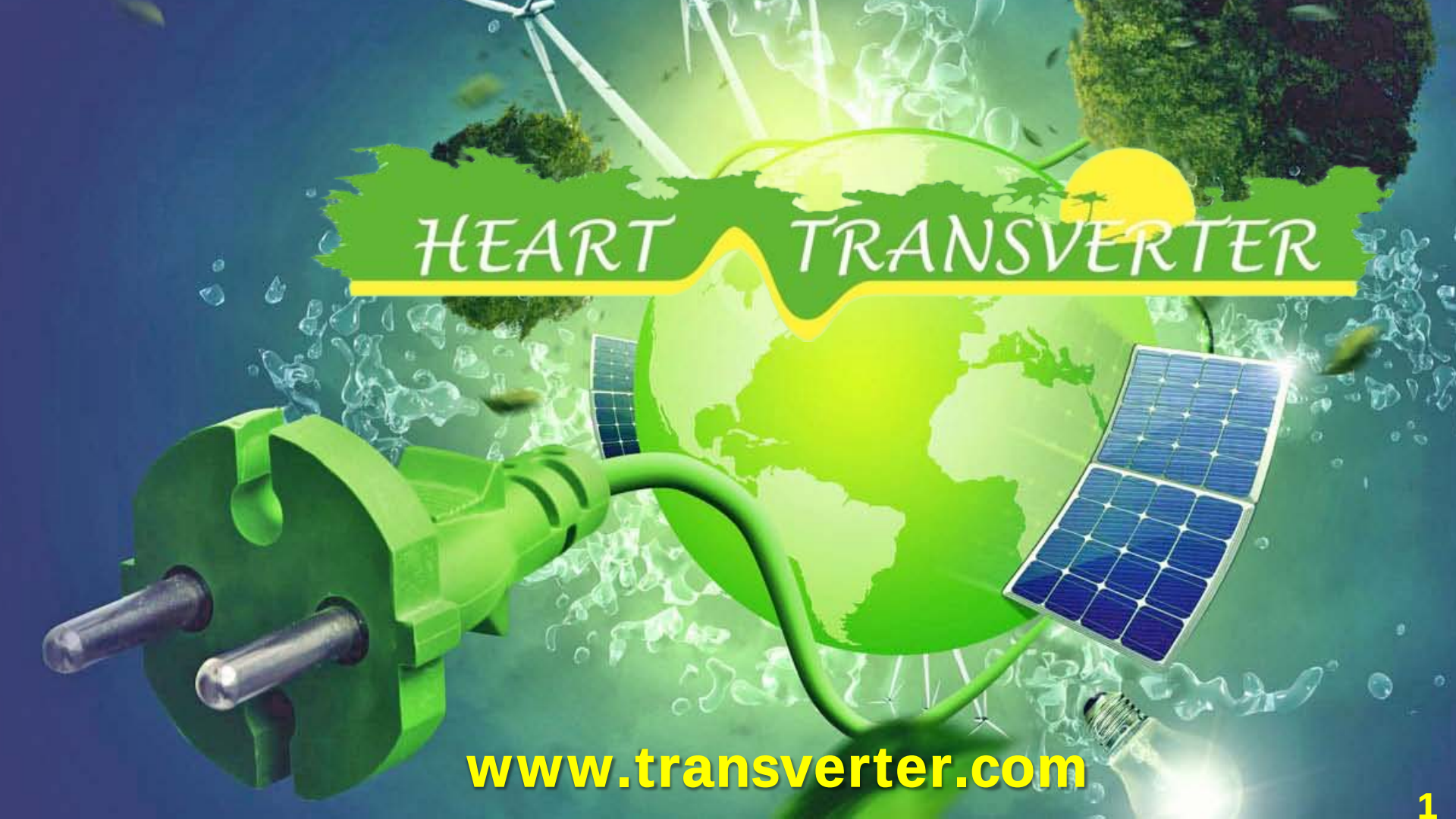
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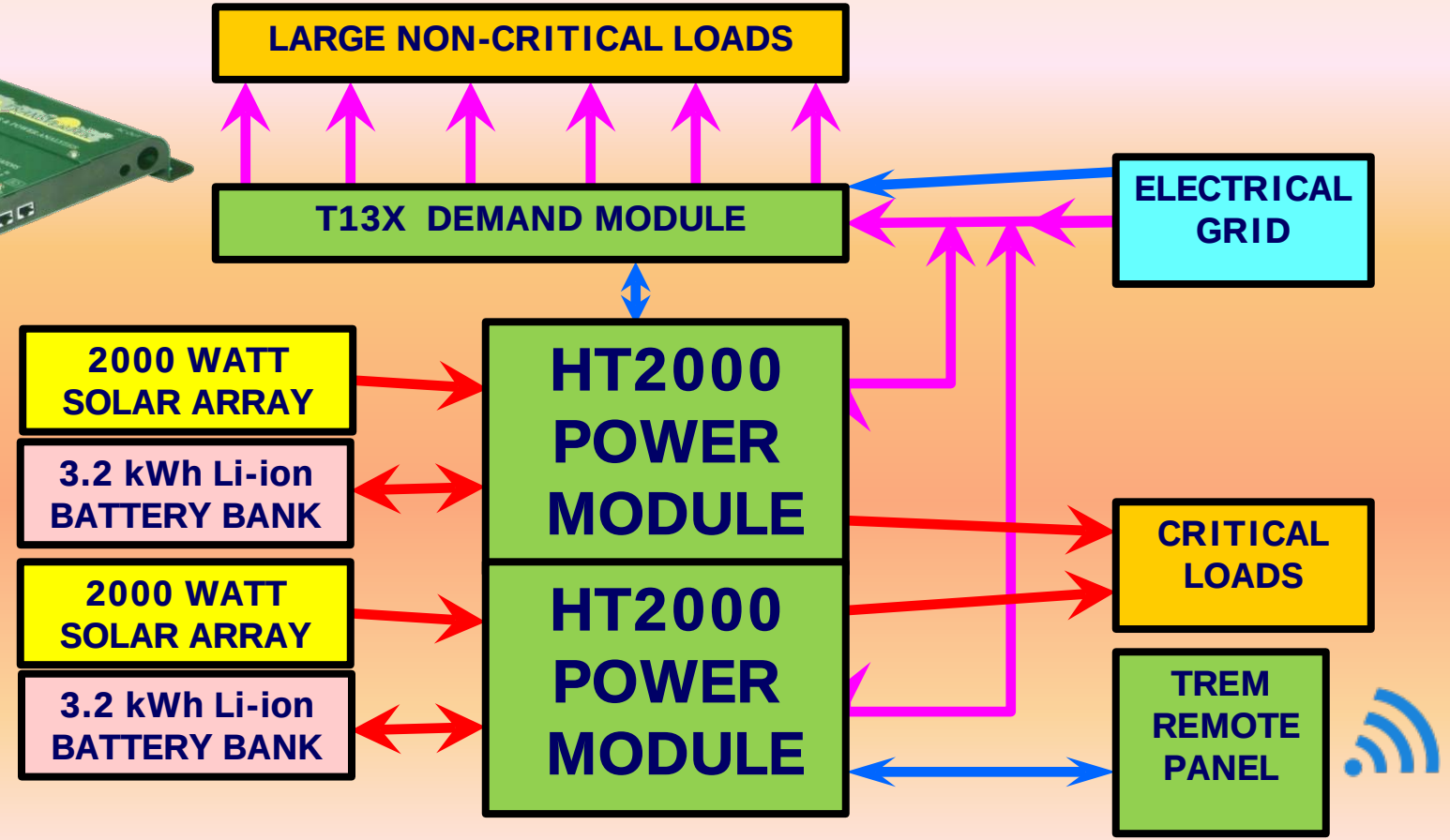
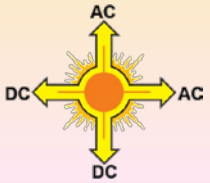
TRANSVERTER MICROGRID NODE

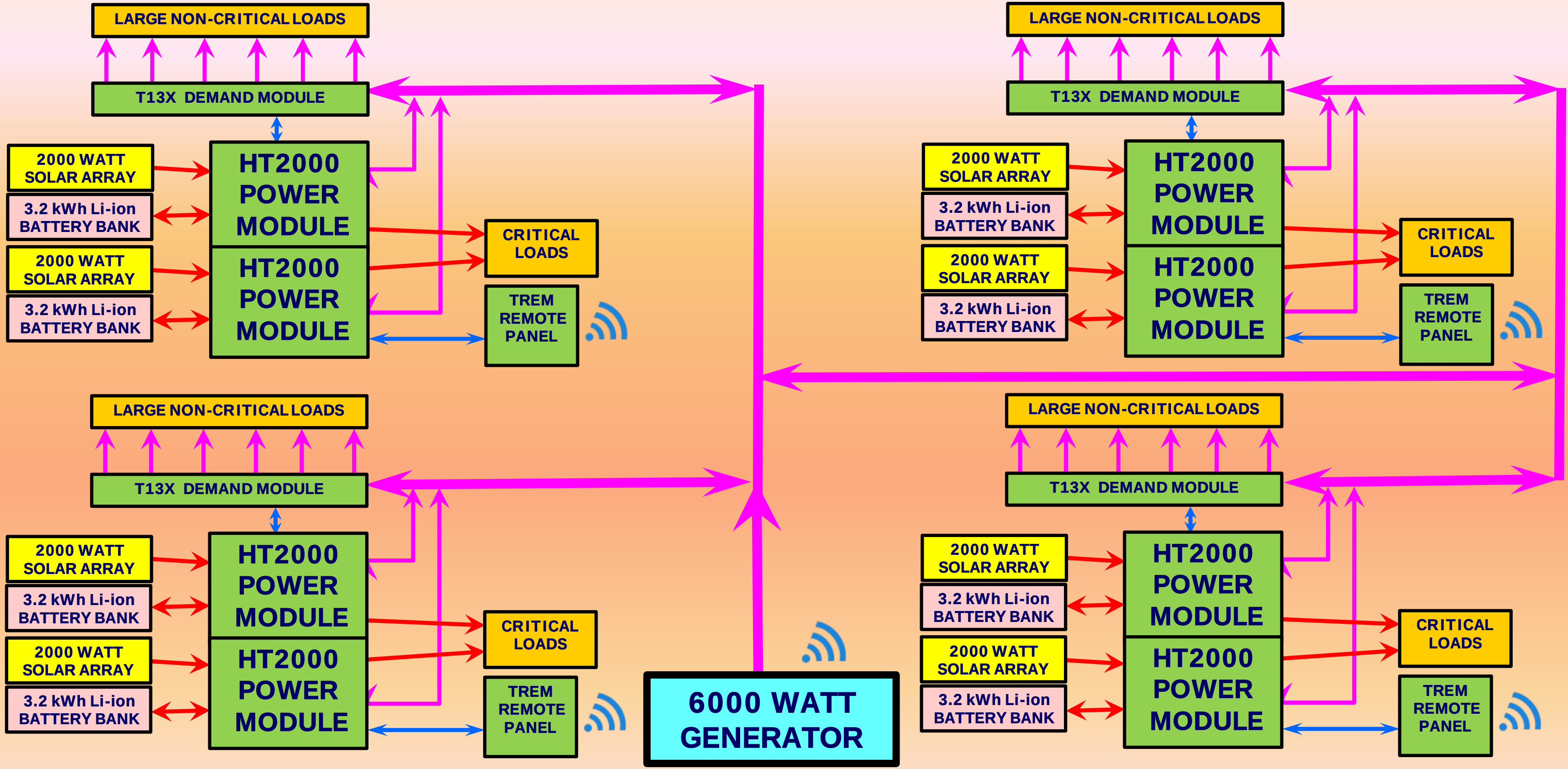


TRANSVERTER MICROGRID NODE



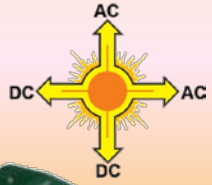
- 4 KW 120/240 VAC 60 Hz OR 50 Hz.
- 4 KW SOLAR AND 6.4 KWH LI-ION BATTERIES INSTANTLY DISPATACHABLE TO LOADS OR NEIGHBORS OR GRID.
- COMPLETE MONITORING AND CONTROL OF LOADS WITH T13X.
- 4 KW UPS BACKUP POWER. 4 KW 48 VDC SUPPLY FOR TELECOM.
- AUTOMATIC AUTONOMOUS OPERATION WHEN MICROGRID DISCONNECTS.
- NET METERING, SELF SUPPLY, STAND ALONE OR MICROGRID NODE.

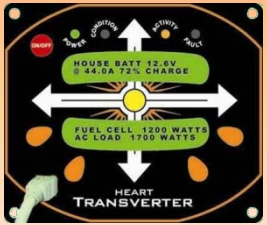
MICROGRID WITH GENERATOR



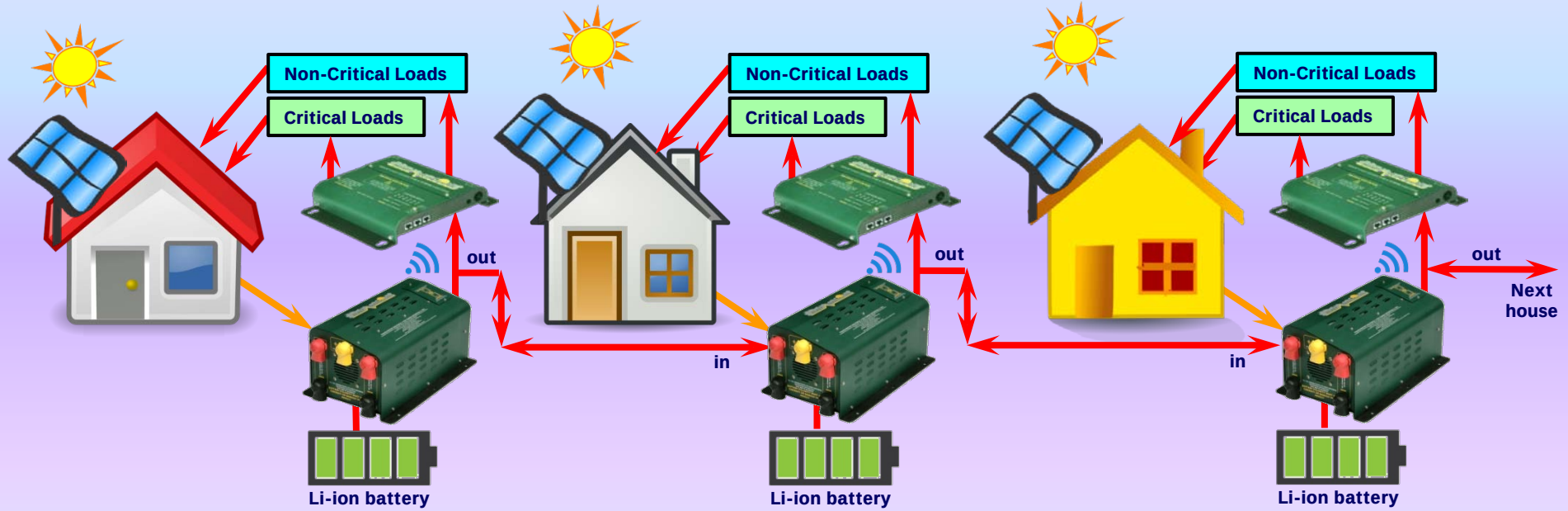
4 NODE MICROGRID WITH GENERATOR

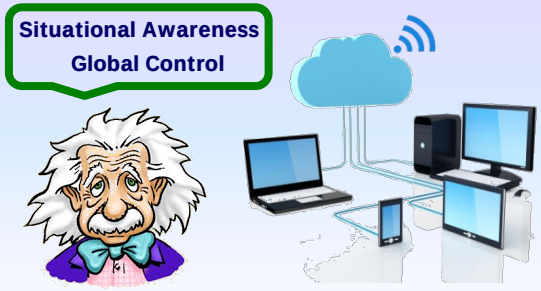
- EACH HOME AUTONOMOUS OPERATION OF 4 KW 120/240 VAC 60 Hz OR 50.
- MICROGRID LINKS 6 KW GENERATOR FOR TOTAL CONTROLLED LOADS UP TO 22 KW.
- ALL HOMES HAVE CONTROLLED ACCESS TO ALL NEIGHBORHOOD ENERGY ASSETS.
- COMPLETE MONITORING AND CONTROL OF LOADS WITH T13X.
- IF GENERATOR REACHES CAPACITY AUTOMATIC PRIORITIZED CURTAILMENT OF LOADS TO GUARANTEE IT IS IMPOSSIBLE TO OVERLOAD THE GENERATOR.

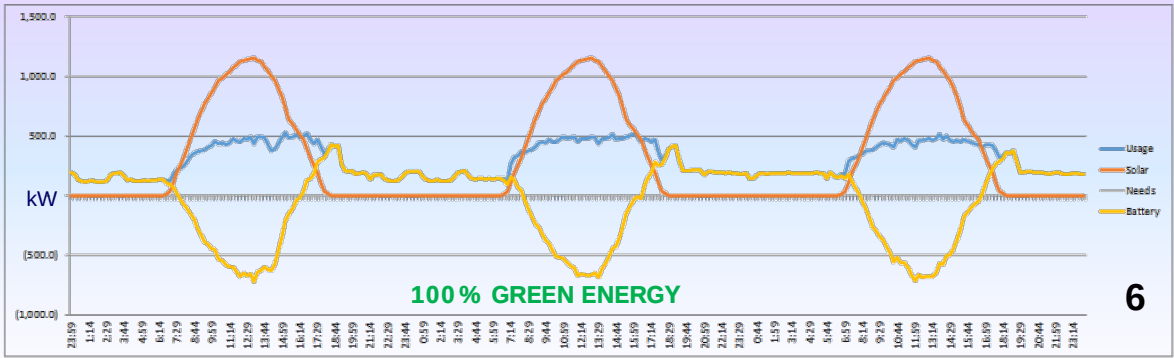




MICROGRID 3 HOUSES (it's all about sharing) no grid

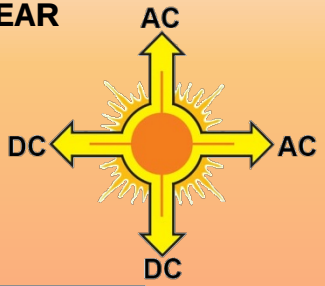


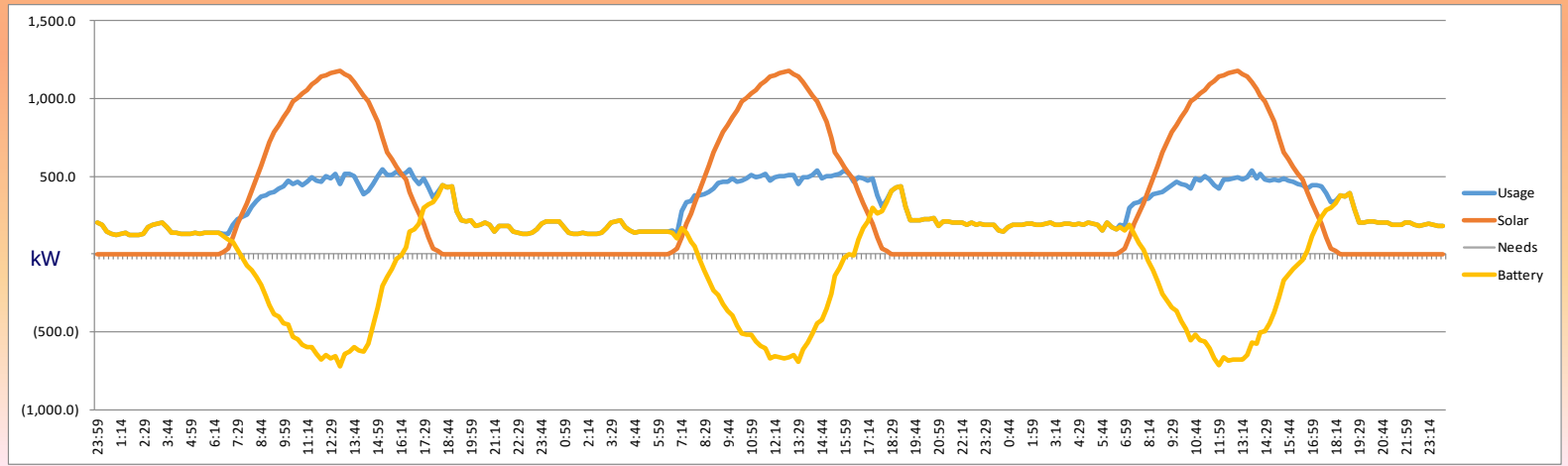




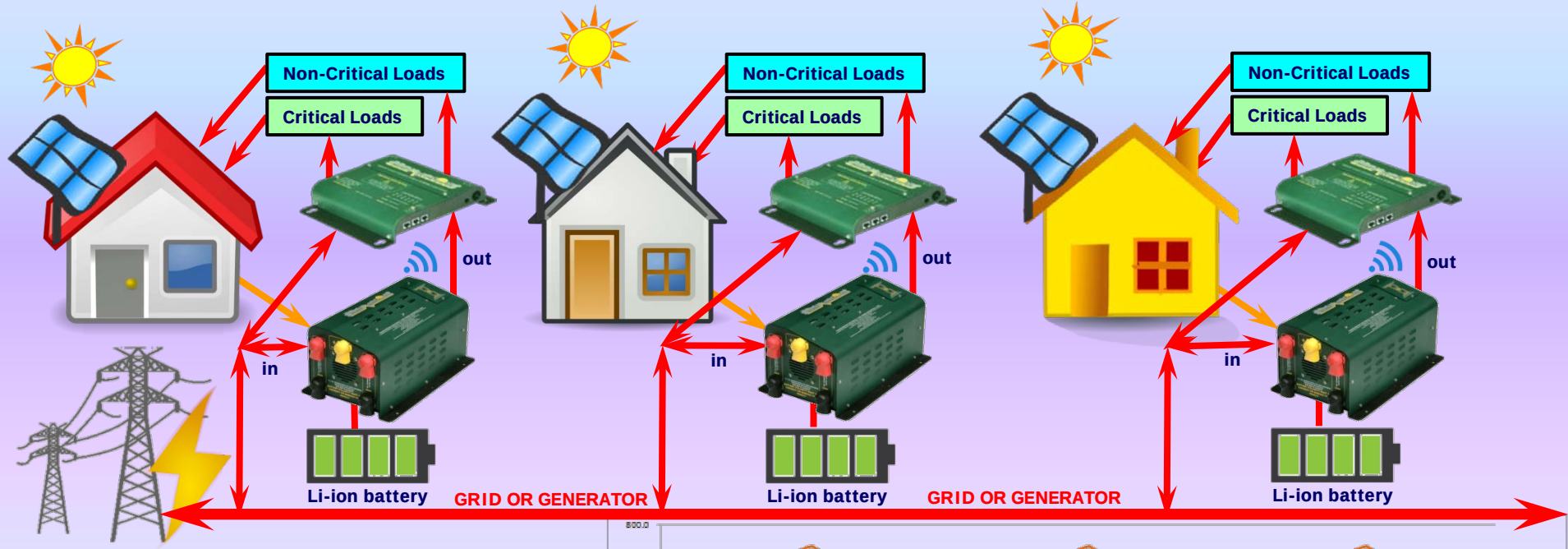
MICROGRID 450 HOMES (it's all about sharing) no grid

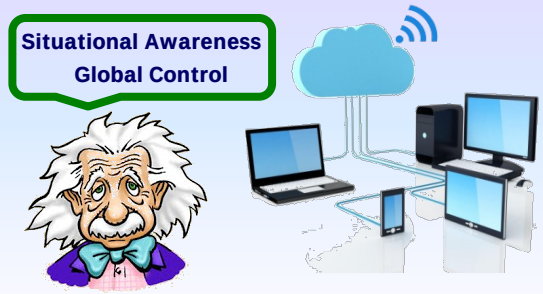
- 450 HOMES AVERAGING 17 KWH/HOME/DAY. MICROGRID ENERGY SHARING BETWEEN HOMES.
- NO GRID OR GENERATOR SUPPORT AT ALL.
- 1.8 MW SOLAR, 1.8 MW TRANSVERTER POWER MODULES, 2.5 MWH LI-ION BATTERIES, TRANSVERTER AUTOMATIC DEMAND CONTROL.
- 900 HT2000 POWER MODULES AND 900 3.2 KWH LI-ION BATTERIES, BOTH WITH 10 YEAR WARRANTY.
- TOTAL INSTALLED COST OF $8,241K. $18K PER HOME.
- LEVELIZED COST OF ENERGY OVER 20 YEARS = $.14/KWH. 25 YEAR EXPECTED LIFE.
- EACH HOME CAN OPERATE AUTONOMOUSLY FOR ABSOLUTE ENERGY SECURITY.

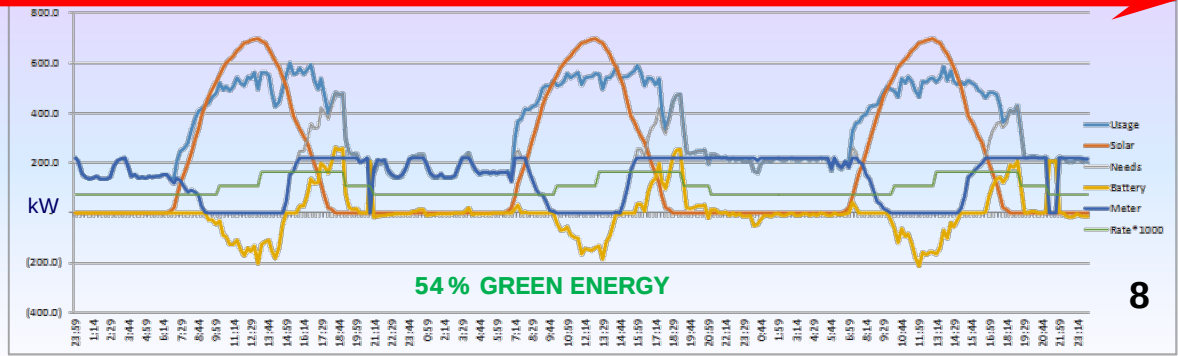




MICROGRID 3 HOUSES (with grid or generator)

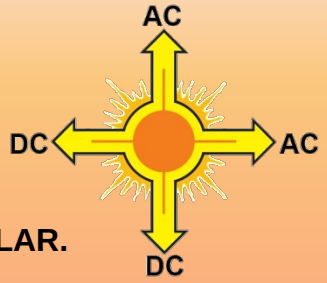


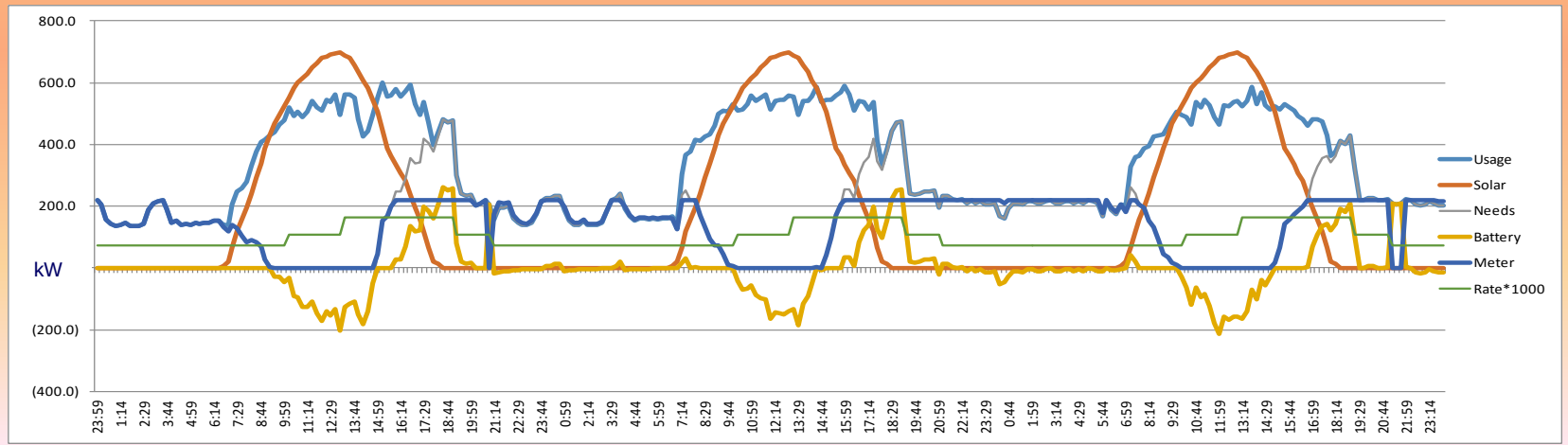




MICROGRID COMMERCIAL GRID (demand reduction)

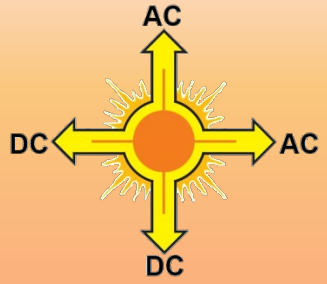
- USAGE = 8,370 KWH/DAY. 600 KW PEAK DEMAND. TIME OF USE RATES CALIFORNIA PG&E.
- 900 KW SOLAR, 900 KW TRANSVERTER POWER MODULES, 1.2 MWH LI-ION BATTERIES, TRANSVERTER AUTOMATIC DEMAND CONTROL.
- 450 HT2000 POWER MODULES AND 450 3.2 KWH LI-ION BATTERIES, BOTH WITH 10 YEAR WARRANTY.
- TOTAL INSTALLED COST OF $4,121K.
- LEVELIZED COST OF ENERGY OVER 20 YEARS = $.14/KWH. 25 YEAR EXPECTED LIFE.
- DEMAND REDUCED TO 37% AND GRID USE TO 44%. SIMPLE ROI OF 7.7 YEARS.
- 900 KW UPS LEVEL BACKUP SUPPORTED BY 1.2 MWH OF BATTERIES AND 900 KW OF SOLAR.

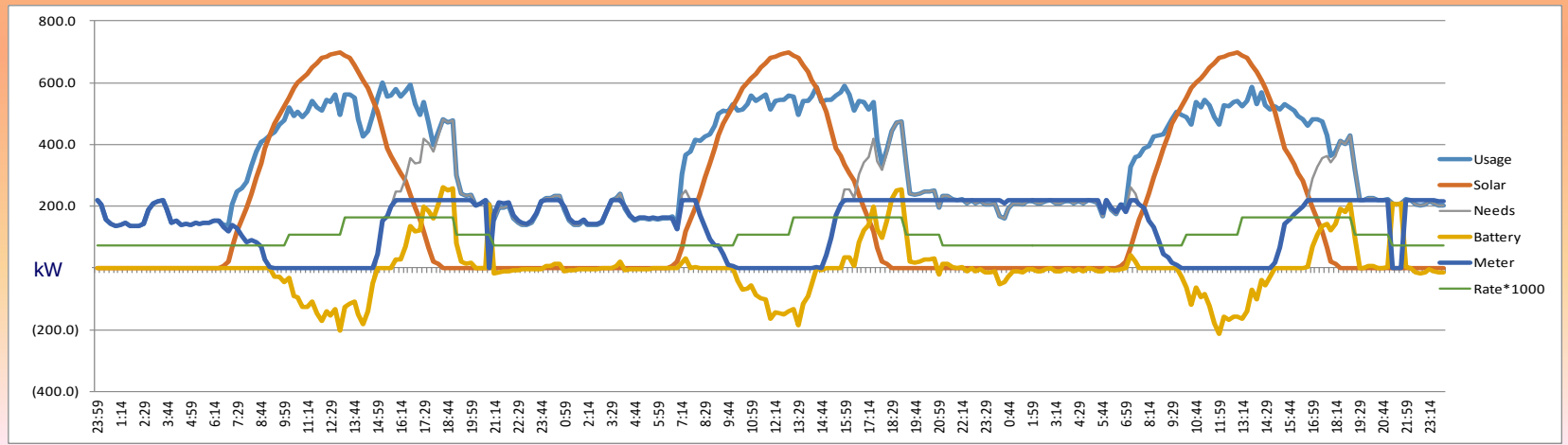




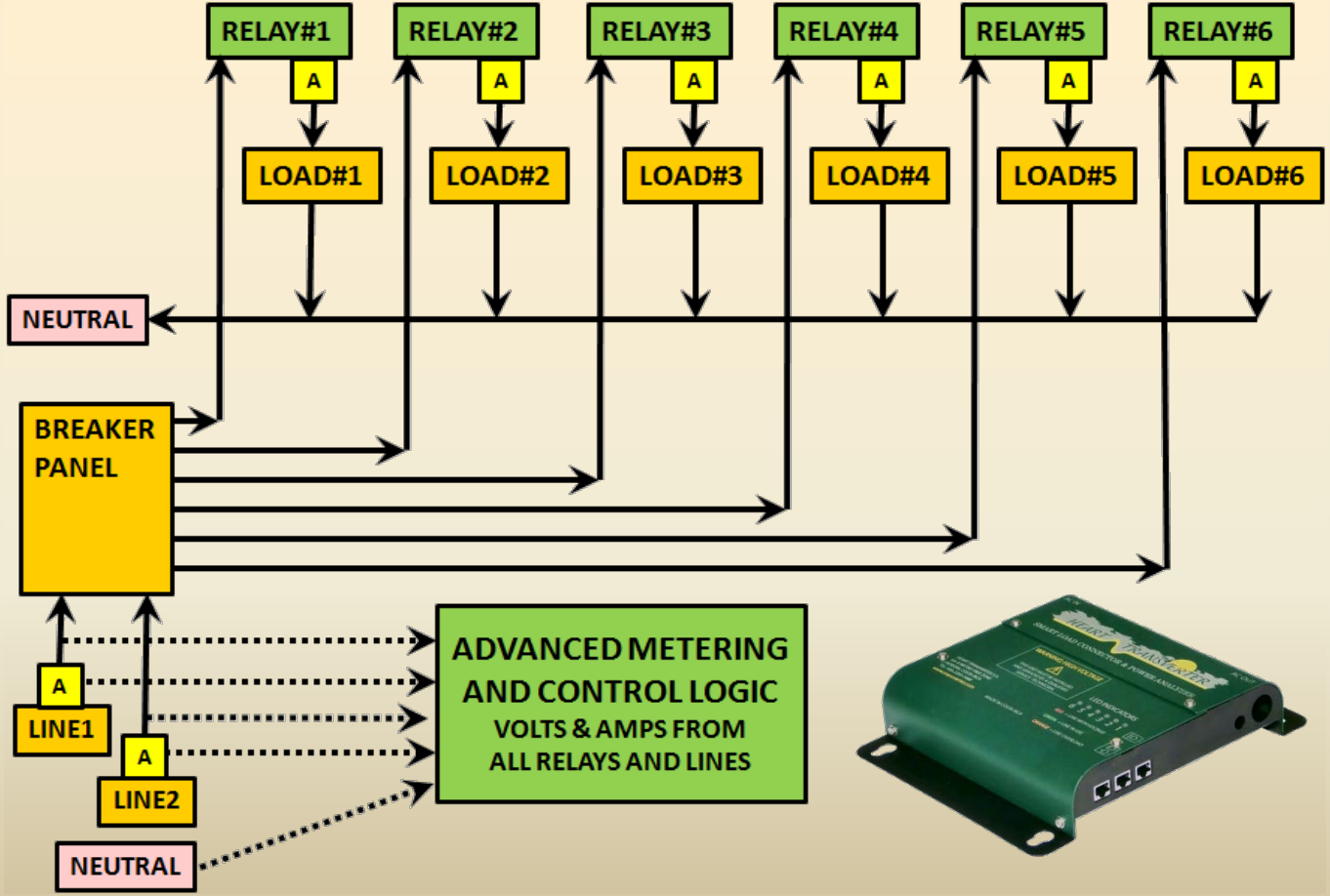
COMMERCIAL MICROGRID (ancillary services)

- ENHANCE SIMPLE ANALYSIS WITH ANCILLARY SERVICES.
- 900 KW SOLAR AND 1.2 MWH LI-ION BATTERIES DIPACHABLE ON DEMAND IN BOTH DIRECTIONS.
- CONTROLABLE DEMAND RESPONSE FOR SELECTED LOADS.
- PATICIPATE IN 15 MINUTE SPOT ENERGY MARKET DIRECTLY WITH ISO.
- OTHER INCENTIVES LIKE SGIP AVAILABLE.
- DATA & CONTROL CAN BE AGGEGATED FOR LARGER VIRTUAL SYSTEM.
- GENERATOR DOWNSIZED TO 37%. INFRASTRUCTURE DOWNSIZED TO 35%.
- VIRTUAL PEAKER PLANT.





T13X AUTOMATIC DEMAND RESPONSE



Loads can be any combination of:

- HVAC, heat pumps, compressors, heaters, water pumps
- EV Chargers
- Legacy Solar Inverters
- Controlled Dump Loads
- Capacitors to inject VARS
- Controls for Auto-start Generators & Fuel Cells

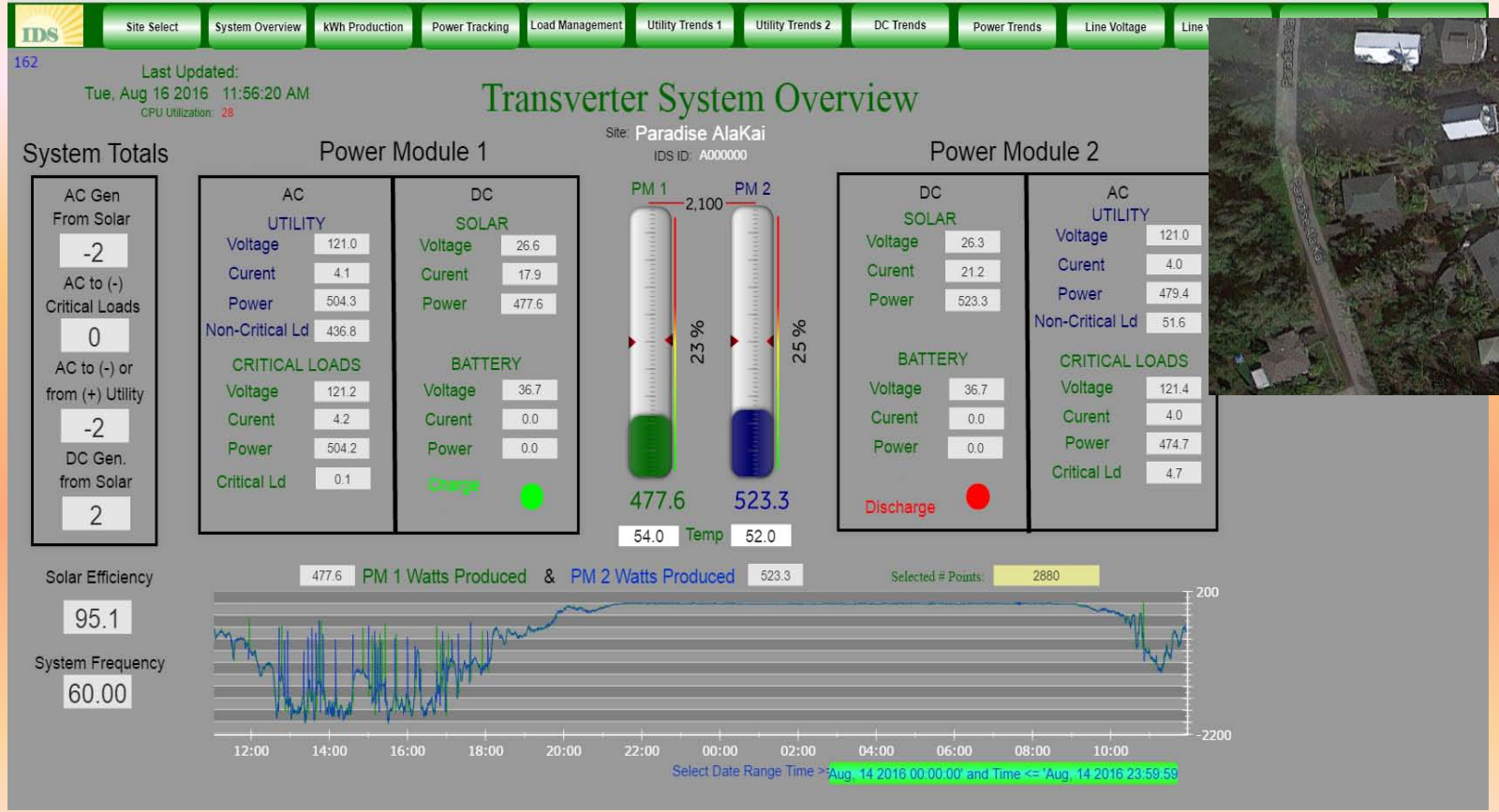
These loads can be individually controlled by any combination of:

- Grid Frequency
- Grid Voltage
- Grid Current
- Load Current
- Grid Power
- Load Power
- Grid Power Factor
- Solar & Battery Conditions
- Local Communication (Microgrid)
- Global Communication (Utility)

IDS Remote Systems Monitoring and Control

- Provided by Intelligent Design Solar
- Monitor solar, battery, generation and loads, with option to monitor water production, HVAC, etc.
- Remotely manage HT2000 & T13X operational settings
- Cloud storage of high resolution (5-30 sec) history
- Web-based presentation of systems performance
- Provide system analytics individually & in aggregate
- Track & report all operational systems' performance
- Local Edge logic runs in "Set and Monitor" mode
- Edge Computing Process, buffers data can operate with intermittent communication to Concentrator.
- Retains real-time and historical data for Billing and Operations

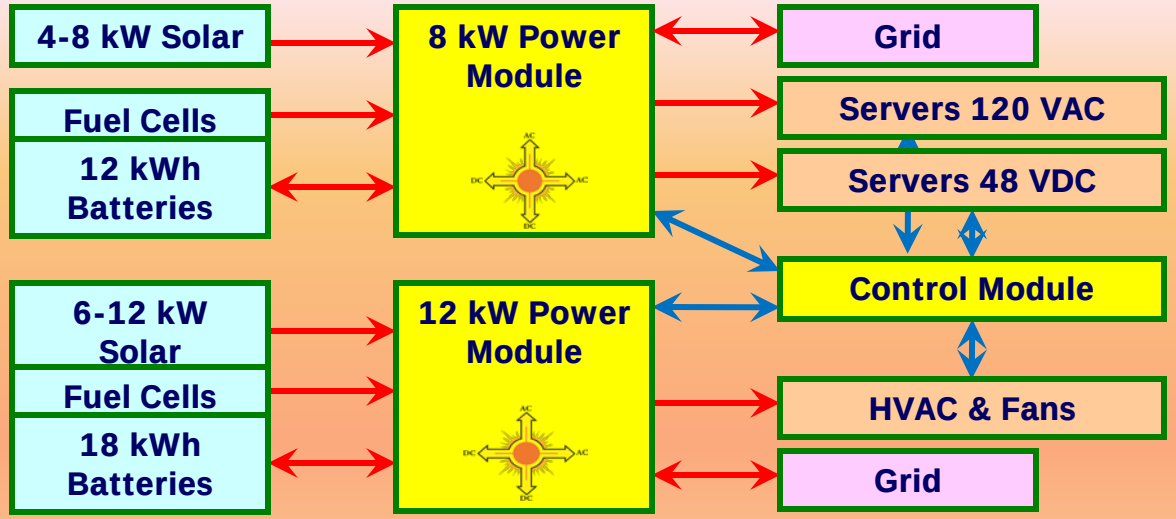
IDS Web and Mobile Live Presentation



System Status, Notifications, Alarms, Trends, Map Overlay…

Transverters & the Future of Server Farms

The Holy Grail of Demand Response



What the grid sees is a totally smooth (PF=1) load, that automatically responds to grid fluctuations in a way that increases grid stability.

- All transitions smoothed by battery banks.
- Server computer throughput –energy balance continuously adjusted every second.
- HVAC & Fans adjusted to respond to energy situation.
- Demand Response driven by local grid measurements.
- Additional Demand Response driven by grid communication
- Everything Power Factor Compensated.
- Solar output mostly absorbed by batteries and loads.
- Full days operation without grid or fuel cells.
- Indefinite operation without grid at reduced powers.

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