero Future



## Dr. Yi-Hsueh Chuang

- Associate Professor Institute of Environmental Engineering, Environmental Technology & Smart System Research Center, National Yang Ming Chiao Tung University

### Professional

- Promoting the development of advanced oxidation and bio-ball treatment systems for the treatment of green, difficult-to-degrade wastewater, particularly in the sustainable water environment waste treatment sector. Facilitating collaboration between domestic and international production and research to drive innovative research and development.
- Advancing research and development on emerging wastewater treatment technologies that are low in pollution, energy consumption, cost, space usage, and promote resource recycling.
- Facilitating sustainable water environment cooperation between Taiwan and India.

### Achievement in India:

- 2022 MOU on Resource Resilience and Energy Efficiency to Future Net Zero Sustainability and Carbon Neutral.
- 2023 MOU on Taiwan-India Sustainable Water Environment Forum with MEMECCI
- Organizer for on Taiwan-India Sustainable Water Environment Forum by MOVNV Taiwan
- 2023 MOU With ICCW、PHDCII、IGP on Taiwan-India Industrial Collaboration Summit

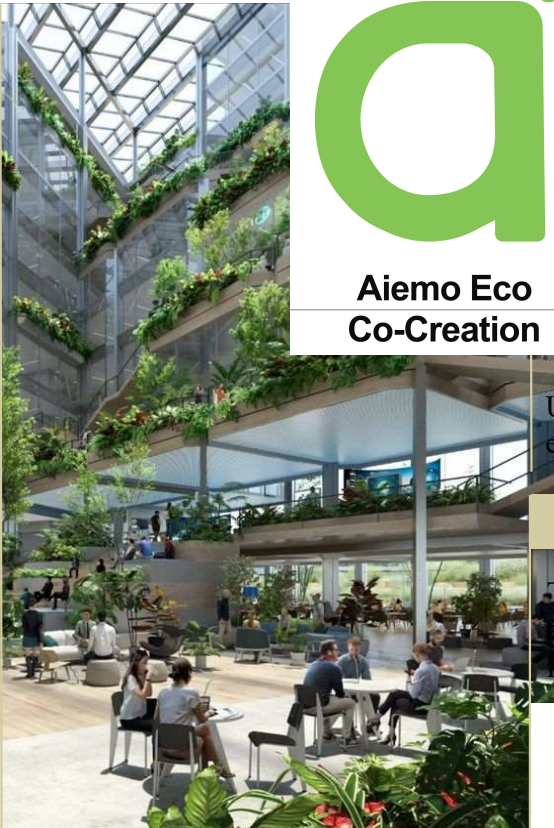


## Ms. Jung-Shan Yang

- Assistant  
Institute of Environmental Engineering  
Environmental Technology & Smart System Research Center  
National Yang Ming Chiao Tung University  
Secretary of Water Affairs Organization, Taiwan(WAOT)



**Aiemo Eco  
Co-Creation**



Create multi-level green belts through architectural and landscape construction.

**Greenery**

### Soil Water Retention



Utilize permeable pavements to enhance rainwater infiltration.



Existing mature trees on the site are preserved, utilizing tree cavities.



### Biodiversity

Through the incorporation of native species and plants that attract birds and butterflies, utilizing plant diversity, integrated with overall external landscape design, to enhance biodiversity on the site.



The source of information is from Pinterest.

# Eason Wang Ecotechnology Co., Ltd.

## Green Plastic Technology 100% biodegradable in natural environment



RAW MATERIAL	CARBON FOOTPRINT /KG
PAPER	1-2 KG.
STAINLESS STEEL	2-3 KG.
PLASTIC	2-4 KG.

The carbon footprint of plant fiber resin approximates 0.5kg per kilogram!

If using our plant fiber to produce products, the carbon footprint of products will lower than products made from other raw materials.

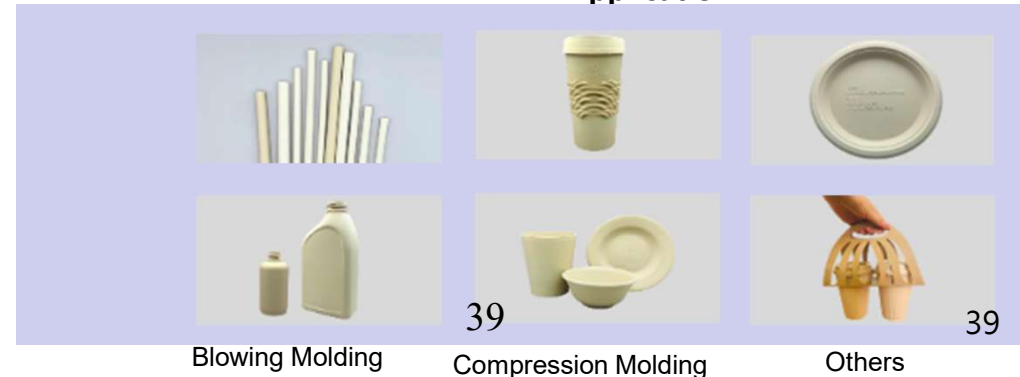
By utilizing dry processing and forming patented technology, we use plant fiber, starch, water and natural resin which is made from plant as our raw material to produce Eco-Plastics.

Plant fiber resins can be used in many aspects. Such as extrusion molding, injection molding, blowing molding, vacuum forming and so on.

- **100% biodegradable in natural environment** that certified by DIN CERTCO.
- **Plastic-Free that certified** by DIN CERTCO.
- Environmentally friendly manufacturing technology.  
Low carbon emissions and won't produce waste water.
- A new solution for agricultural waste disposal. Promoting a circular economy.



### Application



Blowing Molding

Compression Molding

Others



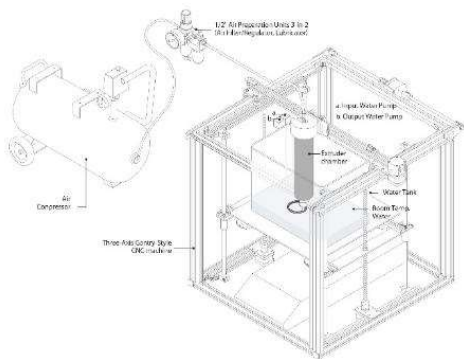
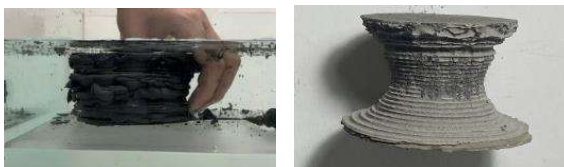
# IGP Innovation and Sustainability: Technology and Products

## Eco System on Forging Net Zero Future

### DM-based Concrete Formwork

The use of injection molding with DM-based material as formwork submerged in water facilitates rapid hardening of the injected material. The formwork is fully reusable.

WIP



### Bamboo Mycelium Panel

The bamboo mycelium panel combines eco-friendliness with durability. Made from sustainable bamboo and mycelium, it offers low thermal conductivity and at least 30 minutes of fire resistance, making it ideal for sustainable construction projects. WIP



### Biochar Tile & Concrete

This project incorporates EBC-graded biochar as a key ingredient in the production of tiles and concrete. Depending on the specific pyrolysis process employed, the ultra biochar can yield lightweight products. By harnessing the unique properties of biochar, this initiative promotes sustainability while offering versatile solutions for construction materials that are both eco-friendly and functional. WIP





# Eco System on Forging Net Zero Future Integrated India and Taiwan Innovation & Competitiveness

**Prof. Gen-Hung (GH) Chen**

Department of Cosmetic Science, Providence University, Managing Director of Taiwan Silk Association(TSA)

**Aiemo Taiwan Innovation Research Center: Development, Testing, Certificate SOP Performance Excellence on Eco Biotechnology and**

1. Empowerment Micro Smart Green Factory
2. Produce Wash Formulas Natural Biotechnology Product with eco plastics packaging material
3. Natural and functional skincare cosmetics and wound healing

## 1. pharmaceutical technology

- \* **Anti-wrinkle, Whitening, Moisturizing and Sun-protection formulas:** effective ingredients were extracted from natural India herbs and recycling of agriculture & aquaculture industrial wastes into ingredients for high value-added products.
- \* **Cell Regeneration and Tissue Repair Technology:** effective cell regeneration and repair techniques for rapid healing and repair of skin wounds.
- \* **Wound healing Hydrogels: Hydrogel-forming natural polymers:** Create more biocompatible materials for skin repair and regeneration from agriculture and aquaculture recycling materials, biopolymers, ex: proteins such as sericin, collagen, gelatin and polysaccharides such as chitosan, starch, alginate, hyaluronic acid and agarose. Synthetic polymers that form hydrogels are innovatively prepared using enzyme crosslinking techniques.
- \* **Smart IoT Manufacturing System:** precise and effective systems, enabling functional Ingredients innovation and manufacturing performance excellent integrated monitoring and data management.





## Eco System on Forging Net Zero Future

# Boosting Concrete Partnership: Collaborative Project – Model Site



**Phase 1 : Feasibility Study Needs Assessment**

**Phase 2 : Implementing Demonstration Project**

**A. India and Taiwan Co-Creation on Micro Smart Green Factories**

- 1) Equipment's, Factory Flow and Manufacturing Process, IoT
- 2) Technologies Integration and Technologies Transfer Manual: Factory Operation



**B. India Micro Smart Green Factories Technology Transfer Empowerment**

- 1) Collaborative Enabling Equipment, Factory Flow and Manufacturing Process, IoT Technology Transfer, Capacity Building Programs
- 2) Kids Education Program: WASH, Environmental Programs
- 3) Scall-up Program after 18 months:

**C. Academic and Industries Emerging Technology Collaboration**



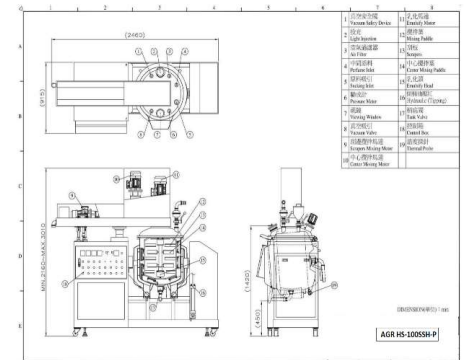
# Eco System on Forging Net Zero Future

## Aiemo Eco Biotechnology Smart Manufacturing System



# India and Taiwan Co-Creation on Micro Smart Green Factories

Equipment and Production Flow, Manufacturing Process, IoT Technologies Integration and Factory Operation and Management Technologies Transfer for capacity building and Empowerment



# Gentle Formula for all skin type



## Hydrolyzed Silk

Natural silk molecules provide excellent moisturizing properties, prevent skin dryness, and combat skin aging.



## Jasmine Oil

Natural antibacterial properties that can help protect the skin from infections. Its calming aroma provides a soothing effect, reducing skin irritation and inflammation.



## Rosemary Oil

Helps reduce swelling and puffiness of the skin, and improve circulation, promoting a healthy, glowing complexion.



## Cedrus Bark Oil

Contains a unique cedarwood aroma, balances skin oils, and maintains skin equilibrium.



## Gardenia Florida Fruit Extract

Gardenia fruit extract is added to soothe the skin and reduce skin aging.



## Betaine

Beet-derived molecule that forms a protective moisturizing film on the skin, providing gentle, non-irritating care.



## Aloe Barbadensis Leaf Juice Powder

Rich in polysaccharides, it soothes skin dryness and helps keep the skin hydrated.



## Lauryl Glucoside

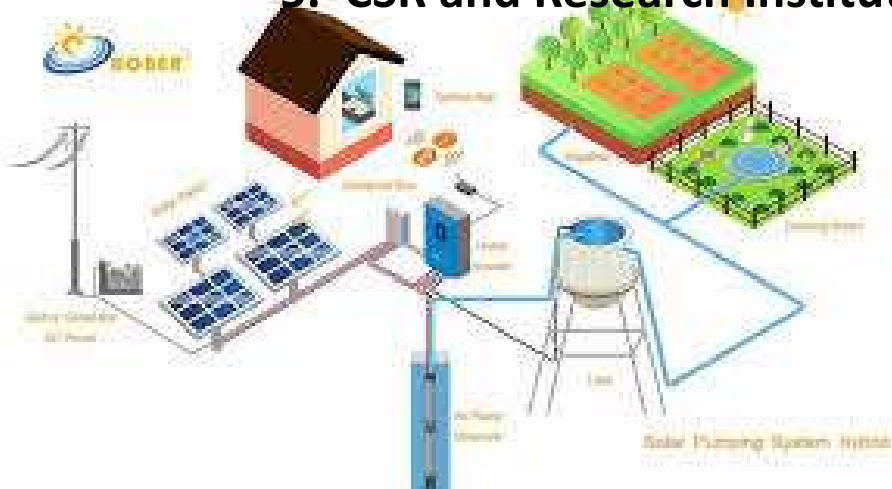
Natural plant-derived cleanser that is gentle on the skin, making it an excellent choice for sensitive skin.



## Solar –Biomass Green Energy Hygiene Infrastructure Solutions

electricity , water pump, and water treatment for village

1. International Centre for Clean Water (ICCW), IIT- Madras
2. IGP Biomass and WAOT Water Treatment
3. Tamilnadu: Chennai Nikmed Ms. Vidya, UFLUX and Vyomraj Eco Plastics with Taiwan Avatack & Easonwang
4. Rajasthan : SR ASIA Mr. Birendra Raturi - Founder Director
5. CSR and Research Institute





**Qwater** is design as a solution for easy, mobile and quick installed drinking water supply address the needs during disaster and remote areas. Conventional water supply is usually broken down or inaccessible while during nature disaster area, in remote area, contaminated water sources, high turbidity raw water, and so on. Qwater has been installed and successfully in operation serving the purpose of providing safe, healthy and drinkable water in many occasions.

**Philippines Tacloban**

# Qwater



## Decentralized Water Treatment System

**Qwater** is an optimal solution to provide safe drinking water in remote areas

**Quick** : Easy to assemble within 30 mins by two persons.

**Quality** : The effluent quality conforms to drinking water standard that treats high turbidity water (< 3,000 NTU).

**Quantity** : High volumetric production of 15,000 L/day in a small space(< 3 m<sup>3</sup>). It provides clean water to at least 60 persons for daily usage or 7,500 persons for daily drinking.



### Remote schools

- Stable and auto-operation over 7 years
- Total production over 20,000 tons
- Power consumption is 0.93 kwh/ton



### Disaster relief

- Provide 12,000 L drinking water in 7 days
- Save costs worth 20,000 bottled water
- Cooperate with army and NGO groups



### Foreign remote areas

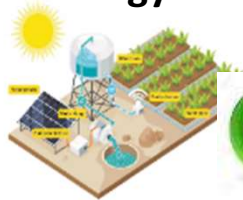
- Obtained CE certification
- Simple water treatment system evaluation



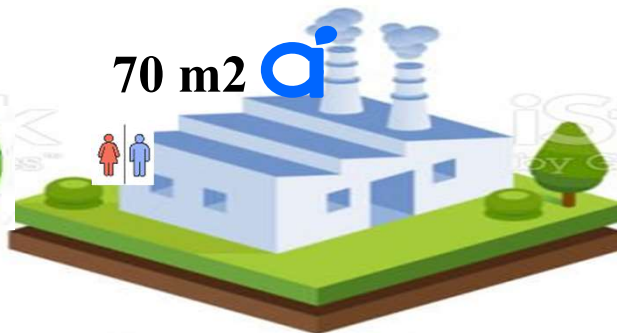
ESG Aiemo Eco Biotechnique Model Site

# Eco Biotechnology Empowerment micro ESG Factory for skin burned women produce Clean Agent Products

Solar -biogas Green Energy



Water, Zero Liquid Discharge (ZLD)



Eco Farming Herbal



Semi-Automation Machines + Hand made Technology Transfer Production, Training and Marketing Sales



Aiemo Eco Biotechnology Local herbs and upcycled aquaculture and silk production waste







Funded by the European Union



# Empowering Health, Wealth & Sustainability for Vulnerable Women and School Kids



## Giving hope for **Now and Future** Focus, Passion and Engagement



• Hope



• Humanity



• Kindness



• Health



• Wealth



# Light-up the Light • Create Hope in the World

Contact: Prof. Dr. Chen-Yeon Chu, [cychu@o365.fcu.edu.tw](mailto:cychu@o365.fcu.edu.tw) IGP Website - <http://www.igp.fcu.edu.tw/>