



PREPARING FOR LA2028 OLYMPIC GAMES

SUPPORTING LA CITY & LA COUNTY SUSTAINABILITY GOALS

HYDROGEN AND CARBON PRODUCTS FROM ORGANIC FEEDSTOCK



THE WASTE REFHYNERY



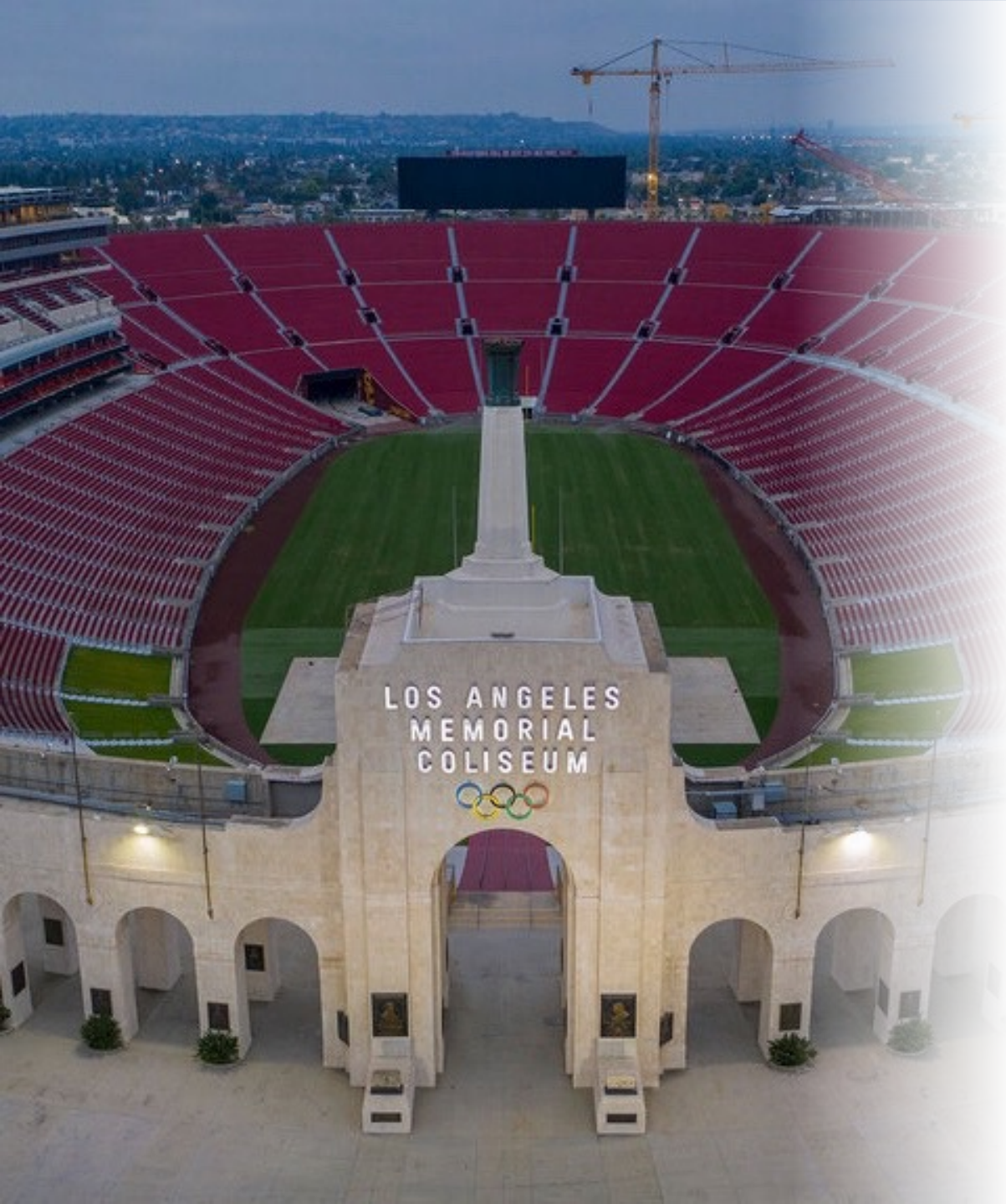


H₂ station

Wholly-owned subsidiary of Clean Energy Enterprises Inc.
Headquartered in Long Beach, California. Offers solutions globally.
Direct presence in India and EU (France)

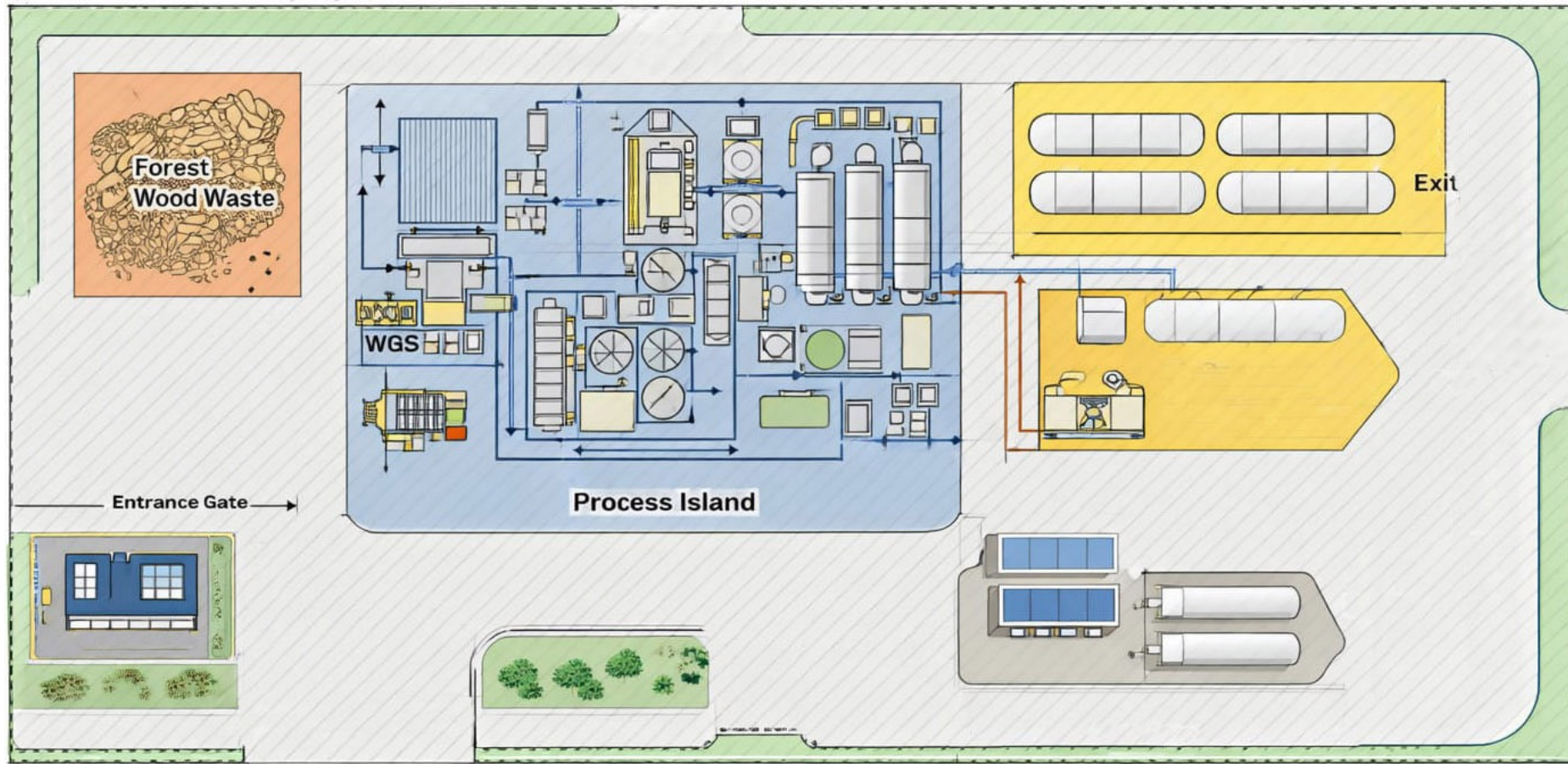
Patent-pending thermochemical process converts waste biomass and plastics into H₂ and CO₂.

Ways2H engineers, builds and sell systems to operators who process waste and sell hydrogen and carbon products
Clean Energy Enterprises owns IP and develops projects under full ownership and/or partnerships



THE PROJECT

- ➔ LA Olympics and beyond
 - ➔ Create a framework for future Olympic Games and other local ecosystems
- ➔ 60 tons/day input > 6 tons H₂
 - ➔ Sustainable H₂ supply for future uses
 - ➔ At or below fossil fuel price parity
- ➔ Private financing available
 - ➔ Private fund as developer / operator



EXPECTED LAYOUT

Plot Size:

4,500 - 5,000 m² (1.1- 1.25 acres)

Approx-Areas/

~1,250 m²

Feed Yard ~700 m²

~250 m²

Filling Station ~400 m²



EXPERIENCE AND BACKGROUND

- ➔ The Team: over 60 years cumulated industrial experience in gasification, hydrogen, chemical processes
- ➔ Design, engineering, construction, operation of various waste to energy – including hydrogen conversion technologies
- ➔ USA, Japan, Europe, China, India, Kuwait...
- ➔ From small scale (NASA ISS) to large industrial plants



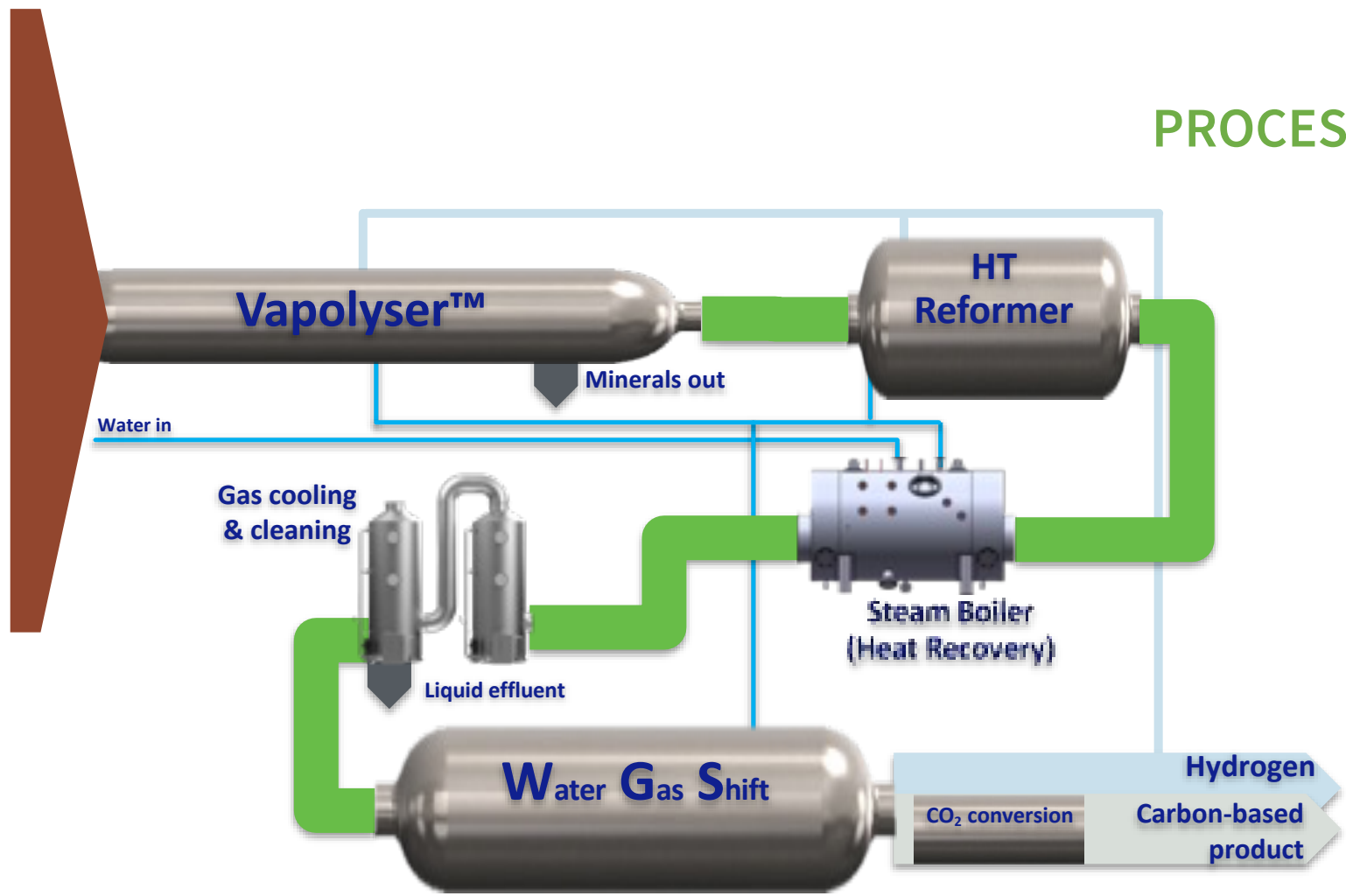
DESIGN BASIS

- ➔ Industry-proven, commercially available components
- ➔ Innovative process architecture:
 - ➔ Highest H₂ yield on the market.
 - ➔ High concentration CO₂ output
 - ➔ High thermal efficiency
- ➔ Simple and integrated design
- ➔ Proof of Concept: 110kg H_{2eq} per ton feedstock



Municipal Solid Waste
Biomass
 Medical Waste
 Food Waste
 Plastics
Wood
 Paper
 Landfill-bound recyclables

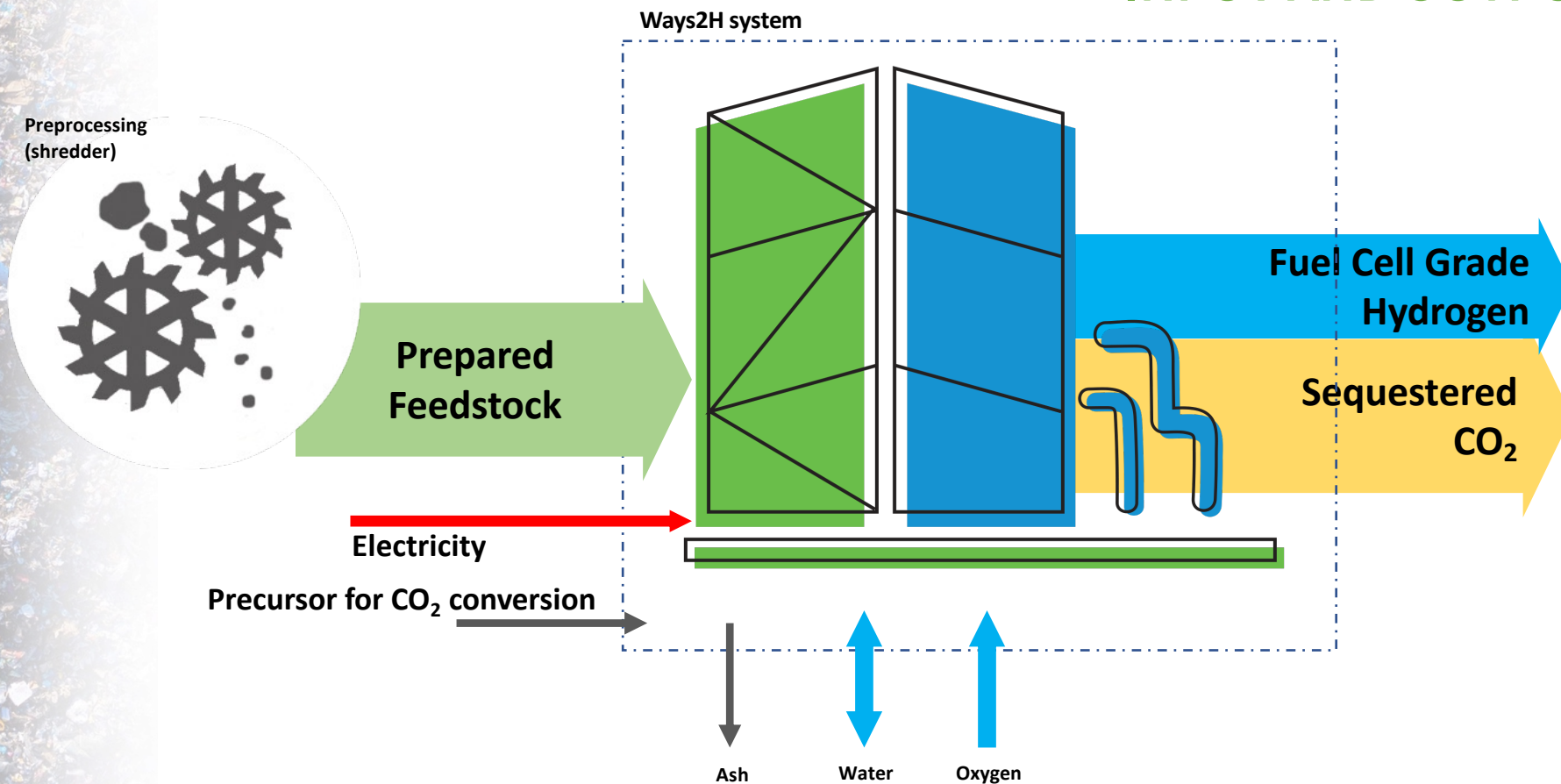
PROCESS OVERVIEW



110 kg H₂ /
 ton Feedstock

1.7 ton CO₂ /
 ton Feedstock

INPUT AND OUTPUT MATERIALS



KEY DIFFERENTIATORS:

H₂-based reactors energy supply

- Optimal temperature control regardless of feedstock quality
- Direct heating maximum efficiency
- No combustion byproduct: only steam

Steam-induced gasification

- No direct combustion
- Maximized hydrogen and CO₂ output
- Minimized contaminant generation

Rotary solids processing reactor

- Direct control on residence time
- Mechanical action on solids lumps
- Enhanced heat distribution

All C, H and O reused into commercial products

- Atmosphere: nitrogen
- Solids: ash only
- Liquid: controlled industrial grade effluent



PERMITTING

- ➔ Land Use & Environmental Review
- ➔ Air Quality Permits (SCAQMD).
- ➔ Water & Wastewater Permits
- ➔ Hazardous Materials & Safety
- ➔ Building & Construction Permits
- ➔ Industrial Waste / Solid Residues
- ➔ Federal Environmental Permits (If triggered)
- ➔ Hydrogen Production Reporting
- ➔ Utilities & Infrastructure Approvals





THE WASTE REFINERY



Woody biomass
60 t/day waste input (48 t/day dry basis)



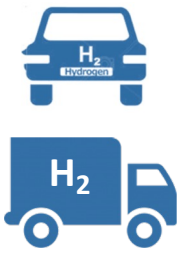
6 tons Hydrogen output
+ over 20kg CO₂e sequestered
per kg H₂ produced

CONFIGURATION EXAMPLE



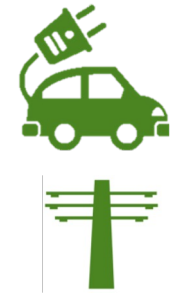
Hydrogen Gas

1,200 passenger vehicles
or 150 trucks / buses
served per day



On-site power

To charge Battery
Electric Vehicles
or feed the grid



+ 110 tons/day Sequestered & Avoided CO₂



MULTIPLE BENEFITS

- ➔ Government office, ministries and Municipal executives Support governments: energy transition policies and environment goals
- ➔ Waste mgmt. supply chain: Alternative to landfills/incinerators while creating additional revenue
- ➔ Airports, Sea Ports and Harbors: Energy transition and decarbonization goals. Closed ecosystem with local waste and local H₂ demand
- ➔ Recycling plants: Provide a truly effective real recycling solution
- ➔ Data Centers: Carbon-negative off-grid energy supply
- ➔ Islands: Closed ecosystems, high energy and waste management costs, very little space
- ➔ College & University campuses: Closed ecosystems with captive clean energy users, support for innovation and IP development
- ➔ Large hospital/medical centers: Very high costs of medical waste disposal. Need for uninterrupted power supply
- ➔ Steel industry / Oil & Gas Refineries: Decarbonization goals





THE WASTE REFHYNERY

For additional information
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