New

Biosirus

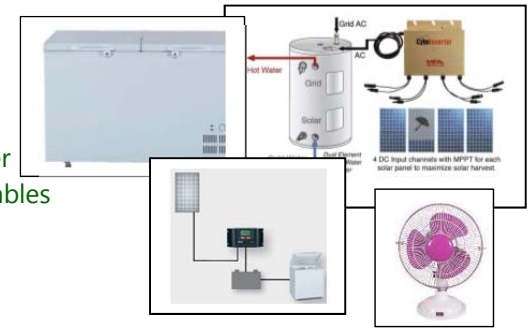
Off-Grid Rural Energy Solutions

Solar Agro Processing

- **24/48V DC System: 125/300W Solar PV, 20/30A Charge Controller, 40-100AH Battery, Electrical Switch Panel**
  - **Rice Mill Huller (600W) and Polisher (800W) -** up to 240/100 Kgs -Brown Rice /White Rice per day
  - **Corn Huller (500W) and Flour Mill (1200W) -** up to 200 kg/day from dried corn cobs)
  - **Coconut Scraper-Grater (250W)** - up to 60 coconuts/ hour
  - **Cassava Grater (250W)** - up to 60 Kg/hour
  - Battery Powered; up to 4 hours working time; Best with 2 batteries
  - 8 hours charging time

Solar Heat/Cool Comfort Systems

- **Electric Fans (12/24V BLDC motors) and TVs (12/24 V DC)**
- **Solar Hot Water Systems (120/240V AC or 12/24 V DC)**
  - Boiled Water for community safe drinking
  - Warm water for other community washing services
- **Refrigerator/Freezer Systems (120/240V AC or 12/24 V DC)**
  - Chest Freezers 100-525 L (3.5-18.5 Cu. ft.) for medical, meats, other
  - Small Refrigerators 92-212 L (3.3-7.5 cu. ft.) for vegetables, perishables
  - **Freezer:** Input Power 70-110 watts; Temp. < -18 deg. C
  - **Refrigerator:** Input Power 62-77 watts; Temp. < 3 deg C



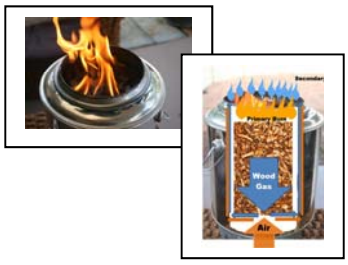
"Mobile" Solar Irrigation Pump-Set

- **DC Solar fed AC VFD-drives (120V/240V - up to 7KW)**
  - Tractor trailer flatbed mount ; DC charge controller, inverter, VFD - all in one
  - Solar Panels – use customer's fixed mount or use easy portable "ground-mount" kits
  - Configurations: 120V/220/230/240V; 50/60 Hz.;
  - AC motor is easy to fix than DC motors in most rural communities
  - Low Transport Weight - No Diesel Engines; No heavy Lead Acid Batteries (optional LiFePo4 battery
  - Larger pump operation (10am – 4:00pm); Can charge batteries during outside hours

Rural Thermal Energy

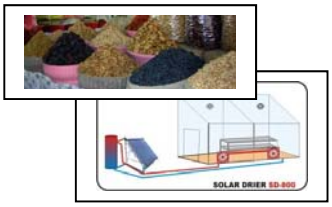
Efficient Biomass Stoves

- **Downdraft Gasifier Principle**
  - Up to 40,000BTU/h (12,000W); Residential Use (Cooking, Hot Water)
  - Up to 200,000BTU/h (60KW); Merchant Services (Hot Water/Agro)
  - Uses only 10% of wood compares to regular "updraft" stoves
  - Very efficient secondary burn of combustion gases
  - Eliminates need for kerosene and other expensive fuels



Solar Thermal

- **Agro/Food Drying Process**
  - Up to 10,000BTU/h (3000W); Slow air heated with temperature control
  - Retains nutrient value in agro products



Tech Talk: *Flexibility / Scalability / Off-Grid Power systems*

Globally, 1.1 billion people have no access to electricity. In other places, electricity is very unreliable often available for only few hours a day. A sizeable rural load (as high as 50-70%) is often irrigation and bore well pump sets. 12V DC microgrids have limitations in providing services beyond LED lights/cell-phone charging, are limited by short cable lengths due to excessive voltage drop and can rarely feed small agricultural motorized appliances. Lastly, there are few DC standards and very few DC components available in the market place.

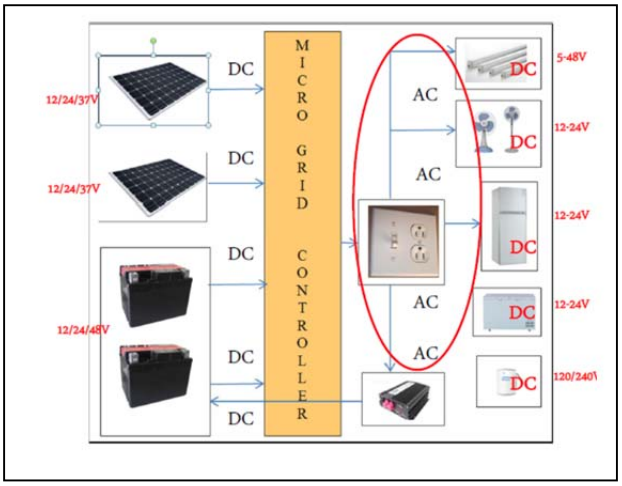
Our "charge-controller/inverter/MPPT" system combines the best of both; a scalable DC input source that is tied to a standard AC delivery mechanism that can feed everyday appliances (AC or DC). All parts are available and most electricians are trained on such AC systems. *This total cost is the cheapest. It is capable of supporting economic development opportunities such as usage of pumps, fans, motor-loads, grinders, water heaters, agro-processing, etc.*

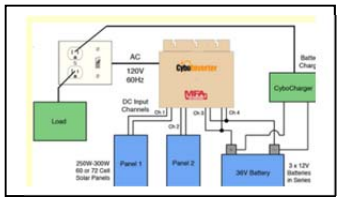
Scalable Off-Grid Architecture

DC Source (15-48V)
- Solar PV, Battery, Wind
- Scalable input

AC Delivery (120/240V; 50/60Hz)
- Longer wiring
- Higher loads & Scalability
- AC Standards / Market Parts

AC/DC Load (120/240V; 12-48V)
- Low energy/high efficiency
- BLDC low motor start current
- Inexpensive AC/DC adapters





And Savings Too:

The cost of running diesel generation, or bringing distribution wires or transporting fuel to remote sites is prohibitively expensive. In such cases our system provides good value. Others are grid power back-up.

Best Value Applications:

- Diesel displacement applications (remote, back-up or unreliable systems)
- Remote military applications (forward bases and remote camps)
- Economic development in rural communities with no access to electricity

Parameters	Platinum Savings	Gold Savings	Silver Savings	Bronze Savings
High Tariff Rate	*****	****	***	**
Diesel dependency	*****	****	***	**
Off-Grid / Remote locations	*****	****	***	**
Electricity Tariff (US$/kWh)	>1.40	1.00	0.80	0.60
Pump/Motor loads (KW)	5 kw	3-4 KW	1-2 KW	< 1KW
Variety of Home Appliances	5+	4+	3+	2+
Typical Pay back (simple ROI)	3 Years	4 Years	5 Years	6 Years

Typical Applications

Biosirus Inc.
21 Amber Street, Unit 3, Markham, Ontario, Canada L3R 4Z3; Tel./Fax: 416-410-4782
email: info@biosirus.com www.biosirus.com

Call us for any details or a trial project

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