

-RED SUN Hydrogen
Revolution

-EGG Algae to H₂

5c/kWh Charging

98% eff. Induction Charging

RED SUN Hybrid
Thermoelectric
Trains Ships &
Yachts

**RED SUN
Philippines**



Algae Collection in Mindanao & Visayas

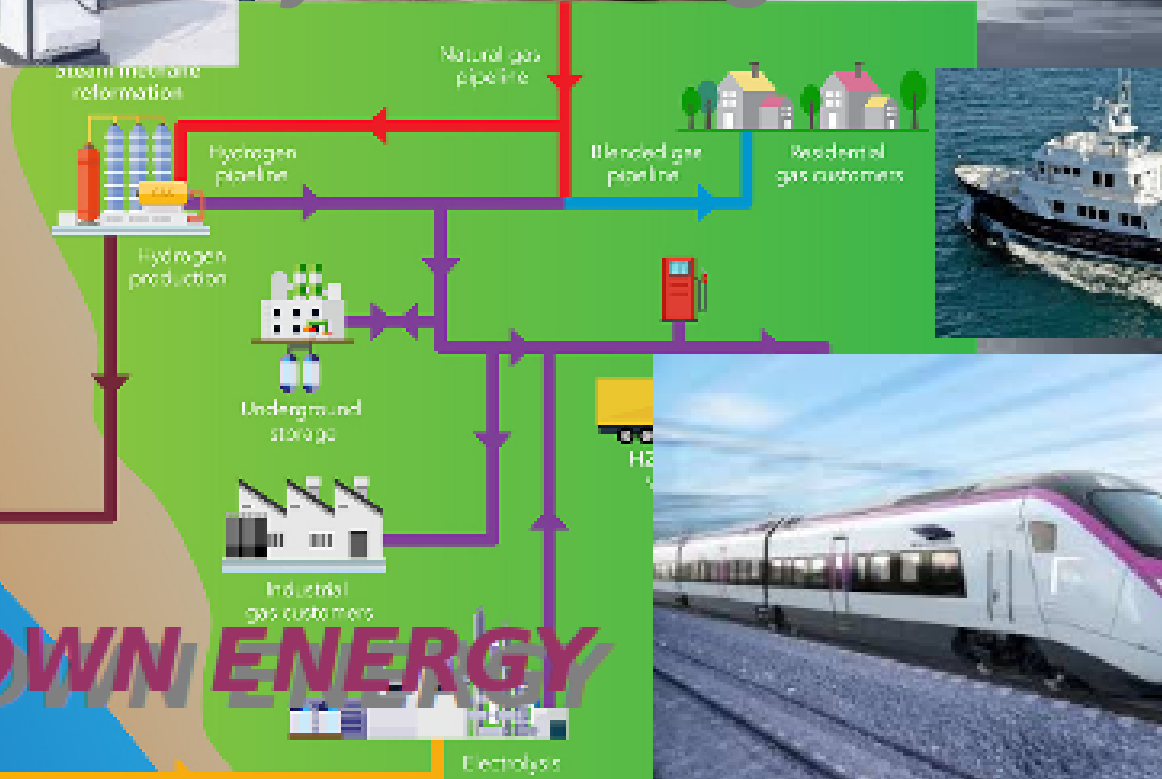


H2 Power Plants

18ton H2/day ~ EGG Algae to H2

Hydrogen Economy

RED SUN 32 MW Thermal Battery



TOP DOWN ENERGY



H2 Power Plants ~ 5 cents per kWh Charging

GAS - Bus, Ferry & Train Lines




H2 Power
Recharge
32 MW
RED OIL


H2 Power Plants




PHILIPPINES


19 MAJOR RED TIDES

 Do not harvest
Do not sell
Do not buy
Do not eat

 Coastal waters of
Mandaon in Masbate

 Coastal waters of
Bataan

 Irong-Irong Bay,
Western Samar

 Honda Bay,
Puerto Princesa City,
Palawan

 Maqueda Bay and
Villareal Bay in
Western Samar





RED TIDE ALERT. A map showing the 13 bays in Eastern Visayas affected by the red tide as of Tuesday (Oct. 6, 2020). The government prohibits the gathering, trading, and consumption of shellfish in these areas. (Bureau of Fisheries and Aquatic Resources image)

TACLOBAN CITY – Red tide infestation continues in 13 bays in Eastern Visayas this week as the Bureau of Fisheries and Aquatic Resources (BFAR) raised a stern warning against the consumption of shellfish meat.

In an advisory issued Tuesday, the BFAR regional office here confirmed that more bays in the Eastern Visayas region have been affected by red tide bloom.

The latest to be affected are the waters of the Biliran province.

EGG algae to H2 Solutions

H2 Power Recharge 32 MW RED SUN Battery

18tons H2/day~EGG Algae to H2 Power Plants

- ~Make 18tons Hydrogen per day ~ Steps~
- ~Collect Red Tide Algae /brown seaweed From Mindano & Visayas by vacuum hose (on land),
- ~Process & sun dry 1st on tarps for 2 weeks

~Kiln Dry & Pyrolyze in EGG Algae high Temp 950°C Catalytic pyrolysis to H2 & run GE LM2500 Turbine to Induction charge

~Transport 32 MW RED SUN 29 ton Thermal Batteries~90MWh Transported by train/Truck/barge to distributed power plants to run 150 MW RED SUN Power Plants- selling to Govt Utility



Secondary Goals:

Mag Gas
Plasma ~
200~700 bar

RED SUN Network
Trains & Ships

Luzon

~RED SUN Refrigeration

~RED SUN RAIL LINES

~Selling 350kt of ice/year

~Mindanao Train stations & Ports

~Refrigerated Facilities & Transport

Mindanao

Visayas

MANILA – The Bureau of Fisheries and Aquatic Resources (BFAR) has banned the selling and eating of shellfish bought or harvested from some parts of the coastal waters in Visayas and Mindanao.

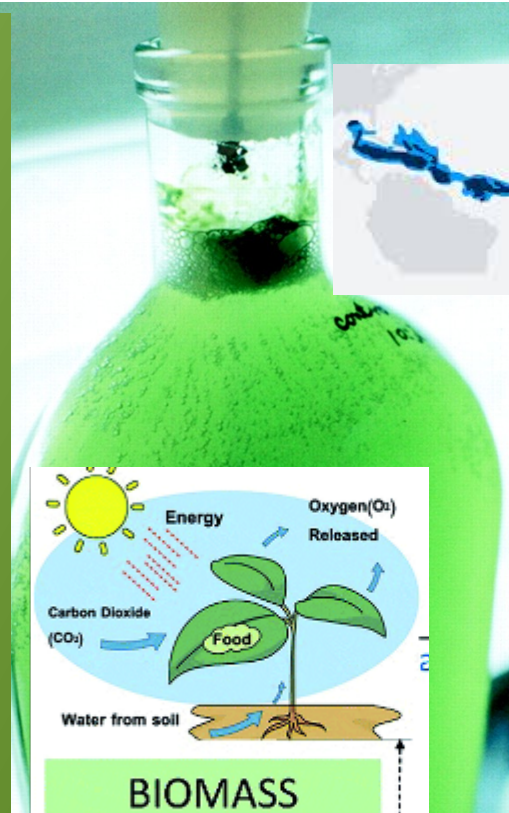


EGG algae H2 Solutions

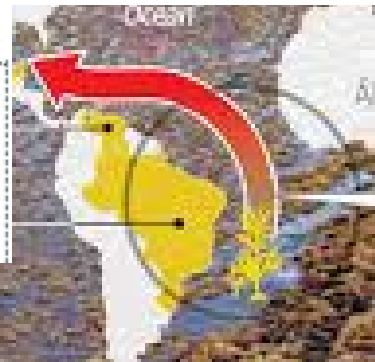
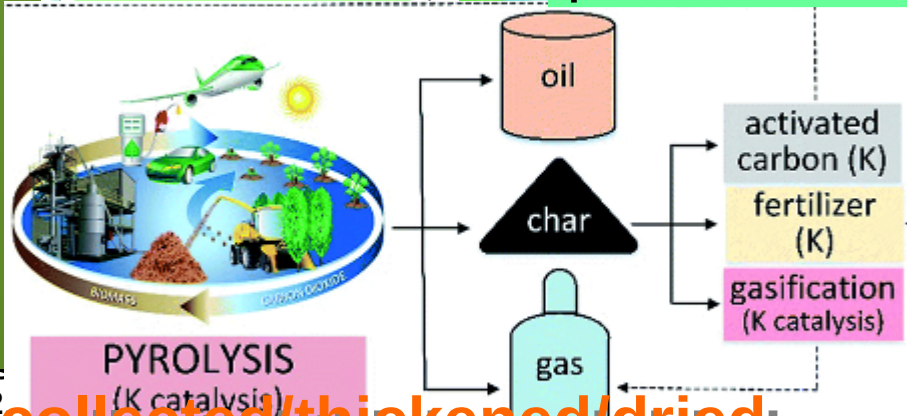
EGG Algae -To Hydrogen Systems 18 tons H2/day ~ Sargassum/Red Tide or Lab Algae



In steam gasification of algal biomass, the use of catalysts enhanced both tar degradation and hydrogen production via water-shift reaction. In catalytic gasification, tar removal efficiency varied from 80 to 100%. + catalytic activity of catalysts was in the order $Fe_2O_3-CeO_2 > RM > ARM$ in terms of H_2 production. The H_2 yield of seaweeds ~0.8L to 1.36 L per gm bone dry



This is higher than that of microalgae. Different amounts of inorganics between seaweeds and microalgae resulted in the different gas yields. The results obtained in this study could indicate that steam gasification of algae for hydrogen production is promising.



Red tides can be filtered/collected/thickened/dried and Pyrolyzed to H_2 safely removing them.

Anastas 2001-12

EGG Algae -To Hydrogen Systems 18 tons H₂/day works with Brown & Red Algae - Sargassum, Native blue green or Lab-grown Algae Fuel



Above -For most business owners and Kep residents, the strange color of the sea was not the main problem. The algae bloom sucked the oxygen out of water, causing hundreds of fish to die and wash ashore in Kep. “What affected us most was the smell,” said Mr. Weenink. “It was a mixture of dead fish and rotten seaweed.”



**EGG Algae~H₂ System
18 tons H₂ per day
prod 420,000 MWh/year**

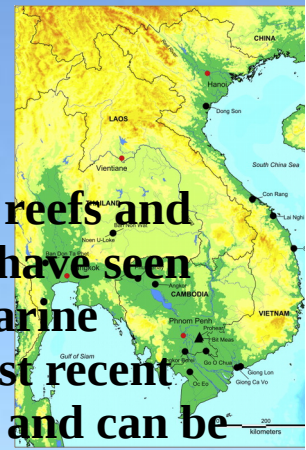


**Featuring Proprietary Puri-Stat
Collection & H₂ catalyst
that Regenerates 1000's of times!**



**Right - Sargassum Sea Weed Invasion of Mexico & Caribbean
Turned to H₂ by High Temperature 2 stage Catalytic Pyrolysis**

EGG Algae -To Hydrogen Systems 18 tons H₂/day works with Brown & Red Algae - Sargassum, Native blue green or Lab grown Algae Fuel



We have just seen a total collapse of the close inshore areas (200m-300m from the shoreline) in Kep Province, An Algae bloom created a green tide killing all the marine life within its reaches and turning the whole of Kep's mainland coastline into a foul smelling mess of green death for a period of around 3 days.

So we would like to put it out there for Local and National Authorities our honest opinion based on good scientific evidence, and utilising previous studies and accepted theories of why this happens and why this happened now here in Kep, considering natural climate related factors such as temperature are not abnormal for this time of year. The Species of Zoo Plankton involved is *Noctiluca scintillans* and a good source of information on other Algae blooms can be found here [harmful algae blooms](#) . With the number of harmful algal blooms around the world increasing in frequency and size over the last 40 years, especially in regions with large increases in coastal populations and over fishing, we feel that the human factors/stressors should be carefully studied and addressed

Over the past three years we have research Kep's reefs and Seagrass beds, and as recorded in our reports we have seen serious declines in health of almost all of Kep's marine habitats due to numerous human factors. Our most recent Zoning report covers many aspects related to this and can be found here [31-stage-1-draft-zoning-plan-for-kep](#).

So here is a summery of those human factors/causes, impacts and stressors that we strongly believe have led to this current event and need to be addressed urgently.

This natural blooming event happens more than once per year in Kep and usually has no negative effects, it is actually a good natural food source and natural part of the food chain that is usually beneficial to the Eco system, but as the Eco system here is close to collapse due to overfishing, excessive illegal bottom trawling and electrified fishing gear this one had a very negative impact and turned into the classic green sludge bloom that is a danger to both people and marine life

These trawling boats also kills huge swathes of Zoo Plankton along with every thing else in their path, this can not continue as this is one of the main factors in the recent collapse..

EGG Algae~H2 System

disturbed by many factors that I shall list below.

1. lack of predators juvenile fish and other marine life which usually consume these blooms which have happened. A very good article on trophic cascading and the link between over fishing, destructive fishing and Algae Blooms can be found here [Trophic Cascading and Algae Blooms](#) and you can also read this scientific study on [overfishing and its link to Algae Blooms here](#) [Over Fishing Linked To Algae Blooms](#).

[Seagrass Destroyed by Trawlers](#)
[Dead Seagrass After Trawling](#)

2. Excessive nutrients in the water due to large amounts of decomposing Seagrass caused by illegal trawling in the Seagrass areas.

Decaying seagrass fuels increasing algal blooms. This can cause a complete regime shift from seagrass to algal dominance. Accumulating evidence also suggests that overfishing of top predators (large predatory fish) could indirectly increase algal growth by reducing grazing control performed by mesograzers, such as crustaceans and gastropods, through a trophic cascade.

1) Hydro-jector vacuumes algae onto barge

Illegal Trawlers

3. Bottom trawling - dragging nets across the sea floor to scoop up fish - stirs up the sediment lying on the seabed, displaces or harms some marine species, causes pollutants to mix into plankton and move into the food chain and creates harmful algae blooms or oxygen-deficient dead zones.

References here [Trawling is Destroying Our Oceans](#)

4. When alive this plankton creates a normal amount of ammonia whilst feeding on phytoplankton, as this natural and non harmful bloom reached Kep it encountered many trawling boats running electric currents through the water column, this electricity killed it in large numbers, resulting in the pasty green sludge washing up in turn the mass deaths caused a spike in ammonia resulting in the marine life deaths

5. Water temperature, but this is a normal occurrence that within a healthy ecosystem would not result in the current situation.

We believe the largest contributing factor is excessive nutrient from decomposing Seagrass of which there has been days recently when it's a meter deep washing up on surrounding beaches, and the large number of electric trawlers working in the areas between the islands and the mainland.



Filtering the Water- Proprietary

EGG Puri-Stat - turns algae into bricks easily!

Filtering-Thickening
Clarification-
Addendum
Additions-

3.5 MM gallons/day

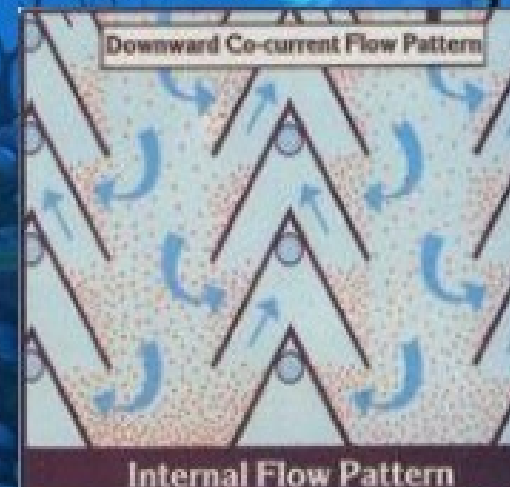
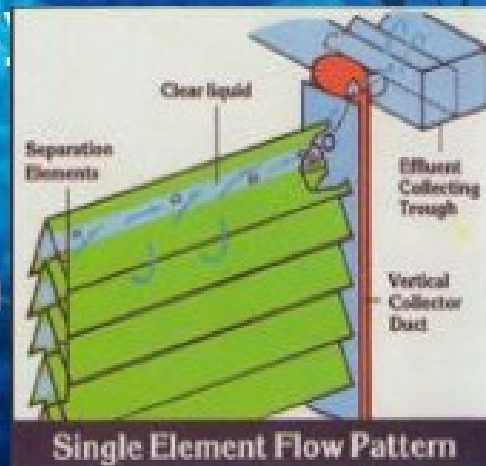
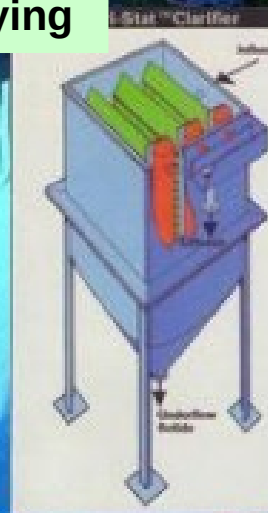
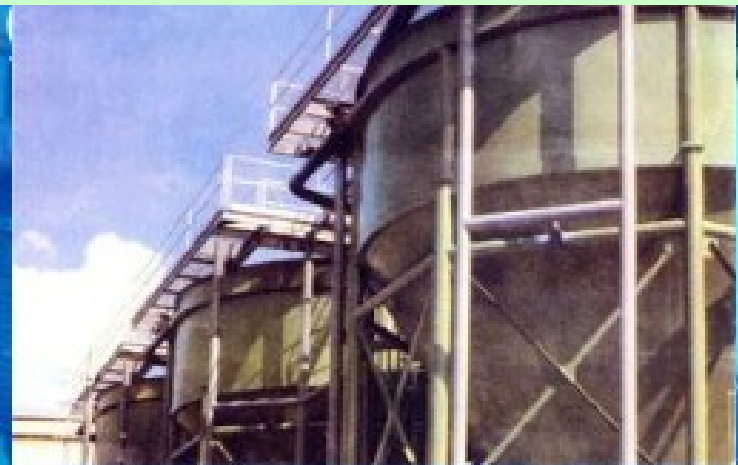
98% energy efficiency

works by gravity-

Works in combination

www.originclear.com

2. PURI-STAT to thicken into bricks for drying



3) Algae Bricks are dried in sun and final drying in RED SUN 1000°C kilns & Ovens



RED SUN PHILIPPINES



algae
Solids Feed Hopper

H₂

950°C
Hydro
Pyrolysis

2" diameter
Fluid bed

K.O. Pot

No off-gassing of any kind ~ No VOCs,
NO NOx, NO SOx, No soot+ Ash recycle

ONLY H₂ comes out at high Temp 950°C
to produce 18t H₂ per 300 ton dry Algae

Hydroconversion

Heat
Exchanger
CWT
CWS

µGC

H₂

Gas
Sample
Cylinder

No Dioxins!
No Ultrafine
particles !!

Dry Test
Meter

www.originclear.com

4) Pelletized dry algae fed in high Temp.
950°C 2-stage Fast Pyrolysis to make H₂

H2 & MAG POWER Electric Tram ~ Catenary System

No Wires or
Catenary
System
Needed ~
H2 & MAG
GAS
Charging
onboard
+thermal
batteries =
1400 km
range-save
\$18m/mile



No Wires!

• H2 & MAG POWER
Tram runs without fuel

- HEALTHY
- ENERGY-EFFICIENT
- SAFE
- LOW-COST - ULR
- ECONOMICAL
- FLEXIBLE - ULR
- ATTRACTIVE
- PASSENGER-FRIENDLY
- PEDESTRIAN-FRIENDLY
- VERSATILE
- PUBLIC FUNDING
- H2 & MAG POWER brings the HYDROGEN ECONOMY to Thailand to enable transport!

H2 & MAG POWER Gas Re-charging & gensets
3.2 ~ 32 MW Thermal Battery enables Hydrogen

Charging with 98% efficiency

Electrical Induction Charger (Power from the Grid)

MAG POWER Thermal Energy Storage to power industry with Compressed Air & Steam Power Plants 9,600 BTUs/kWh at 63% Efficiency

RED SUN Hydrogen Charging Systems:

H₂ stored as heat in 32 MW Thermal Battery

High temperature conductor (1700-1800)

Heat Exchanger (convective induction)

Phase Changing Metal Thermal Energy Accumulator (Phase Changing Copper & Nickel Alloys)

Compressed Air

Super Heated Air Compressor at 1100 oC

Mechanical Link

Air Accumulators

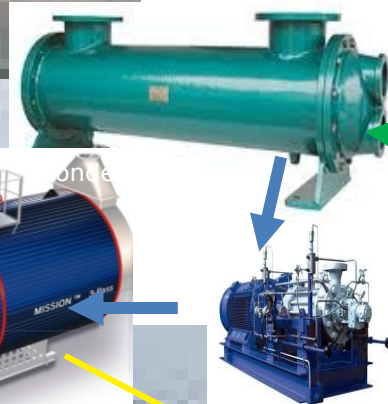
Direct Condensing Low Pressure Turbine Generator



Steam Generator



Stage 2



Condensor Pump

Cooling Tower



Cooling Water Pump



Stage 1



Wireless System!

RED SUN & MAG GAS H2 Platform

RED SUN CHARGING STATIONS:

Heating compressed air in modified Man, GE and Cummins diesel runs generators without fuel with Combined cycle low pressure steam gives overall 53% efficiency!

Self-Charging Trains

Light &

- 1000hp
- 1500V
- 2500V



Charging Train Stations

Connect to RED SUN FERRY LINES

RED SUN FERRY LINES
 Heating compressed air in modified Man, GE and Cummins diesel runs generators without fuel with Combined cycle low pressure steam gives overall 53% efficiency!
 Self-Charging Trains
 Light &
 • 1000hp
 • 1500V
 • 2500V



Wireless System!

Electrical induction charger. Power is from the Grid



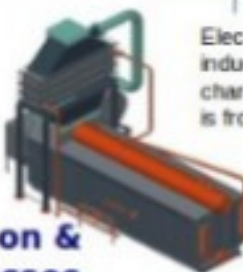
Heated Compressed Air 3x's Torque



Heated Compressed Air 3x's Torque



Inductor for capacitor to 3000V



Electrical induction charger. Power is from the Grid

RED SUN ARBITRAGE x Location & Transport for Arbitrary Location for Use for Industrial Processes

1400 km Range Per Charge – 64 MW on Budd Car

Engineering Team

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 Paul Harris- Electrical Engineer
 Mert Pekrul – Chief Mech Engineer
 Engine/turbine Manufacturing chief
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 Dr Jack Wong – Prof. Civil Engineer
 Mark Rohrbough – Electronics Eng.
 Dr Andrejs Zagars – Prof. of Chem/
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 Jay Dubinsky – Mgr Engineer/Pres.

Administration

Jay Dubinsky –Pres/Mgr Eng
 Dan Winter - Chief Elec Eng
 Jack Wong – Civil Eng
 Chem Eng~ Andrejs Zagars – /QC
 Marketing~ Baby McCaw
 Lawyer~ Alex Pauron

RED SUN + H2 Power

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**RED SUN Non-Combustion Brayton Cycle &
 Diesel Retrofits – 20 to 1,000 MW Power
 Plants Ship & Stationary Power Plants &
 Bus, Yacht, Train Retrofit All Turbine Power
 Systems**



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