



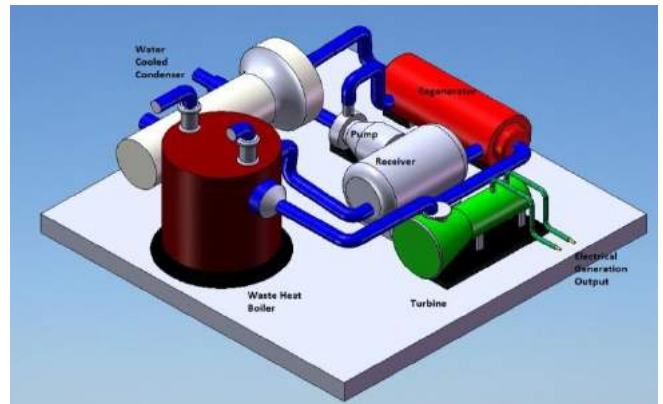
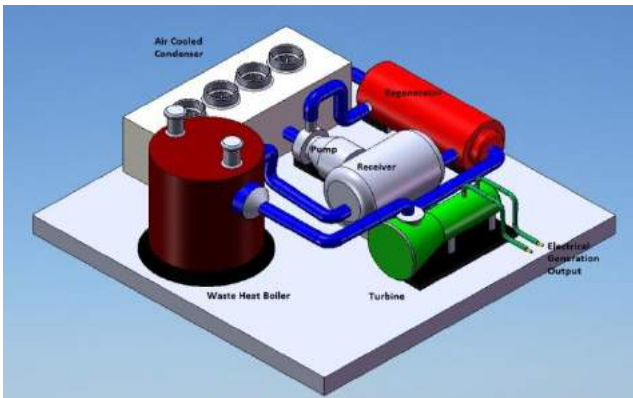
TransPacific Energy, Inc.

Innovative Energy Systems for A Cleaner World

TransPacific Energy (TPE) is a high-tech corporation that designs, builds, owns, operates, sells and installs proprietary, modular Organic Rankine Cycle (“ORC”) utilizing multiple refrigerant mixtures to maximize heat recovery and convert waste heat directly (75F to 950F) from industrial processes, solar and geothermal, biomass converting it into electrical energy. TPE technology can also be utilized as alternative to cooling towers, steam condensers and use heat released to efficiently generate electricity with air-cooled or water-cooled condensers. TPE also expands its **Renewable Energy** activities, for more information and details, visit our web site www.transpacenergy.com

TPE™ uses multi component fluids environmentally sound nontoxic, nonflammable, in contrast to the typical Organic Rankine Cycle that uses binary cycles and organic fluids such as pentane, isobutene, butane, propane and ammonia instead of water.

Count on **TransPacific Energy** efficient waste heat recovery for power generation using its propriety and renewable energy technologies. Other applications include solar, geothermal energy as well as warm ocean waters. We deliver innovative solutions for cleaner greener world. Help us stop global warming with our green energy conversion technology.



Contact us;

TransPacific Energy, Inc

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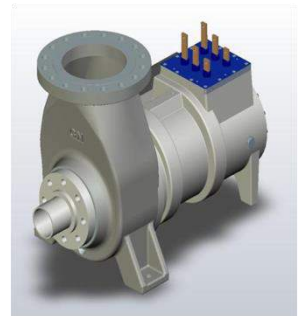
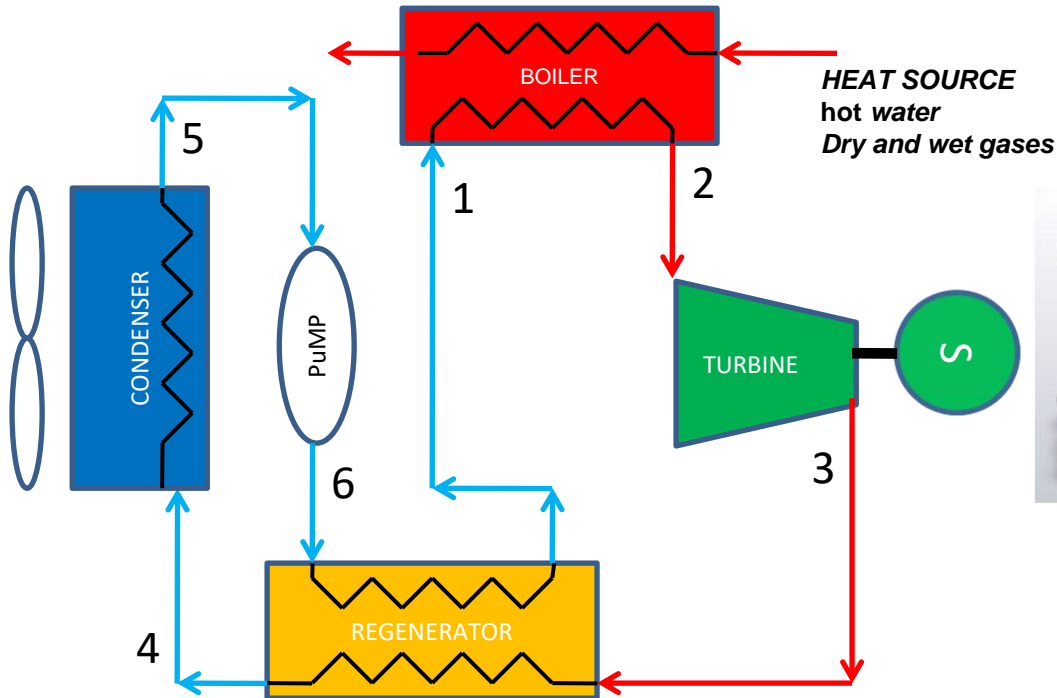
Tel: 619 272 9131, 760 659 8460 (WhatsApp)

Email: information@transpacenergy.com

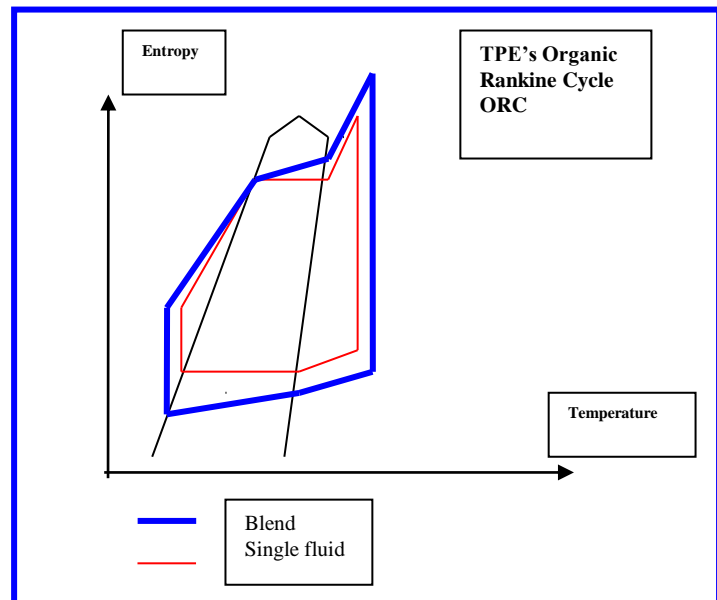


ORGANIC RANKINE CYCLE ORC

The Rankine cycle is a closed loop thermodynamic cycle with a working fluid where an external heat source generates steam at its boiler. Water is the working fluid. Steam turbines, installed in power plants (coal fired, nuclear or biomass) are based on the cycle. In an Organic Rankine cycle (ORC), the working fluid is not water but an organic fluid such as butane or pentane, ammonia etc. This cycle is more suitable for low temperature and medium heat source applications than steam cycle.



- 1-2: The organic fluid (blend) is vaporized and superheated in the evaporator
- 2-3: The organic vapor is expanded through the turbine
- 3-4: Expanded vapor heat up the organic liquid
- 4-5: Vapor is condensed
- 5-6: Organic liquid is pumped
- 6-1: Organic liquid is heated up with vapor from turbine outlet

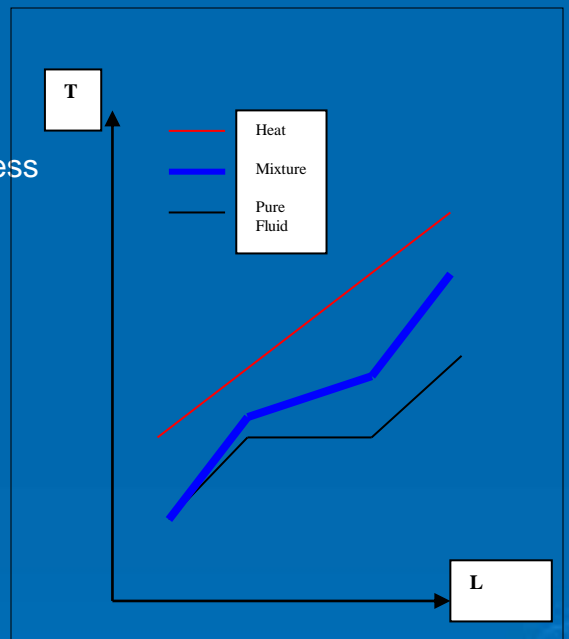


Value proposition: Why Refrigerant Mixtures?!!

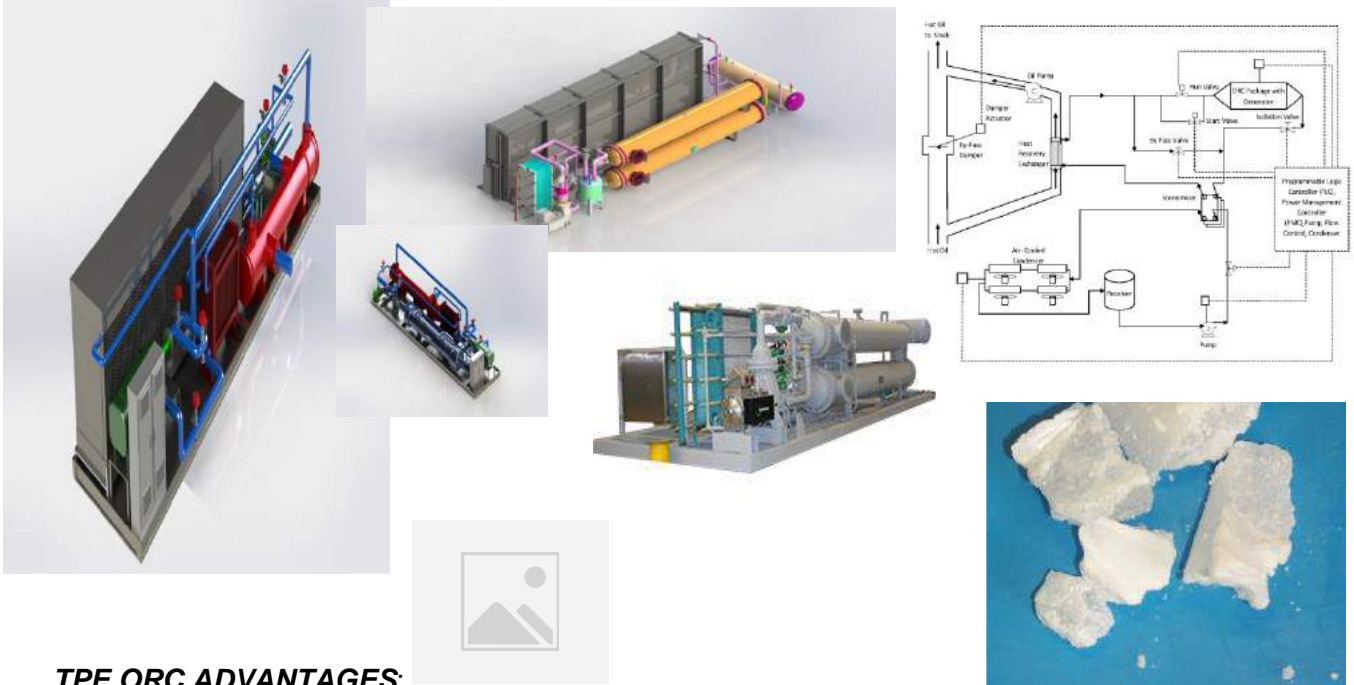
- Pure Refrigerants boil at constant but **blends** boil at **variable** saturation temperatures.

•Benefits of TPE refrigerant Mixtures:

- Unique ability to customize refrigerant mixture for maximum heat recovery, less heat losses and power production.
- Efficient **Heat Recovery Direct and Indirect: (80-1000F)**
- **Wide applications:**
 - Hot fluids:** Gray water, Solar, Geothermal
 - Hot gases:** Flue gases, Hot air
- Economically viable
- Environmentally sound
- Built as per Industry Standards



TransPacific Energy (TPE) ORC uses environmentally sound refrigerant mixtures (blend) formulated to maximize heat recovery at heat source temperatures from 25°C up to 500°C with enhanced electrical efficiency up to 35%. This permits a wide range of applications of the TPE ORC to generate power from waste and untapped heat sources such as liquid and effluent flue gases. Typical turbo generator shown below is for illustration purposes only and final product may vary.

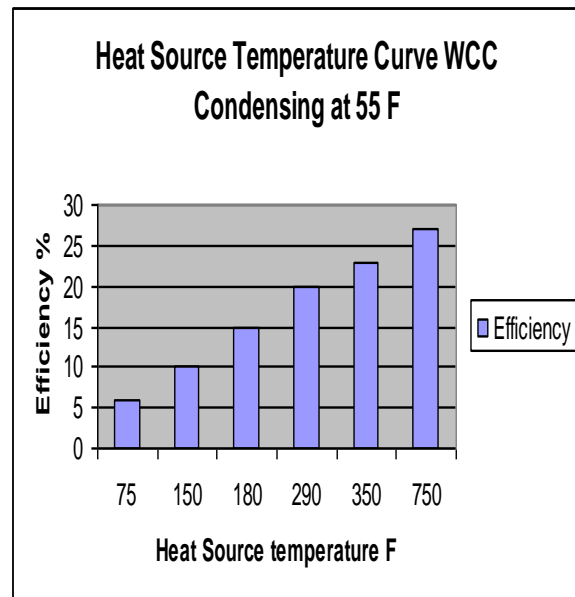


TPE ORC ADVANTAGES:

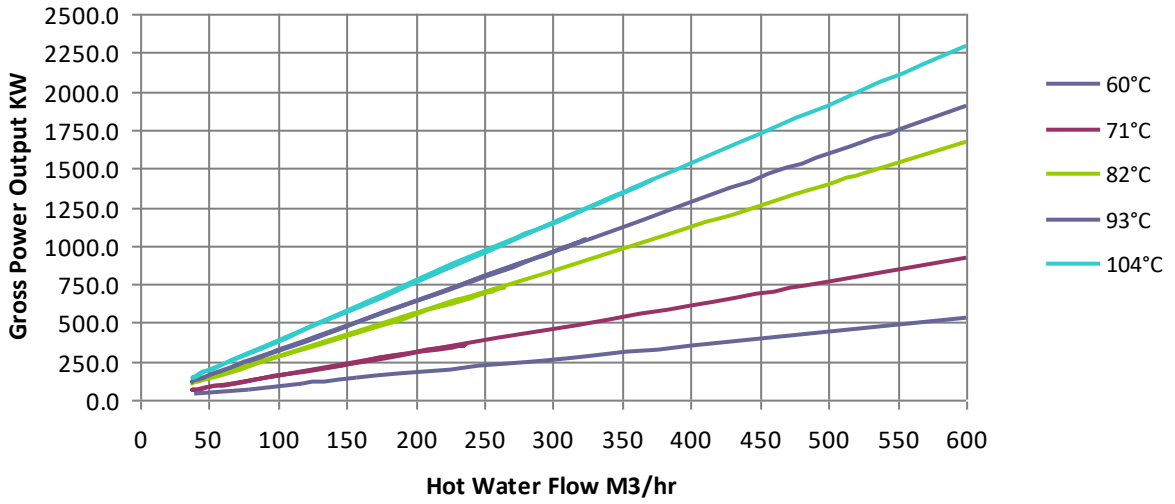
- Enhanced Heat to power electrical efficiency
- Variable boiling temperature to enhance heat recovery
- Hermetically sealed, no gear box
- Availability higher than 80% and efficient at wide range of temperatures
- Easy to install and limited footprint (skid mounted)
- Simple automated operation, PM and Ethernet PLC
- Low operation and maintenance cost
- Innovative certified refrigerant mixture
- Nonflammable, nontoxic working fluids
- Broad Temperature Applications
- Thermal storage uses patent technology; environmentally sound phase change material that meets codes and flame spread standards, and provides 24/7 power for solar, geothermal and load shaving
- Environmentally sound; no fuel consumption, reduce carbon emission, and greenhouse gases, zero acid rain.

TPE ORC UNITS:

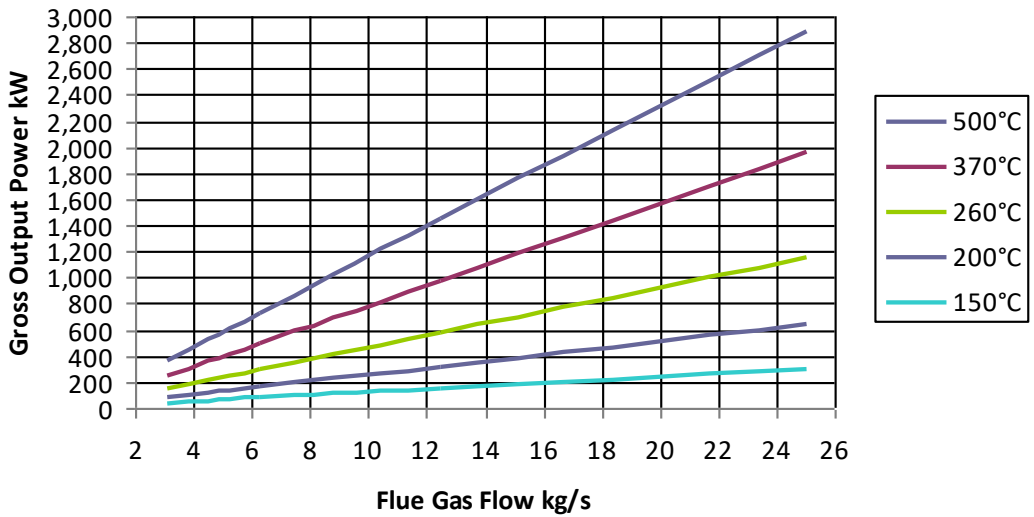
- Custom-made & turn-key Systems: 100 KW to 5,000 KW
- Multiple, Split and Cascade units.



ORC Power Output-Hot Water Single Unit

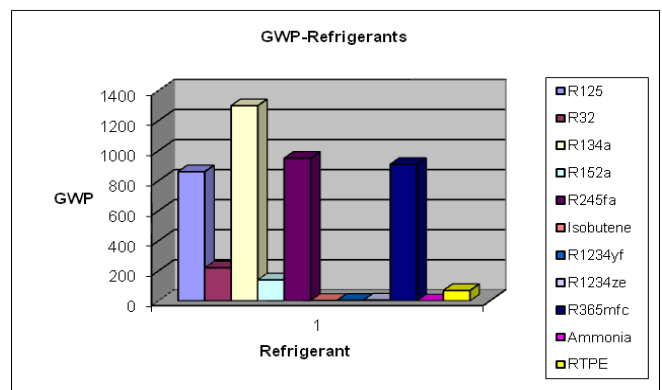
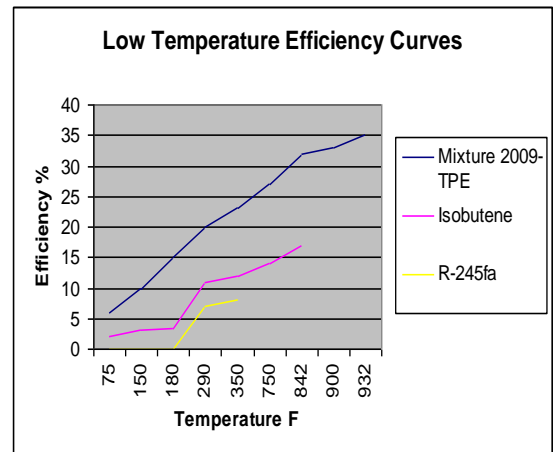
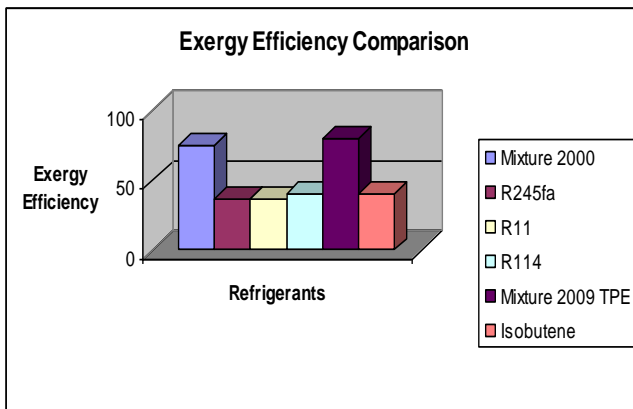
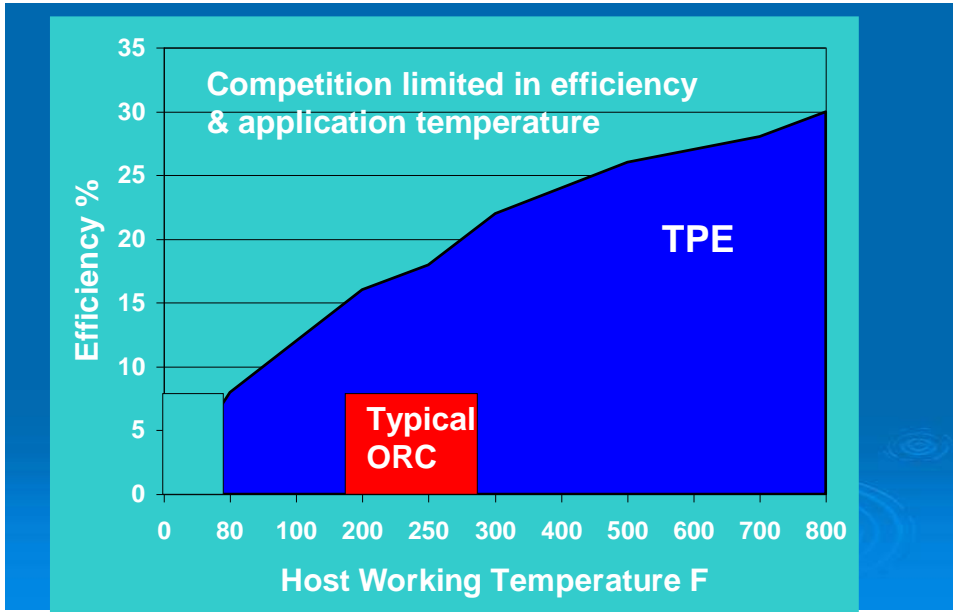


ORC Gross Output: Flue Gas Single Unit



Substantial Advantage....

TPE



Intellectual Properties:

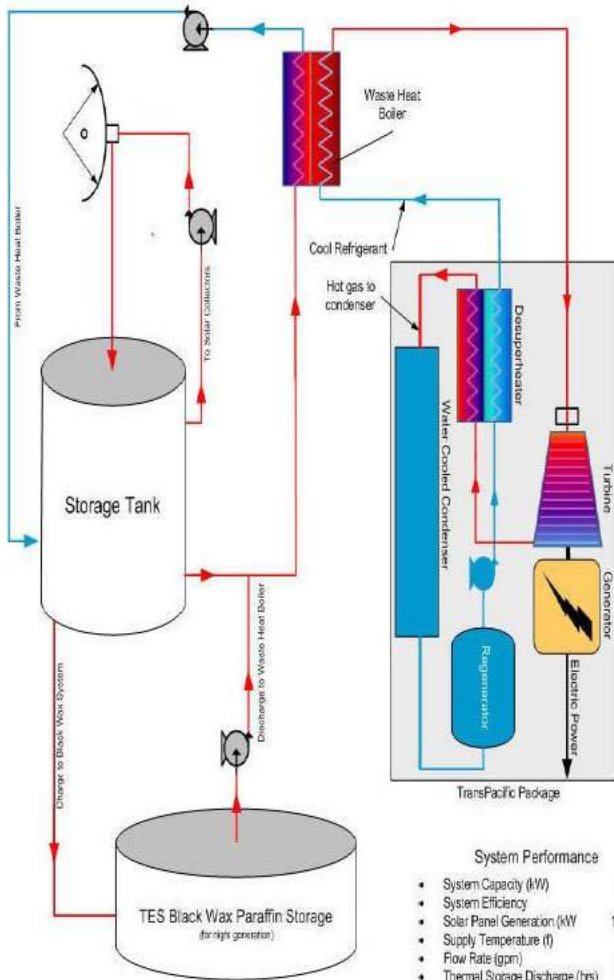
- *Electric Power Generator Using a Rankine Cycle Drive with Refrigerant Mixtures and Exhaust Combustion Products as a Heat Source, US Patent, USPO 8276383, 2012.*
- *Power Generator using a Wind Turbine, a Hydrodynamic Retarder and Organic Rankine Cycle drive, US Patent Pending, 2010.*
- *Methods and Apparatus for Thermal Storage using Heat Pipes, US Patent-, USPO 7891575, 2011*

Thermal Storage ... Black Wax Paraffin

- Innovative Technology
- Provides 24/7 continuous supply of power
- Ensures 24/7 continuous supply of heat or cooling
- Enables change of state at predetermined temperatures
- Can be used with forced air or liquid coolant flow
- Environmentally sound, meets codes and flame spread standards
- ***Applications: Solar, Geothermal and load shifting***



TransPacific Energy Solar Thermal



System Performance

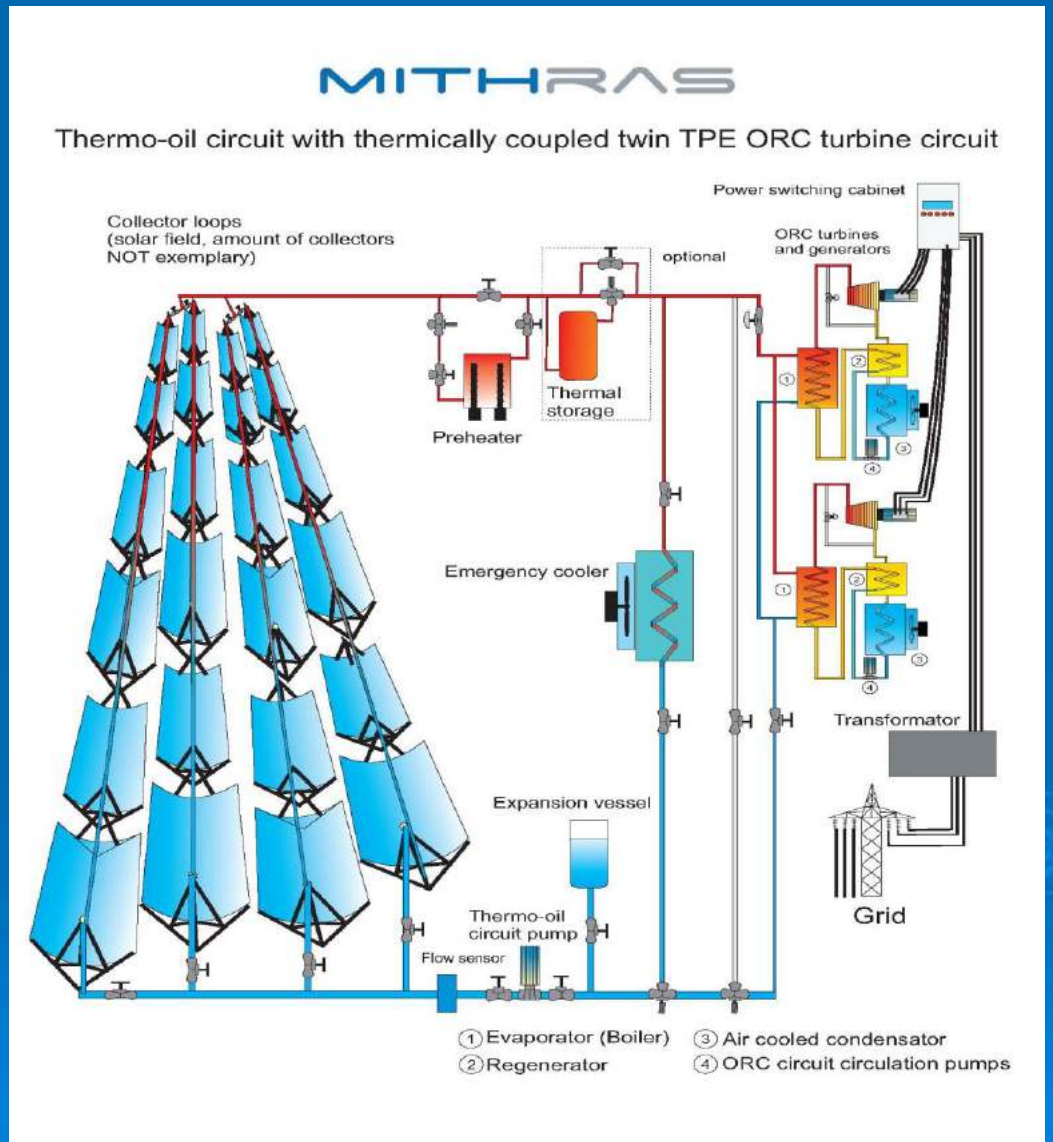
- System Capacity (kW) 1,170
- System Efficiency 14%
- Solar Panel Generation (kW) 13,485
- Supply Temperature (f) 200
- Flow Rate (gpm) 3,488
- Thermal Storage Discharge (hrs) 10.09
- Operation 24/7



Thermal Solar CSP -ORC

TPE

- Thermal Solar Plant
- 10 MW



Market...

TPE



Customers Worldwide... Hot gas or Hot fluid applications;

- *PPP using fossil fuel*
- *Solar and Geothermal power plants*
- *Food processing facilities*
- *Petrochemical refinery installations*
- *Abundant/Live oil wells*
- *Desalination process*
- *Biomass applications*
- *MWD sites*
- *Marine transport*
- *Ocean warm waters (OTEC)*
- *Cooling Tower replacements and substitutes*
- *Condenser Alternatives*
- *Various DOD applications*



Market... Current and Future

TPE



FIELD APPLICATIONS OF TPE ORC

GAS FLARE:

- Waste landfill
- Waste water treatment plant
- Refineries
- Petrochemical industries



INDUSTRY EFFLUENT:

- Paper industry
- Glass industry
- Cement industry
- Food industry (sugar, milk,...)
- Biofuel



THERMAL PLANTS:

- All fossil fuel
- Solar thermal
- Geothermal
- . Energy storage



POWER PLANTS:

- Cogeneration (gas turbine and engines)
- Biomass
- Biogas
- Wind turbine



OCEAN THERMAL ENERGY:

- Coastal activities
- Offshore platform
- Ocean Thermal Energy Conversion (OTEC)





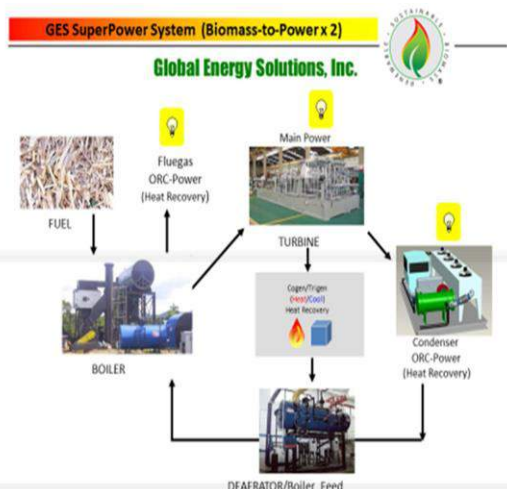
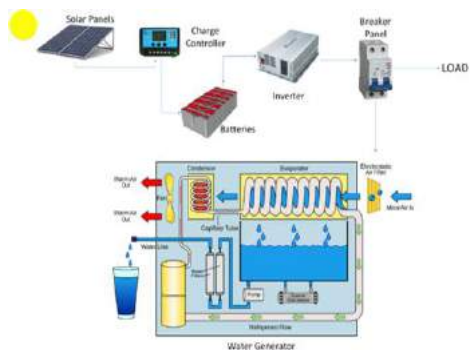
TransPacific Energy Renewable Technologies

- PV Solar Panels
- PV-Thermal Solar
- CSP Solar Integrated ORC
- Geothermal Energy
- Biomass Energy
- Hybrid System for Remote Areas
- Solar Clean Water Generators
- Solar Lights
- Desalination by PV-Thermal
- Fuel Cell driven by Solar and Wind Energy for Hydrogen Production and Storage



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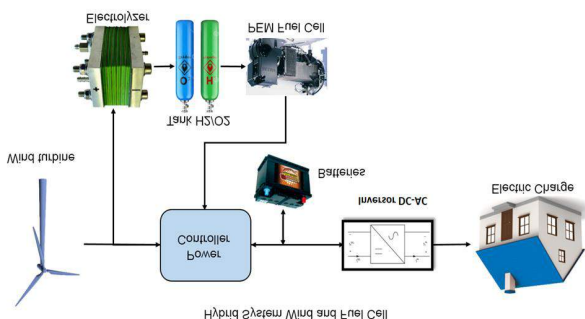
TransPacific Energy Renewable Energy Technologies



Photovoltaics - Technology



Using the sun to generate electricity



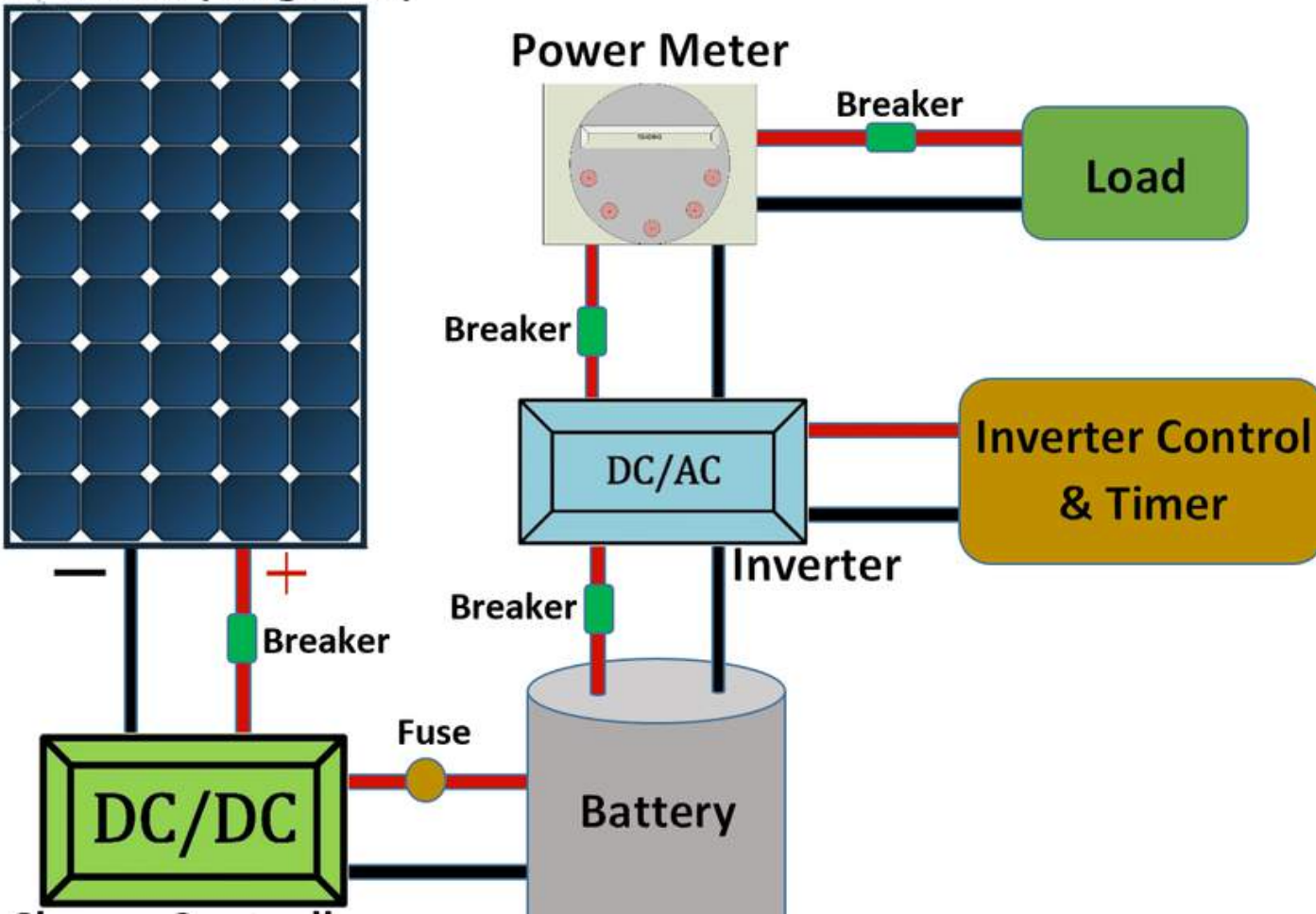
TransPacific Energy Solar Technology

Photovoltaics - Technology

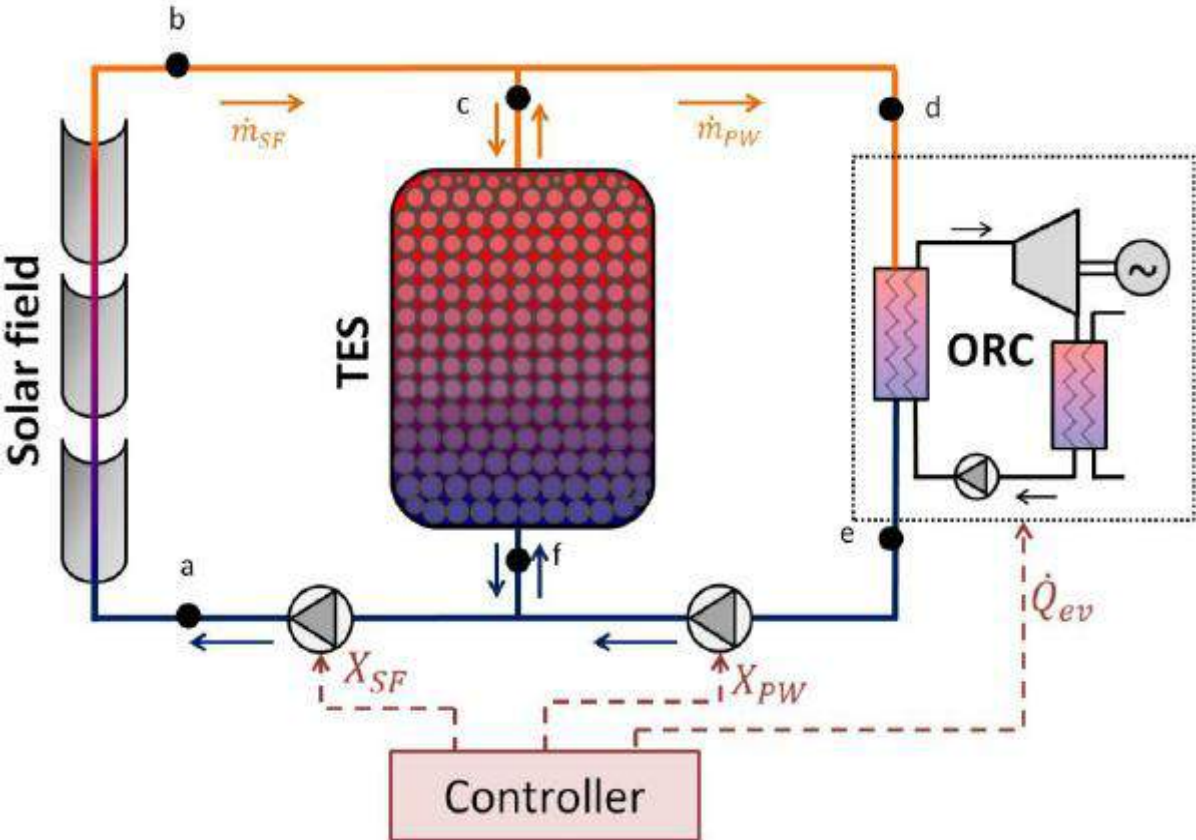


Using the sun to generate electricity

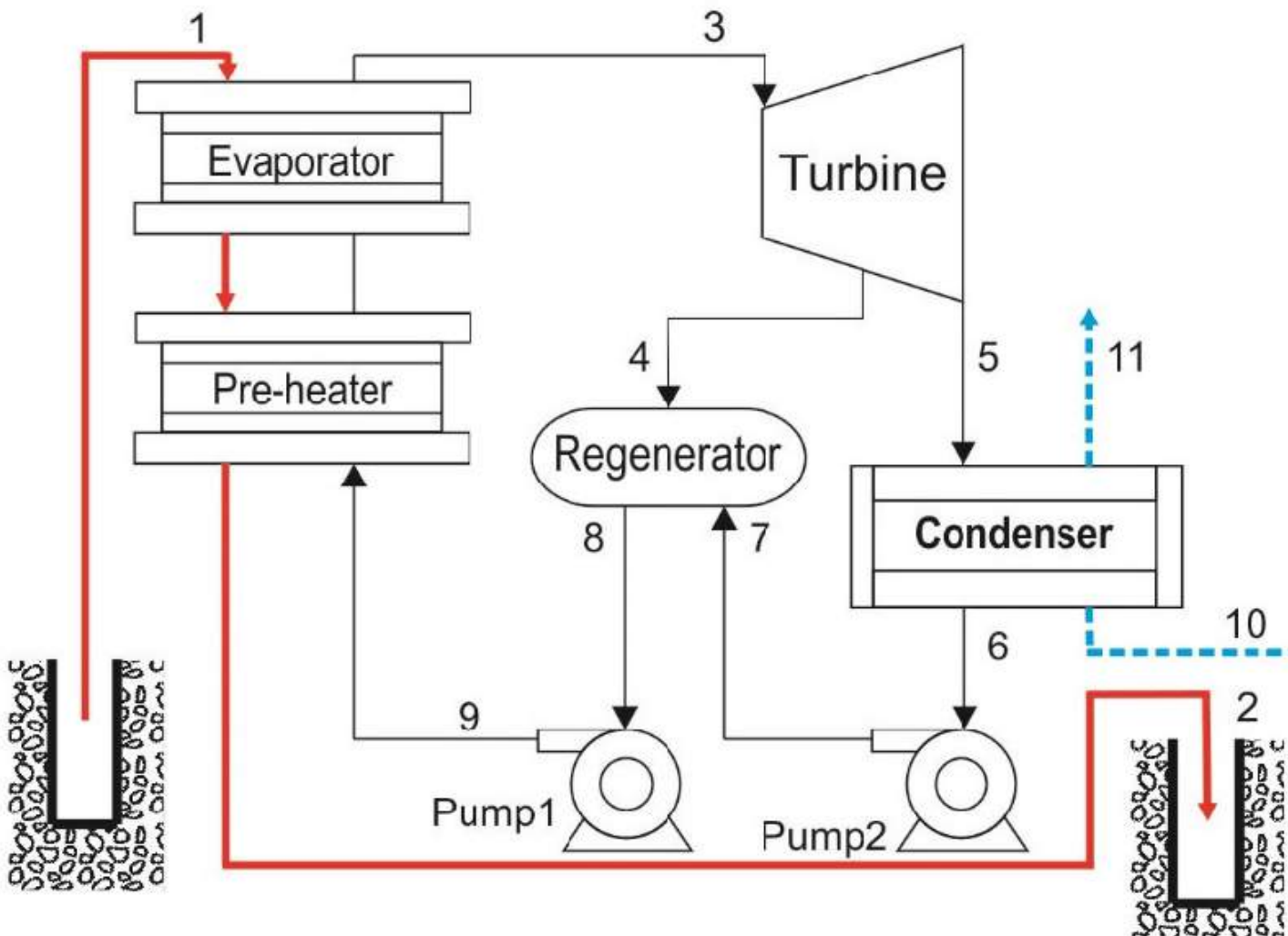
PV Panel (Single -Si)



CSP Integrated ORC Technology



TransPacific Energy Geothermal Technology

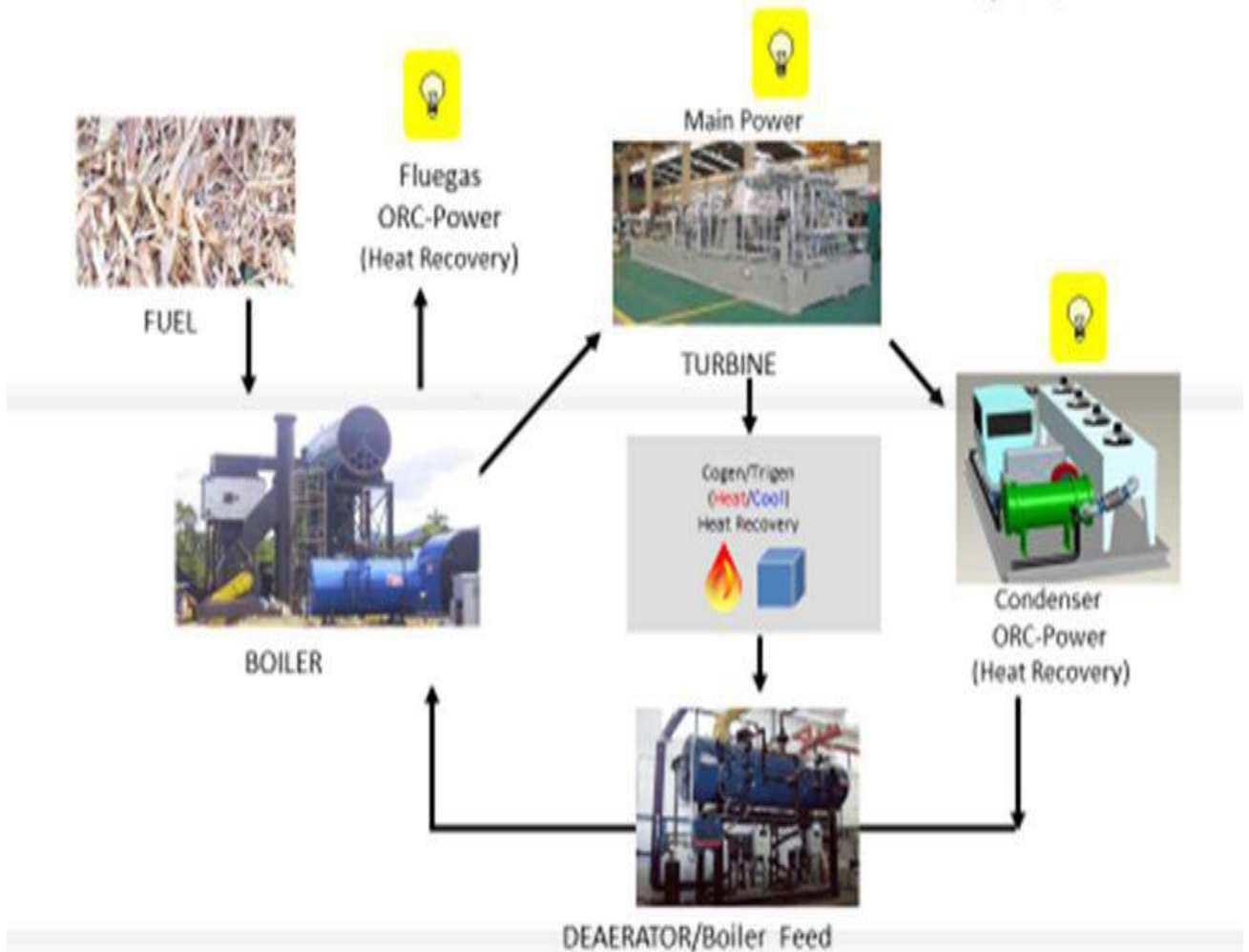


Biomass Energy Power Generation

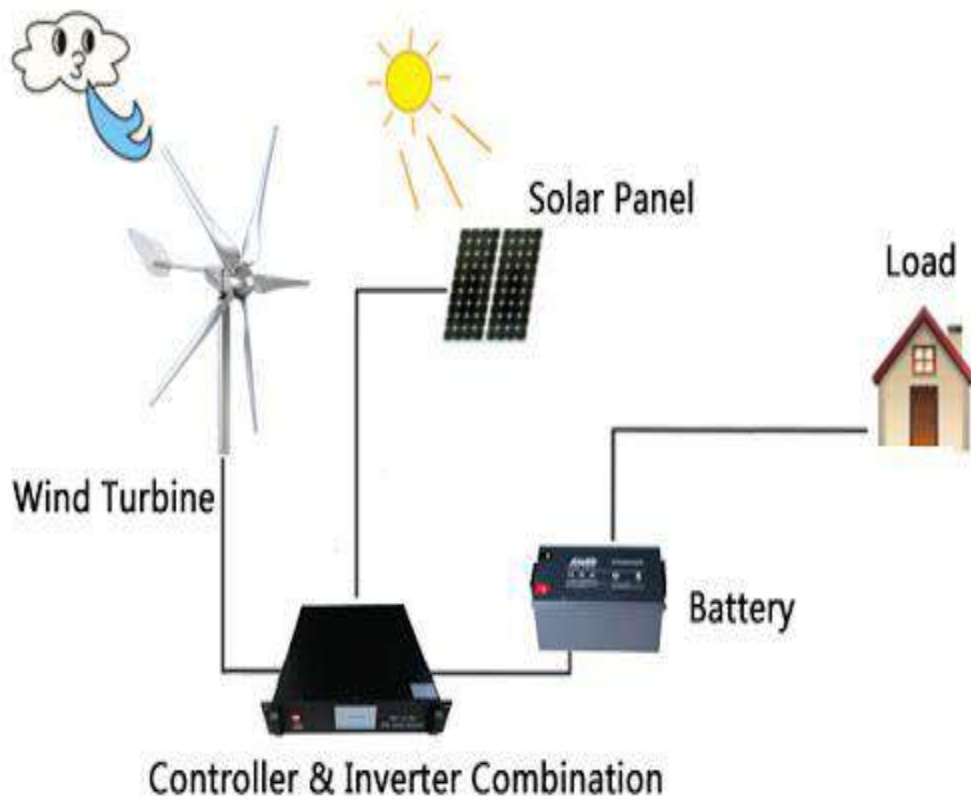
GES SuperPower System (Biomass-to-Power x 2)



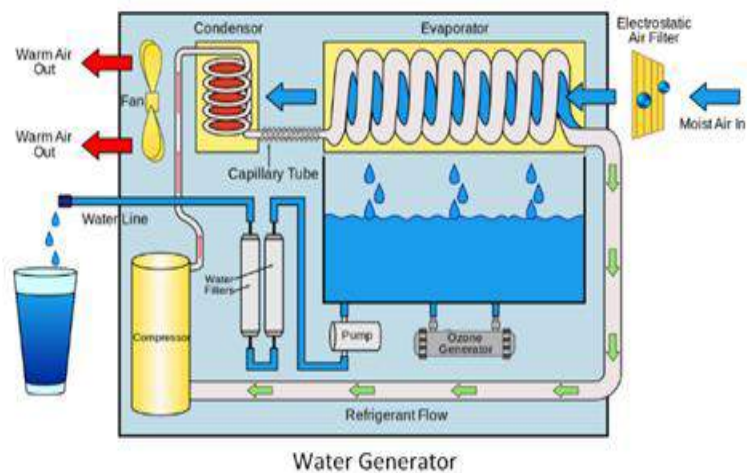
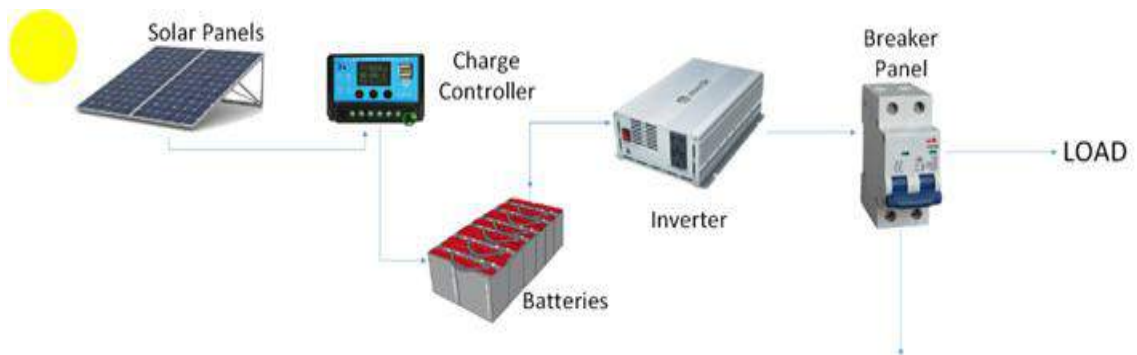
Global Energy Solutions, Inc.



TransPacific Energy Hybrid Technology



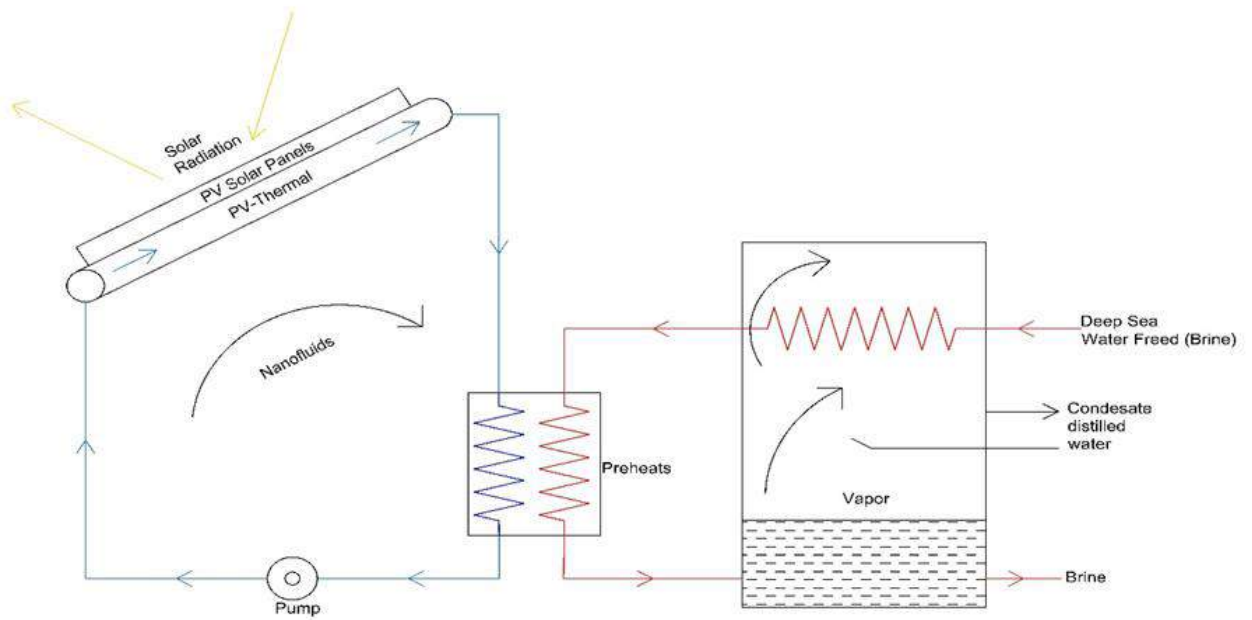
TransPacific Energy Solar Water Generator



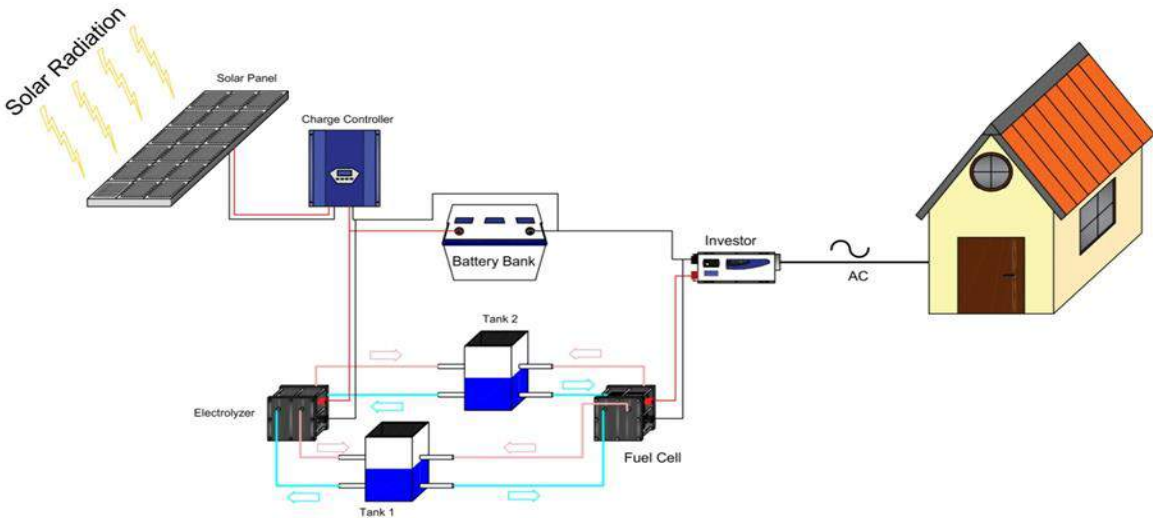
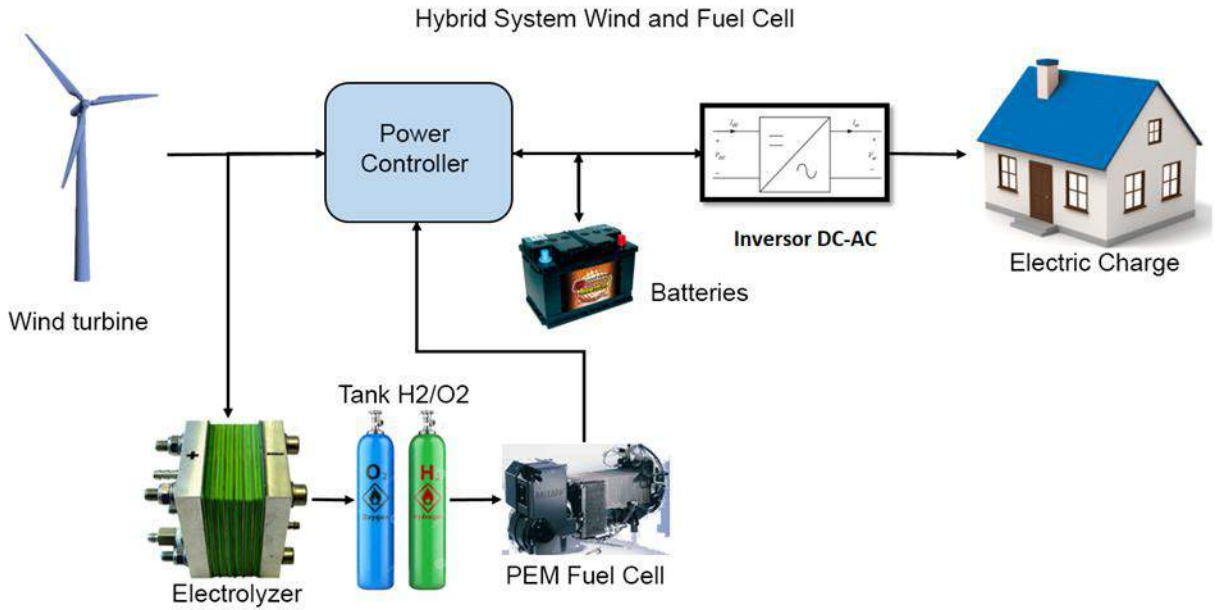
TransPacific Energy Solar Lights



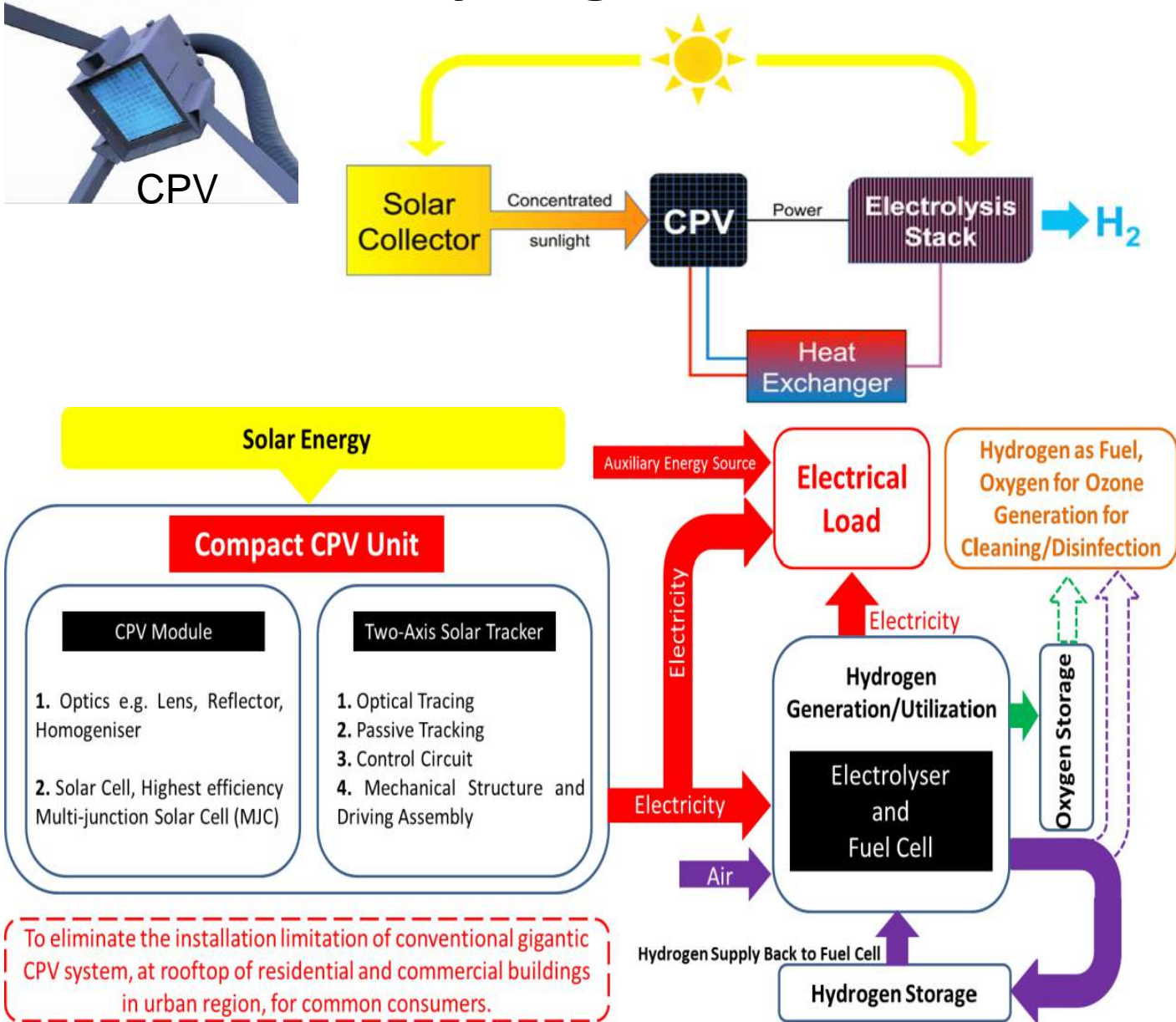
TransPacific Energy Desalination With PV-Thermal



Fuel Cell driven by Solar and Wind Energy for Hydrogen Production



CPV and Hydrogen Production



Application & Core Benefits

- Technology: CPV Hydrogen Plant is more efficient than any other existing Renewable Technologies.
- The overall energy efficiency of the Solar Hydrogen Plant is 28%.
- Economical: The lowest LCOH cost (1.38/kg H₂) in the Hydrogen industry (SMR \$2.08/kg)
- It can produce Electricity - Levelized Cost of Electricity (LCOE) - \$0.021/kWh