

RED SUN REINVENTS POWER



Congratulation KABISIG-ITF to its First National Summit!

September 16, 2023, Polomolok, South Cotabato



DR. DAN WINTER
World Renown Scientist
Multi-Awarded Inventor
Managing Director
REDSTAR

" Looking into the near horizon ahead and the needed social innovation for the bargaining power the of the poor Filipinos is more than being



DR. JAY A. DUBINSKY
World Renown Nuclear Scientist, Bio-Chemist
CEO/President
REDSTAR

REDSUN Cutting Edge Green TECHNOLOGY



VECTOR DESIGN



The RED SUN Molten Nickel thermal batteries have a 10 year warranty and lasts 50 years or more. The RED SUN Thermal battery is designed to transform electricity into heat, like the earth with 98 % efficiency. It can store heat for up to a year as a back-up battery to run both diesels and turbines with 30 % more efficiency than fuel because of its higher heat band, storing heat 1400-2200 C. This enables energy arbitrage which is charging the battery at night from all renewable sources including hydro, wind and geothermal and delivering due to its mobile transportability in the day. RED SUN Thermal batteries are 7x energy dense than Tesla batteries, whereas a 11 MW battery only weights 6 tons and provides 120 MWh per charge. Therefore, we will charge the battery at night at various hydroelectric facilities and deliver to distributed locations in the various cities, suburbs and industrial parks in the day. This one-of-a-kind battery therefore can give 30 % more income to wind, solar, geothermal, and hydroelectric, allowing them to sell electricity at night and supplying much needed extra electricity throughout the Philippines for industrial parks, cities and suburbs, thus preventing brown-outs.

Red Sun Paradigm Shifts

Paradigm Shift #1- Size Matters In Transportation and Ships:

New Paradigm Shifts in power and Transport enabled by Red Sun.

There are half a dozen Paradigm shifts through the **Mobile Red Sun Thermal Ni-Fe alloy** 1800°C thermal battery that unlocks the economics and sustainability of pure heat analog systems, while utilizing renewable energy, hybrid propulsion, and Nuclear power. Red Sun holds utility scale power in a 32 MW battery with 360 MWh of power inside a 20 ft shipping container at only 30 tonnes. When Lithium batteries are struggling to reach 300 Wh/ kg and only 1 MW can fit in a shipping container, Red Sun reaches over 1400 km retrofitting two to **GE Diesel Electric** Locomotive and train!

We won the fuel / energy monopoly game by capturing unused wind, hydro and geothermal at night and delivering in the day with the 1st mobile utility- scale battery that gives over 1000 Wh/kg in space of only 18 m³, a volume is 25 times less and 7 times lighter than lithium ion batteries. With 32 MW Red Sun Small enough to retrofit any yacht or ship engine room/compartament (**Red Sun/PowerSource 440 kW** is 4.5 m³ and weighs just 450 kg, yet gives 752 kWh per charge!), enabling fitting in engine rooms of yachts and trains and going aeronautical in a new era in high energy mobility and hybridization for planes, ships and trains that lithium- ion batteries can never do. The below picture shows the huge size discrepancy, with the \$49 million **SM Development** 50 MW Lithium Battery Energy System (BESS, shown in picture below), taking a whole city block, non- moving, requiring constant monitoring for fire/ explosion, and only lasting only 12 years, while holding power for only 4- 5 hours. And with high fire and explosion risk creating insurance headaches and higher premiums. Comparing this to 40 MW Red Sun battery that gives 400 MWh, and lasts 50 years and millions of cycles, plus; can hold power easily over a year, with zero fire or explosion risk.

50 MW Salt Battery – 150 Wh. per Kilogram		RedStar's Red Sun Thermal Battery Generator 2000 – Wh Hours per Kilogram with Steam Generator
Lithium Battery – 270 Wh. Per Kilogram		18 Cubic Meter, 26 Tons - Transportable by truck ship and other locomotives in 20 foot Container



Retrofitting all Trains Ships & Power Plants - Paradigm Shift #2

Red Sun heated cryo nitrogen expands 3.5 x's more than gasoline- running nitrogen trains in the 19th and 20th Century, so by retrofitting old diesel with cryo nitrogen and thermal battery replacing coal boiler 150 years later, you get 3.5 x's the torque. So it's much more suited by 3.5 x's for ships and freight trains, where pulling or pushing power is Everything!

Thus, in an era where we are transitioning from fossil fuels, Red Sun holds the keys by dramatically lowering costs, and reducing size, thus, enabling retrofitting all engines, diesels and turbines seamlessly with pure heat at 1450°C to 2000°C delivered to combustion chamber of turbines, steam generators and rail systems of diesels, supplemented by cryo nitrogen- made from the air. For 30 year average nitrogen train service life; and, operating at 1.5 cents per mile. This era of low- cost travel will return under Red Sun in trains and trollies, like previously running nitrogen- fuelled trains ran in dozens of countries on 5 continents for 75 years world- wide for pennies on the dollar compared to diesel. Plus, cryo nitrogen at 150° C expands 1500 x's compared to petrols 432 x's, increasing torque 3.5 x's! So, Red Sun not only runs with zero emissions with no carbon in the engine removing endless cleaning, it has no explosions and gives continuous non- intermittent heat with half the vibrations, which gives 50% longer life to the engine, and removes 25 db noise pollution; and, forever removes bilge oil and heavy metals that now threaten to destroy all sea life!, with diesel fumes claiming 80 million lives per year!

So, Red Sun is a universal adaptor for every type of ship (some have both turbines and diesels, like Navy Ships and **Carnival Cruise**)! Trillions will be saved without building new ships. RED Sun even retrofits coal plants with nuclear power.

Saving \$50 trillion in existing Power Plants- Paradigm Shift #3

Red Sun analog 1500°C heat systems retrofit an entire ship, train, bus, coal plant; and all thermal plants can be retooled, without building a whole new ship, plant, train and engine and/or propulsion system, as all hydrogen, methane and alternative fuels and electric propulsion requires. The existing power plants are salvaged thru Red Sun and engage as battery, universal adaptor and energy amplifier, such that nuclear reactors can be plugged into diesel propulsion existing systems and ships, which enables a new era of nuclear powered ships that **Lloyds Marine** is promoting. Another paradigm shift! That's 2 shifts in one..with Redstar's exclusive patented **Non- Combustion Brayton Cycle** or for diesel non Combustion Otto Cycle World wide patent in 2017. Red Sun patent was reviewed and supported by Director of **Jet Propulsion Lab** and **Cal Tech** to patent office. This is because the Red Sun runs on pure heat and does not need air in deep space!

That's 200 x's difference! TOUCHDOWN!

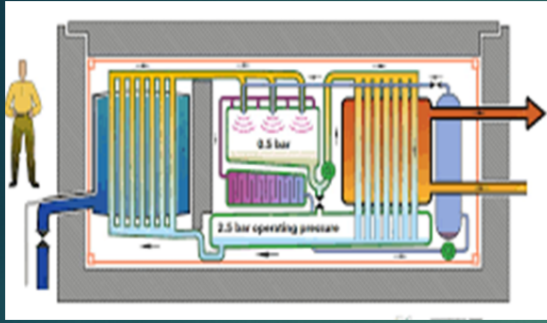
RED SUN LASTS 50 YEARS (SOLID STATE- NO MOVING PARTS LIKE YOUR I- PHONE).
RED SUN IS TOTALLY ANALOG, NO ELECTRONICS REQUIRED!

NO FIRE RISK:

NO EXPLOSION RISK

INSURED BY **Lloyd's Syndicate!**

<https://www.youtube.com/watch?v=dEUxEZ2sfUM>

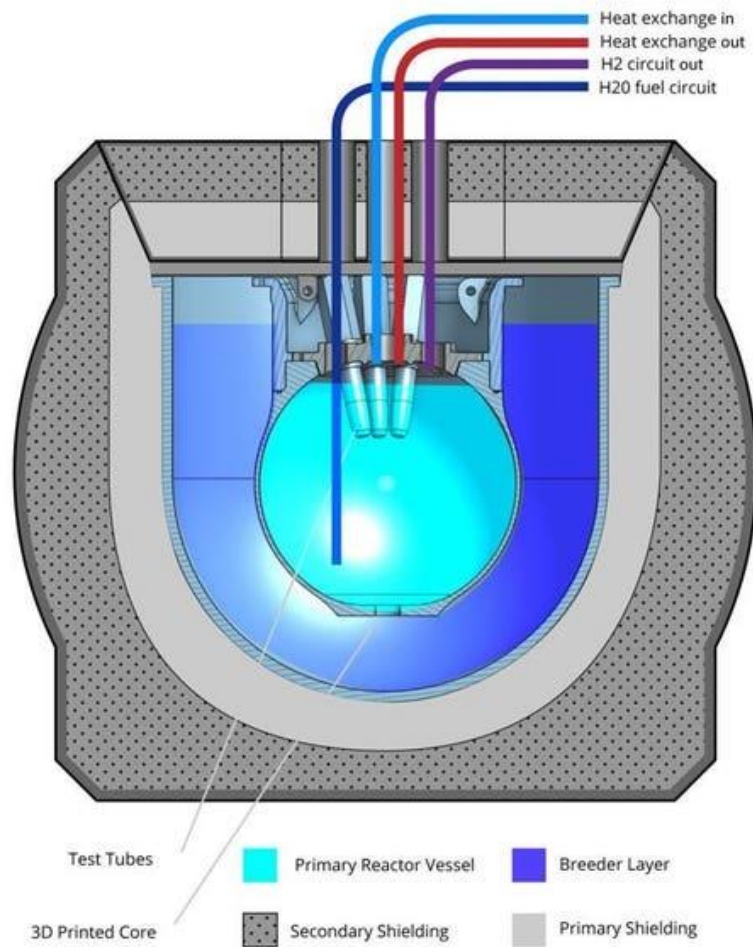


Retrofitting a Molten Salt reactor on the deck of any ships can be implemented putting the RedStar's Red Sun Thermal Generator in the Engine Room connecting the MSR with the engine by a simple power cable, thereby the fuel cost could be zero. **Lloyd's insurance** is available with full financing package.



Nuclear Reactor designed by Nobel Prize winning physicist (*Glenn Seaborg, 1951 Chemistry Nobel Prize*) that does not make plutonium, but does make valuable medical radioisotopes, hydrogen and 2 MW heat per christmas tree- sized reactor that Redstar will manufacture with exclusive new Basalt Reactor for \$500/kW - **Paradigm Shift Number #3**

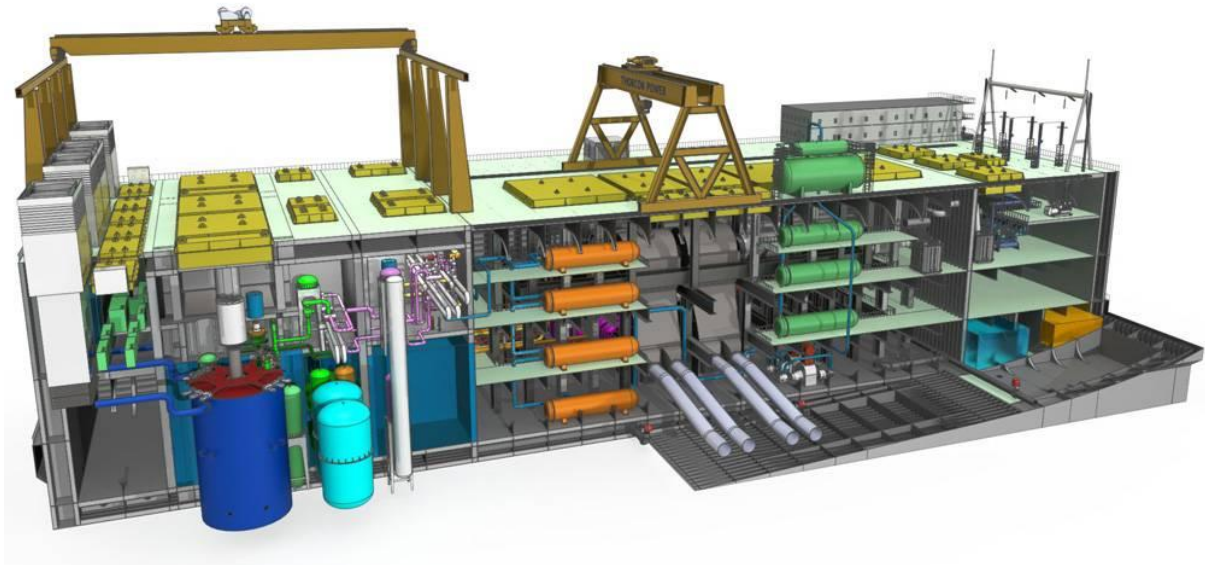
For 75 years they hid this tech. Just like **USA DOE** has hidden the **Aqueous Homogeneous Reactor** (AHR, see below cut- away cartoon to show very simple design) because the military runs our atomic program since WWII, the NRC and USA atomic labs and energy policy is run by military dictates, and sponsored by **Dupont**, a plastics manufacturer. So at the dawn of the nuclear arms race they wanted abundant plutonium, which precludes the AHR as it makes none, so this reactor and the molten salt reactors at **Oak Ridge National Labs** were buried for 75 years. The molten salt reactor was saved by another jet propulsion engineer who happened to visit the day they were incinerating all the records! All the manuals, test results, wiring diagrams, etc., were all piled high on a cart like your typical **Nazi** book burning. This was **Kurt Sorenson**, CTO of **Flibe Energy**, <https://flibe.com/> - a Molten Salt Reactor (MSR) developer.



He is one of my hero's by saving these reactors. AHR costs \$500/ kW for **Redstar** to build with *Professor Jack Wong* in Bangkok.

A **Nuscale** reactor costs \$19,500 per kW. The **Sizewell C** reactor in England costs \$31,250/kW - which is **62 x's the cost** of the **AHR**, while the AHR comes with a full feasibility study by **Oak Ridge National Labs** after testing and running for 5 years! **Below-**

reactor



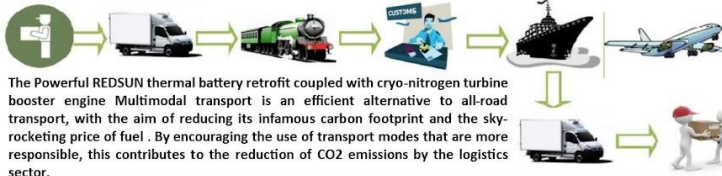
Red Sun batteries give over two orders of magnitude [CAPEX](#) cost savings & one order for ship - [operations](#) expence-0 Emissions
- Paradigm Shift #4

The average price of lithium ion battery packs is \$100 to \$115/ kWh. This is for battery packs at the pack level and can vary based on chemistry and manufacturer and lasts 12 years. Whereas, a 32 MW battery costs \$180k to manufacture and gives 360,000 kWh per charge and lasts 50 years, giving \$0.50 per kWh. Thus, Red Sun is a new paradigm shift in power and transport enabled by a new analog thermal power system that creates up to 1450°C continuous non- intermittent heat in the combustion chamber in patented **Red Sun Non-Combustion Brayton** or **Otto Cycle** - tested on diesel and turbines at ***GE, Siemens, Man, Cummins, Kawasaki, Isuzu, Volvo, Wartsila, Rolls Royce, Pratt & Whitney, & Porsche/VW.***



Passenger Transport and Freight Train simultaneously in one rail is economically and socially viable system

Multi-Modal Transport Operator



New Markets reached by Transforming roads & rail into power corridors

PowerSource 3.2 MW - 1.6 tons

Red Sun Mobile

Portable Thermal batteries allow offsite fill-up within 6 hours to deliver 40MW

Battery in containers provide base power- 40 MW RED SUN Brayton Cycle systems or PowerSource 3.2 MW Batteries. Plug in PowerTower wind & solar offsite to deliver!

GE Transportation is to develop a battery version of its AC-motored Evolution Series locomotives with 2 400 kWh of onboard energy storage and an energy management system. The prototype is to be tested on BNSF freight trains between Stockton and Barstow, working in multiple with diesel locomotives, and is predicted to reduce the train's total fuel consumption by 'at least 10% to 15%'. 'This project will give us tremendous insight into the capabilities of battery power and the best operational methods of leveraging the technology,* which is expected to cost around \$45 million for this locomotive!

Battery-Electric Locomotive

Massive power generation capabilities up to **2400 kWhrs**
Huge fuel savings of at least **10-15 %**

Vs. Mag Power Wireless Electric Train Retrofits

Vs. RED SUN 32 MW Thermal Battery = 65,000 kWh
Fuel savings of 94% - 64 MW - weighs 60 tons = 130MWh on Budd car-110 tons
Range of 1400 km to 2100 km- Electric Locomotive Retrofit - \$1.6 mln+ Bat cost
Charge-up with Mag Gas cost 1c/kWh = \$650 USD - 4-6 hr+onboard Recharge
Onboard Charge-up 2x's while running: Induction + MAG GAS genset charger

Red Sun Mobile Bus / Train Thermal 1750°C battery- 440 kW (752 KWh/ charge, 450 kg, 5m3).

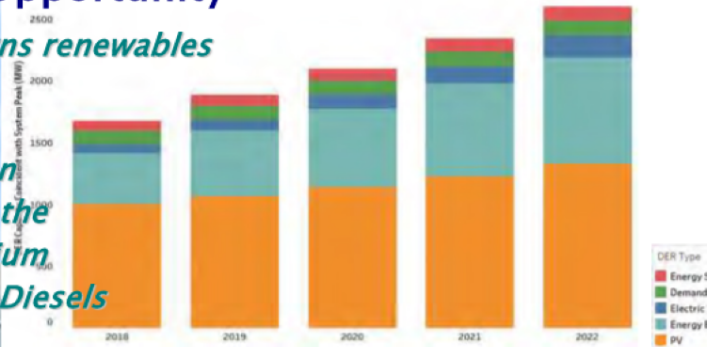
Train - Red Sun 32 MW gives 360 MWh/day, 30 tonnes, 18m3, \$1 per kW, 64 MW runs train **1400 km/5hr** charge + self charges



Energy Storage Is A \$620 Billion Global Investment Opportunity

RED SUN Arbitrage turns renewables into baseload power!

30 MW RED SUN Molten Nickel Batteries 25x's the energy density of Lithium. Runs both Turbines & Diesels



There is significant opportunity for energy storage to provide flexibility – to help balance variable supply and demand – and systems will undoubtedly be used in complex ways. Energy storage will become a practical alternative to new-build-generation or network reinforcement



ARCADIS
EC HARRIS

Red Sun retrofitted to run freight trains/ ships with 3.5 x's original diesel torque adding cryonitrogen at 2 c/ liter from the air sustainably!