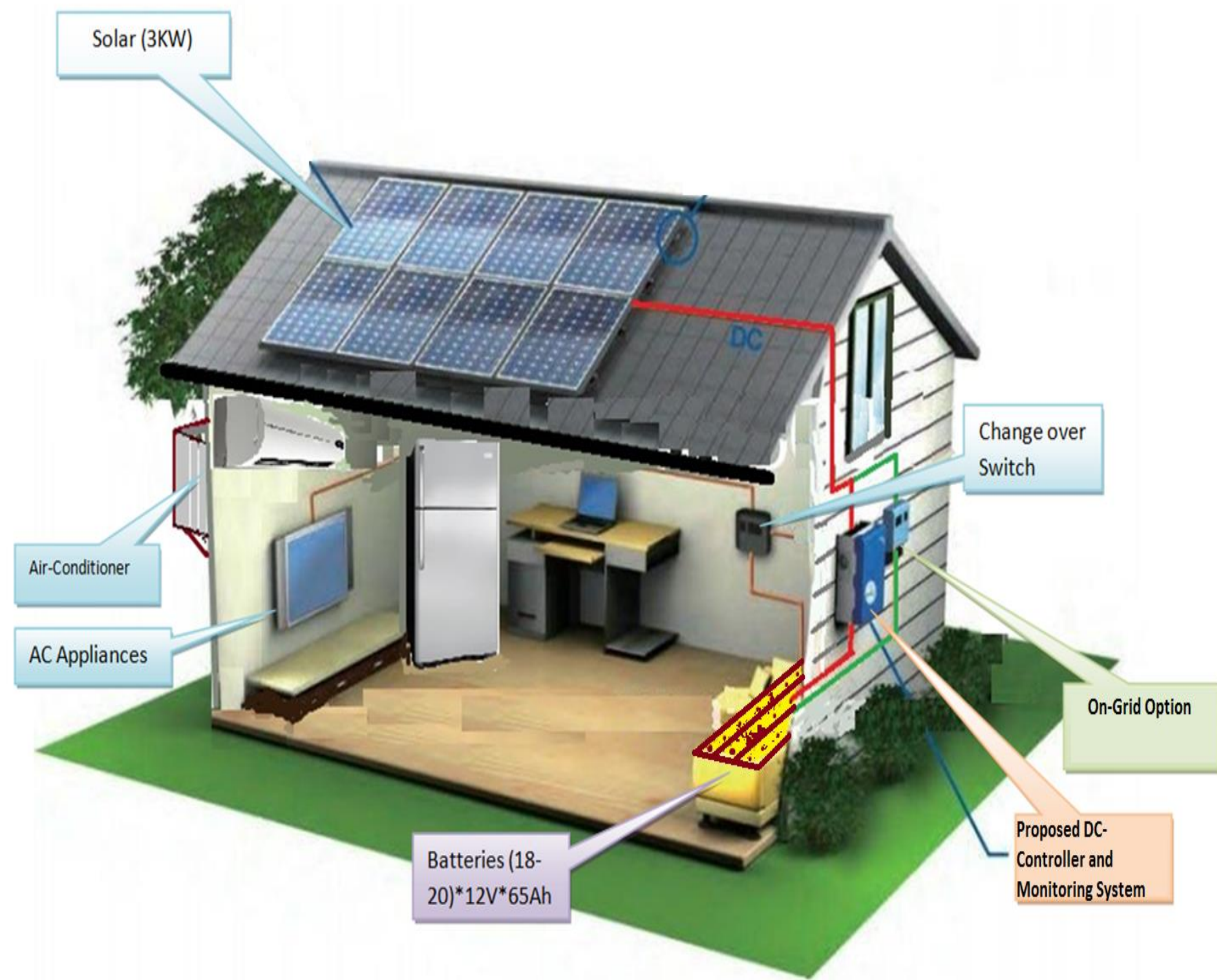
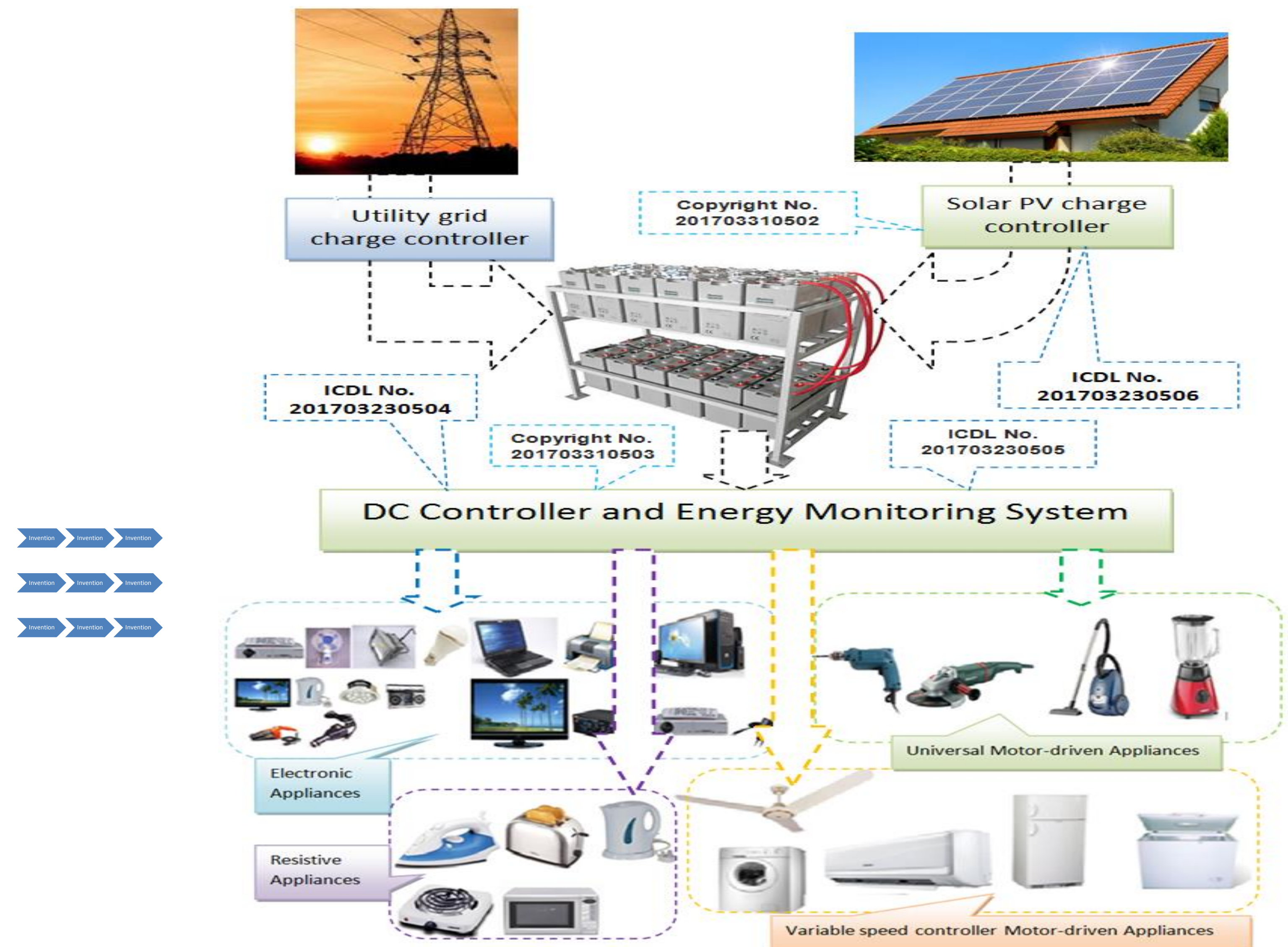


DC Homes in Future Energy System



Conventional AC Homes Green Energy System



DC Homes Green Energy System

INTRODUCTION OF TECHNOLOGY

With the arrival of smart grid era, new electronics-based household appliances, and the advent of advanced communication and information infrastructures, advanced metering, energy storage systems and household appliances networks would revolutionize the patterns of electricity usage and energy conservation at the consumption premises. Coupled with the emergence of smart appliance technologies and massive distributed renewable energy, it is the time of a profound transition for the energy conversion pattern **from the conventional AC environment infrastructure towards the DC distribution for the energy systems with renewable and stored energy sources.**

Under the sustainable DC-powered smart grid paradigm, the smart house with its newly available appliances, appropriate supply environment, and the home energy management system plays an important role to improve the efficiency, economics, reliability, and energy conservation for distribution systems.

INVENTION

All the household appliances has been classified according to the type their consumption of power. The electronics appliances perform same or better when they supplied by DC-power, because their components consume DC power in its nature. **Motor-driven appliances such as; the washing machine, Air-conditioner, Refrigerator, all recently have speed controller driving a brushless DC motor.** Normally, these type of appliances convert the AC to DC-power and using the PWM technique to control the rotation speed of the their motors. The other loads in domestic sections are either resistive or inductive appliances that are easy connected to DC-supply.

The invention is a system assembling all the aforementioned appliances with DC power of an appropriate voltage level to satisfy the requirement of a concept adopted in this power distribution design. It is Source-Load Voltage-Matching, which synthesize the voltage levels for the power source (Utility or solar PV power) and the load (Battery Storage bank and Appliances) in order to maintain the balancing.

Appliance specifications	Quantity	daily hours	Power (W)	Option1 (W.h)	Option 2 (W.h)
Air Conditioner, DC Inverter compressor, high quality, 12000 BTU, split unit type	1	10	800	8000	8000
Refrigerator with DC Inverter compressor, high quality	1	14	200	2800	2800
Electric oven heater type	1	1	800	800	800
DC Ceiling fan	2	20	50	2000	2000
LCD TV 32"	1	8	65	520	520
washing Machine Inverter technology	1	0.5	300	150	0
Satellite dish receiver	1	8	20	160	0
Vacuum Cleaner, Universal motor type HQ, 0.75Hp	1	0.5	500	250	0
Cell Phone - recharge	2	1	4	8	8
Wi-Fi Router, switching mode adaptor	1	20	10	200	0
7 watt LED bulb	10	10	7	700	0
3 watt compact LED strip type	6	8	3	144	144
Monitor LCD 19"	1	6	10	60	0
Computer disk top, keyboard, mouse	1	3	80	240	0
3 in one Colour printer	1	0.3	30	9	9
Portable DC Fan	1	12	20	240	240
Iron (any low power type)	1	0.5	600	300	300
Portable cook Heater	1	0.2	1000	200	200
Solar Water heater , 60L	1	6	0	0	0
Air cooler DC type	1	1	30	30	0
Hair Dryer	1	0.1	800	80	0
Coffee Machine	1	0.5	350	175	0
DC Freezer	1	6	160	960	0
Toaster	1	0.2	900	180	0
Shaver battery type	1	0.2	15	3	0
Well Pump (1/3-1 HP) DC type	1	0.5	80	40	40
Laptop	1	2	60	120	120
Video Game Player	1	1	20	20	0
Drill machine universal motor type HQ	1	0.02	250	5	5
Grinder machine universal motor HQ	1	0.01	1100	11	11
Daily max. consumed KW.h total				18.415	15.207

ADVANTAGES

- High energy conversion efficiency due to dispense of inverter and direct DC environment.
- Compatible for both; On-Grid and Off-grid PV system
- Low cost
- Easy installation
- Green innovation

MARKET POTENTIAL

Consumer/End User

- Residential PV-powered houses
- Commercial buildings

Industry

- Building and construction
- Green energy industries.
- Energy conservation investments



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