The REOSE Solar Panel Hause

By

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The REOSE Solar Panel Hause is a home that is completely built with Steel, Structurally Insulated Solar Panels (SSISP). The REOSE SSISP are unique because they are the only structural building material that collects, transfers, stores and converts solar photovoltaic and solar thermal energy flows into useful, and mindful work.

Traditional building design rejects the summer's sun, spring rains and fall's gusty winds with cool roofs, rainwater runoff plans and wind diverting schemes, and yet homeowners secretly yearn for those very same energy flows during different times of the year. What the REOSE solar panel Hause does is flip this design strategy around and asks how we can best design a building to absorb more solar energy, more wind flows, and more rainwater runoff. The end result is a Sustainable Home, a living, breathing, and thinking environmental system, a Hause, that is designed to last for generations.

The interlocking solar panels are designed to be stacked on top of each other, with system interconnections being made at the doors, windows, eaves and corners of the home, school, or office building during installation. The SSISP are strong and can withstand 200 MPH winds, 8.2 earthquakes [RS], and qualify for a 40% reduction in homeowner's insurance because they are so safe. The REOSE Solar Panel comes in XXL sizes with 2, 4 & 6ft heights x 6-12" widths, and from 2 to 50 ft long.

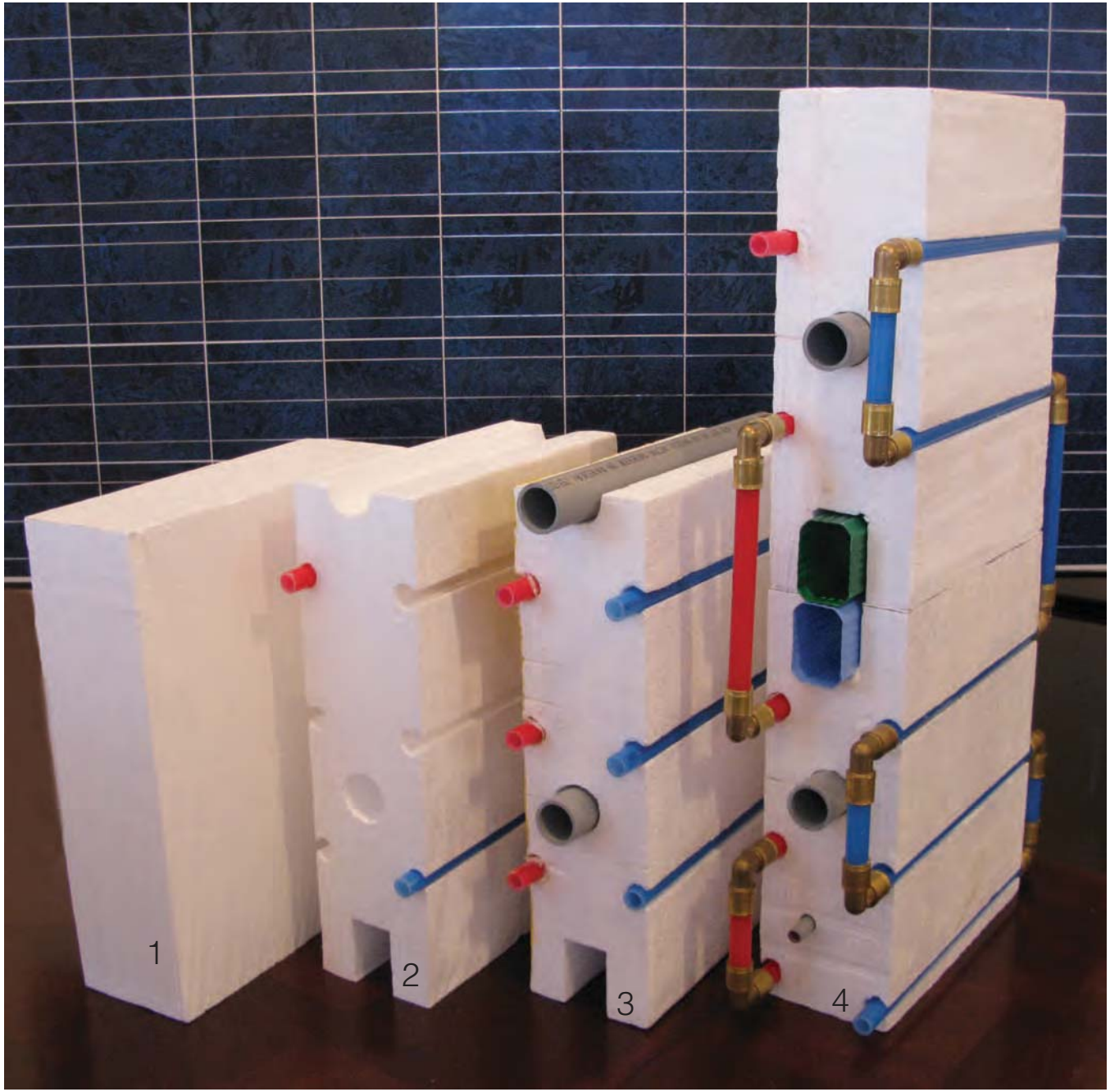
Due to its unique structural flexibility, arrays of SSISP's can span great divides, with free roof spans of 50ft or more under normal residential loading. Architectural framing with the REOSE solar panel is simple, with only minor modifications required of standard 2x6" building plans.

The standard 1250 sqft SSISP Hause will also generate enough clean energy to support two adults and three children continuously for 25 years (~1200kW-hr/month). Replacing the SSISP's thin film PV panel is as simple as pealing and sticking another PVL over the top of the existing laminate. The SSISP Hause uses smart meter technology to empower owners to sell/net-metered timely electricity production, which also qualifies for both renewable energy (RE) and energy efficiency (EE) incentives.

Normally buildings are framed and then the construction trades are invited to install the electrical, mechanical and plumbing sub-systems. Using the REOSE solar panel eliminates this timely and labor intensive construction step altogether. Making future floor-plan changes is simple as installing the electrical, potable water or HVAC outlet at the desired wall, floor or roofing location, as each solar panel has both supply and return headers for all of these critical habitation needs in every surface.

The principal construction advantage of the SSISP Hause is that it is so fast and easy to build. The SSISP Hause is delivered to any Google street-view address in standard shipping containers as a turn-key, foundation ready installation kit (SSISP foundation is an option). The single container kit contains everything the builder needs to build a 1250 sqft (25 x50 ft) Hause (~$100K).

For more information: contact www.REOSE.com, 720 Julia Street, New Orleans, LA 70130, 504-570-4661



1: STANDARD EPS CORE

2: SHAPE HARDEN AND CLEAN THE CORE

3: INSERT ELECTRICAL, GREYWATER RETURNS

HARD SET SOLAR THERMAL TUBING IN CORE WITH STRUCTURAL GRADE LIQUID METAL ADHESIVE.

4:FASHION WALL PANEL INTERCONNECTIONS.

NOT SHOWN

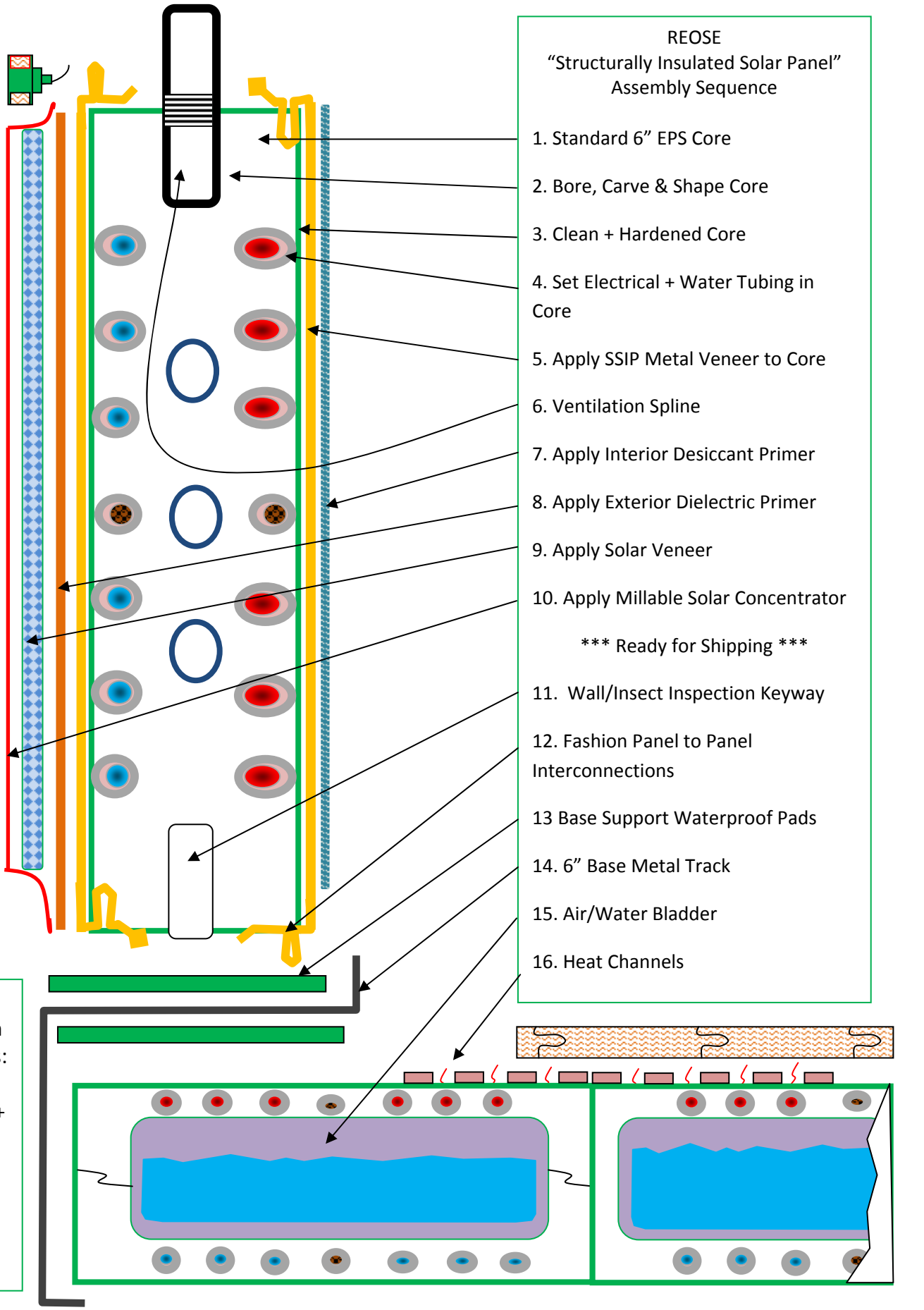
5: SPRAY INTERIOR DESSICANT PRIMER (BOTH SIDES)

6: SPRAY EXTERIOR DIELECTRIC PRIMER ON EXTERIOR WALLS AND ROOF.

7: SPRAY SOLAR COLLECTOR ON EXT WALLS AND ROOF.

8: SPRAY MILLABLE SOLAR CONCENTRATOR AS PROTECTIVE FILM.

REOSE SSISP MANUFACTURING SEQUENCE



REOSE
"Structurally Insulated Solar Panel"
Assembly Sequence

1. Standard 6" EPS Core
2. Bore, Carve & Shape Core
3. Clean + Hardened Core
4. Set Electrical + Water Tubing in Core
5. Apply SSIP Metal Veneer to Core
6. Ventilation Spline
7. Apply Interior Desiccant Primer
8. Apply Exterior Dielectric Primer
9. Apply Solar Veneer
10. Apply Millable Solar Concentrator

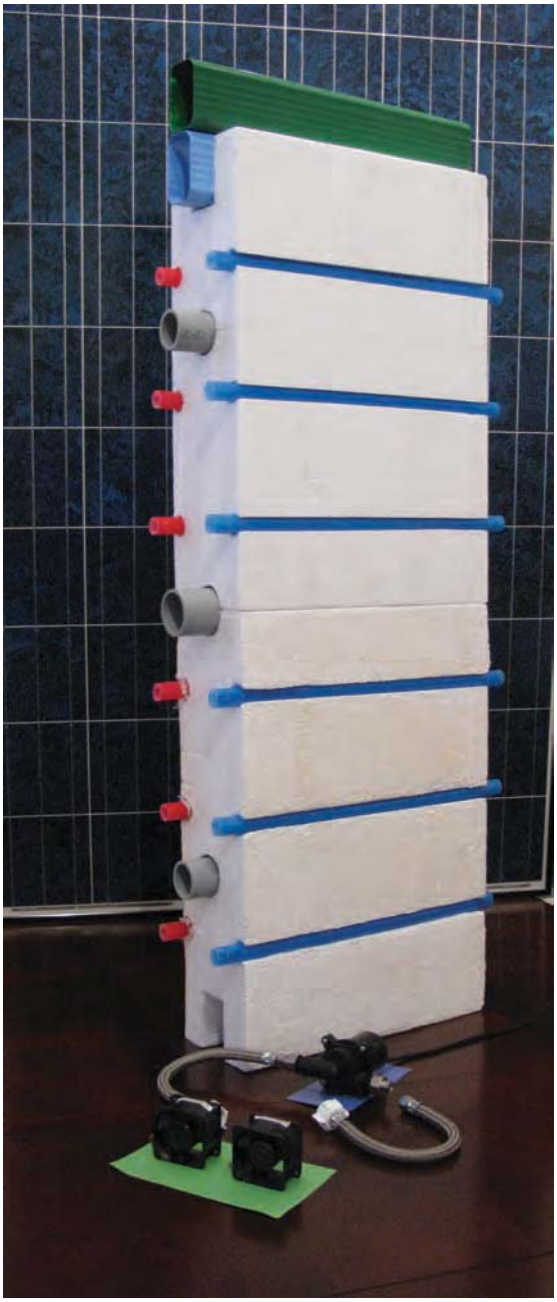
*** Ready for Shipping ***

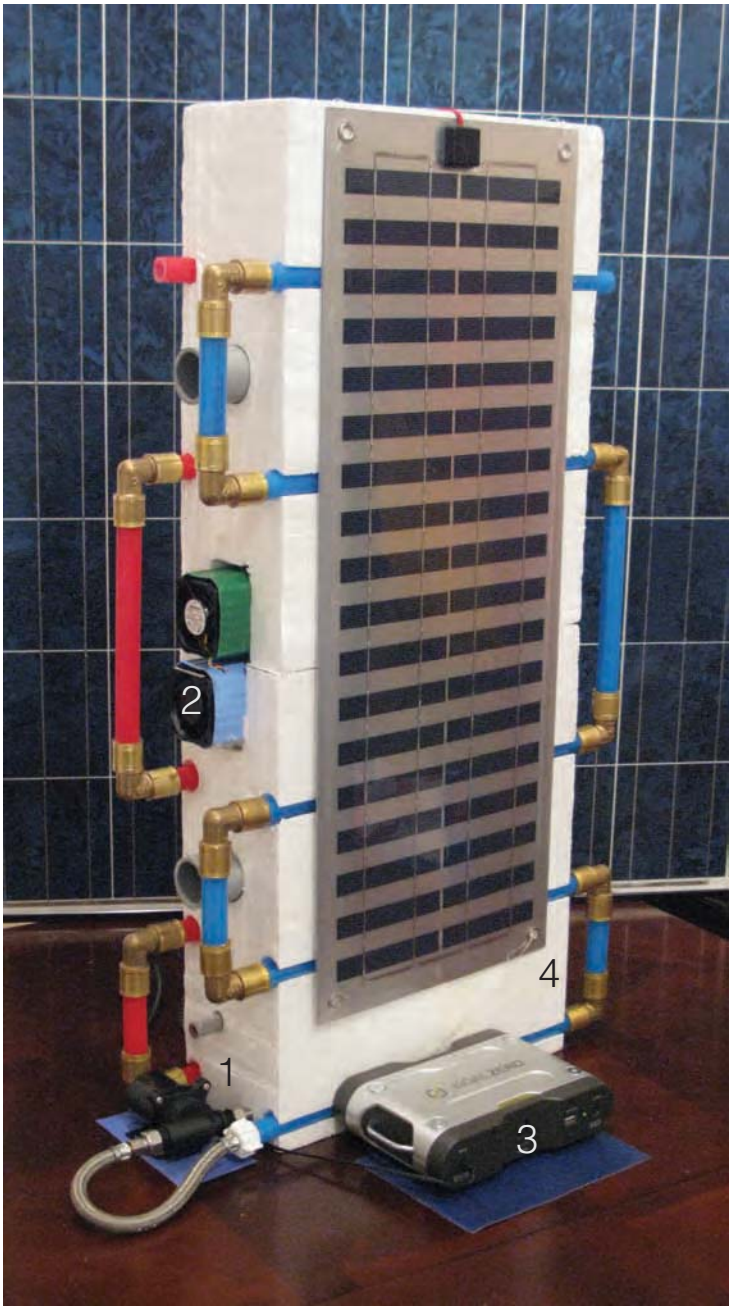
11. Wall/Insect Inspection Keyway
12. Fashion Panel to Panel Interconnections
13 Base Support Waterproof Pads
14. 6" Base Metal Track
15. Air/Water Bladder
16. Heat Channels

18" Foundation Panel Tanks: Air + Rainwater + Potable + Graywater & Thermal Storage

Graded Surface with 10Mil Plastic sheeting cover (live + dead loads = ~ 25 ft^2 + H2O)

REOSE SSISP FINSHED PROTOTYPE
(LESS STEEL VENEER)





INCLUDING:
(1) WATER PUMP, (2) FANS, (3) BATTERY STORAGE, AND (4) SOLAR PVL COATING

The REOSE Solar Panel House: New Orleans, LA

Given:

A. Given that 2011 is a time of uncertain times, and very few things about the future can be known with any high degree of certainty given so many known challenges and even greater unknowns. If humanity does survive all the bad things that might happen to her (and maybe even more so if it doesn't), the one thing we can be pretty sure of those that do survive will still need a safe, healthy and comfortable indoor living environment to call home.

B. US residential energy consumption of a modern code compliant home is ~ 1000 Watts (1.0kW), per sqft of home, per month, and 60% of that number is related to the heating, ventilation and air conditioning (HVAC) of the home. For the average 1500 sqft American home, this equates to $200/month utility bills and +18,000 KW-hrs consumed annually. Building HVAC represents the largest components of U.S residential energy consumption and collectively U.S. homes use + $150B/yr in on-grid resources to simply maintain safe habitable indoor environments.

C. The National Renewable Energy Laboratory (NREL) has determined that there are, on average, ~ 4.92 equivalent full power hours (FPH) of solar energy, per day, in New Orleans, LA. What equivalent FPH means, is that given some days are longer than others, raining and/or cloudy, you get more sun at noon than at 9am or 3pm, and if you add all of these factors and other random weather events up, in New Orleans the average is 4.92-hr/day. NREL has established the power rating of the FPH solar resource is to be 1000 W (1.0kW)/m^2/hr, … or an amount ~ equal to the solar energy that falls on one square meter of earth from the sun when it is directly overhead, at sea level, in a dry desert, on the longest day of the year.

D. For New Orleans these 4.92 FPH @ 1000 Watts/sq meter = 4920 "Potential" W/ m^2/day or 456 W/ft^2/day, or = ~ 93 Watts/sqft/FPH of flat plate collector.

a. A quality 12" x 12" (1-sqft) of commercially available thin film solar photovoltaic panel (~0.4 ounces)) will on average produce 5-Watts of DC power for each FPH of exposure or ~ 24.6 Watts/day, total in New Orleans.

> The PV solar panel has a simple energy conversion efficiency of 5 (Watts-hr/sqft) divided by the total 93 (Watts-hr/sqft) available, means the PV solar panel is utilizing = 5/93 x 100% = ~ 5.4% of the available energy to perform useful work.

b. A quality 12" x 12" (1-sqft) of commercially available flat plate solar thermal collector (TC) will absorb 55 Watts/sqft/hr of incident solar energy, or ~ 55 Watts of the 93 Watts available.

> The TC solar panel has a simple conversion efficiency of = 55/93 x 100% = ~ 59% of the available solar energy to perform useful work, or ~ 9 times that of the solar PV panel.

E. The commercial solar panel marketplace segregates, low efficiency solar PV, from high efficiency solar TC panels, and places them into two separate (either/or) technology categories, and no wide-scale commercial product is available that attempts to combine the two functions into a single energy collection device.

Resolve:

1. The REOSE Solar Panel integrates solar PV + solar TC panel characteristics into a Steel Structural Insulated Panel (SSIP) building system to create a unique BIPV energy collection, transfer, storage and conversion device called the passive thermal engine home. This integrated system is designed to empower 25-years of sustainable life and have a 100-year life-cycle cost of ~ 1/2 cents/day/sqft-home. For a 1000 sqft home, this works out to ~ $5/day.