Introducing Energine Green Group, Ltd. RED SUN Solar thermal 1800°C infrared focusing & collection



Solar Thermal Infrared Collection Thermal Molten Nickel Batteries ~32 MW Hydrogen Electricity Production Retrofitting Trains ~ Ships ~ Jets

Www.originclear.com

www.max-mesh.com

www.energime.com

Solar Desalination



RED SUN Infrared Solar thermal 1800°C infrared focusing & collection reaches 1740°C with 22 meter dishes, and 1100°C with SUN IR black body collecter. Utilizing RO plus batteries, the modular desal unit below makes water per day



16 meter dishes produce 4 million MJ per day with IR and Visible light collection

Operation: 16 hours a day- 4 hours LIS batteries Modular 20ft container+ Production: 3 million liters per day desal water 100 m² RED SUN IR trough Deployed in one day ~ Moveable ~ work on brackish & sea water ~ Low cost

Who Are We?







Energime Green Group, Thailand Ltd (EGG) developed technology tested & output-certified by VW, Rolls Royce, Kawasaki & British Atmospheric Data Center, running large 2.5 MWp turbines at 32% efficiency for over a year; and, gives 61% efficiency when running combined cycle (cc). EGG is Patentee of the world-wide exclusive Infrared reflection, which for the 1st time enables focusing & collecting the full spectrum of heat and light giving 1600°C to 1800°C+ with H2 Charging! Additional co-patents with the DOE allow molten Nickel 32 MW storage units 18m3 to give 10 to 30 day operations to smooth-out wind & solar to allow baseload power 24/7.

Energime Green Group, Thailand



Dan Winter ~ Chief EE/partner



RED SUN thermal batteries ~ retrofit all turbines/diesels EGG Algae to H2- 18 t/day Low-wind Turbines,Solar AC/Heat, Electric, & Solar Thermal Batteries 3- 32 MW Vitruvian Gardens Vertical 10-Level Aeroponic Synponic Greenouses, Infrared Focusing





EGG renewable & hydrogen platforms are based on a solid history of accomplishment: responsible for developing and designing many ground-breaking renewable energy and sustainable growth projects world-wide; Algae & H2 Specialists Dan's work related to H2 production...

fractalfield.com/hydrogen danwinter@fractalfield.com

Click here for the brief navigable powerpoint image set

Hydrolysis by Fractal Implosion: Releasing Hydrogen Hydroxy Gas from waterwith dramatic new efficiencyusing Dan Winter's radical new equation which prove's the FRACTALITY of the Hydrogen Atom 10 014

Proof that golden ratio scaling of both Planck Length and Time-Predict Hydrogen Structure .. and Unpacking

Dan Winter ~(wavelength and frequency harmonic series) of hydrogen.





How PhiRICAIS (Implosion) is revealed by Spectrum Analysis

-EKG Coherence-



With Lloyds insurance wrap for the Philippines/Panama PPAs and ten year waranty from Thyssenkrupp on all thermal battery equipment and performance based on over 75 years of successfully transporting molten steel 30 days journey by rail to Sweden from Russia, with 100+year companies *Thyssenkrupp* and *RAFT* providing the solid reliable thermal systems that are integrated into *RED SUN*. With manufacturing and assembly in Germany for *RED SUN MOBILE* storage. Additionally, EGG will run low-temp desalination modules up to 12 MM Liters of desalination per day with contracts in the Philippines,

3M have tested their coating systems for solar concentration for years, to reach 98% reflectivity for collection including infrared.

Along with generating power, EGG will make 350k tons of ice/y, and run refrigeration plants, plus provide air conditioning, heat and steam to run combined cycle power plants. In some industrial locations *RED SUN* is contracted through jv's for 25 years thru *EGAT* & other utilities selling electricity at \$150 per Mwh in the Philippines & Panama.

Goals..

RED SUN Baseload Power up to 500 MW solar therm: triple power to make electricity, air conditioning & sanitary hot water for neighborhoods with lowest cap cost per MWh

Provide efficient large powerplants with small footprints-easy to retro-fit -Triple power (Elec, AC & Heat) source for off-grid townships, hotels, hospitals and other governmentt buildings

> Make 100% clean renewable energy and no emissions that qualify for CCs

Fcus & capture 97% of sun's total Spectrum to provide distributed base load power and on demand power 24/7 with new thermal storage technology licensed from the DOE.







Solar Flows...

Global Energy Flows W m⁻²



RED SUN & MOBILE STORAGE

Infrared Focusing Collection & Solid Heat Transfer and Storage Medium with a Combined Cycle Steam Power Plant – 97% of Sun's Energy used! In large-scale thermal power collected at 1700°C to run GE turbines and Man Diesel power plants; 40 Mwp can be moved from wind farm to generator site in mobile system for running diesel engines off-site to eight complete and semi-autonomous renewable energy combined desalination systems featuring its proprietary forced evaporation and infrared solar collection systems called RED SUN. Matched with EGG's patented 40 MWp thermal battery called RED SUN MOBILE to run the power plants and desalination together, creates a very cost-effective system that can deliver water at 70cents per m3 and eliminate the €40 million in electricity charges by running all on RED SUN Infrared solar troughs and dishes.



Maximum Design Flexibility



40 MW Storage (only 18 m3) modelled after the earth with Graphite ceramic casing around a molten steel core, RED SUN storage holds heat withless than 2% Loss in caloric value each day



12 to 22 meter dishes, or large undergound dish bunkers provide 600 suns, including all IR and wide band heat focused onto the exclusive RED SUN heat collector/transfer

Research and Development

Energime Green Group works with DOE, Univ of Texas, Latvian Technical University, Rolls Royce, Kawasaki, and British Atmospheric Institute, and UIB to name a few institutions.

ALSO:

1 Year testing with Rolls Royce UK – Run very large 1.5 MW turbines

1 Year testing with Kawasaki – Runs their 1.5 to 1.8 MW Turbines

1.5 Year testing with British Atmospheric Inst -302 W/m2 UK@10pm



Roof Technology Options

- Solar Concentrators
- Solar photovoltaics
- Wind Wall and Vertical Axis
- Wind Turbines
- **HVAC and Light**
- Parabolic lighting
- Evaporative cooling
- Solar wall and solar duct

Solar thermal water heating & <u>Water condensing technology</u>







©2010 Energime | All Rights Reserved

Turbine Technologies



Rolls Royce & GE 2.5 MW

From The Turbine Plot's Flight Manual @1995 by Gregory N. Brown and Mark J. Hot





Brayton Cycle originally designed as heat only system, without pressure

RED SUN Canister is retrofitted to replace fuel inlet with heat-only system

RED SUN follows the exact same Brayton Cycle

RED SUN operates easily @1100°C on Low pressure 1-2 Atm only

Turbines operate cleanly on RED SUN Last longer!

©2010 Energime | All Rights Reserved



RED SUN Capabilities

- 97% of sun's rays captured by RED SUN, up to 2800 nanometers
- Allows running off the reflected IR/heat of clouds, operating without direct sun
- Enables 365 days operation in all climates
- Not affected by moisture in the air or humidity
- Not affected by water getting on equipment- Weatherproof



Minimal to zero emissions of any kind & qualifies for carbon credits



Production Advantages

- High heat allows high efficiency turbines to double efficiency to 32%
- Dependable Year-round base load power independant of weather cond
- 54% of total output of sun collected with brand new IR Reflection world- wide patent that is the first to focus IR for thermal collection
- High heat above 1620 C allows retrofitting every jet turbine ever built.
- Complete power system is off-the shelf to give best parts service
- Design features plug-in electric, HVAC, sanitary and hot water; and; drying capabilites for industry and hotels alike
- Complete design flexibility adjusts to local conditions
- Small footprint allows roof-top installations



Typical Profit/Cost Breakdowns

Profits:

24 hours/day x 365 d = 8760 hours x 10 MW = 87,600 MWh/yr

\$300 per MWh × 87600 MWh electric = €26.3 million/yea
\$200 per MWh × 87600 MWh AC = \$17.5 million/year
\$70 per MWh × 87600 MWh heat = \$6,1 million/year

Totals

\$49.9 million/year

Costs: \$5 million per installed MVV = \$50 million for 10 MVVe

Return on Investment (ROI): \$49.9 million/\$50 million = 99.9%

Capitalized Cost per MWh 20 year life x 87,600 MWh/year= 1,752,000 MWh/20 yrs

(\$50 million + 2.24 m maint)/1,752,000= \$30 USD/MWh







Power Purchase Agreements

With Energime Green Group, Thailand:

~RED SUN PHILIPPINES ~ 150 MW ~ Nickel Mining Concession with Mindanao Tribes ~two desalination contracts - Cebu

Pending: ~Ph ~ JV with Passay City & Cebu Industrial builder to provide electricity

~ RED SUN PANAMA ~ 150 MW



Supportive Relationships and Partnerships: <u>Solar Space FRAMES</u> INDUSTRIAL CO., LTD.

EGG is supported by the technology & active input of over 90 sustainable tech companies world-wide



Energime Green Group, Thailand ~EGG is a Global Engineering Incubation and Scientific Networking, Marketing and Technology Integration Network,

Main Activities:

Energy Storage & H2 Production
Green Power & low wind Turbine130kW
EGG Algae to H2 18t/d ~ 420,000 Mwh/y
RED SUN retrofit all Diesels/turbines
Greenhouse Growing of Herbs/meds
High Temp Pyrolyisis 950°C
Energy Efficiency Retrofits for Hospitals,
Ships & Commercial & Ind
Building materials & Bitumen materials
Synthetic Fuels – OHM OIL
Composite Manufacturing & Building

Developing reliable H2, Solar energy & food productions~ ·Heat transfer materials Charging Electric power Charging Station~ 5c/kwh Drying biomass Waste heat collection Air Conditioning **Refrigeration &** Ice production Manufacturing Wind, solar, storage, and energy products Nano-paint & vinyls Wind Turbine & solar dish manufacturing

Thank You!

Energime Green Group, Thailand/Ltd **RED SUN PHILIPPINES.** Jay Dubinsky - President/Mgr Eng. Dan Winter- Chief EE ~ Partner Jack Wong . Civil Engineer **Dr Andrejs – Chemist** Aina Julian – Architect RED S Mkt ~ Baby McCaw Lawyer ~ Alex Pauron Tel: +34-652-274-123 USA: 425- 221-9713 Skyp ~ tolanwinter ~ doctoredsun@gmail.com 34-652-274-123 ~ USA~ 310-651-8123 www.inductotherm.com

www.energime.com