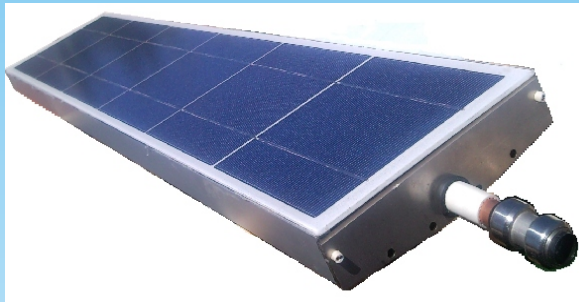


TP4 - ENERSOL

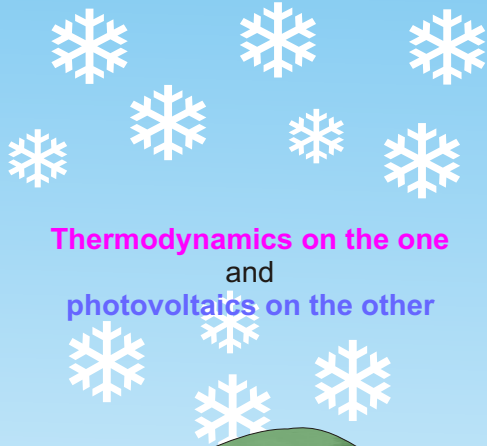
Green-Tech

New generation Photovoltaics



A double installation in one and the same area

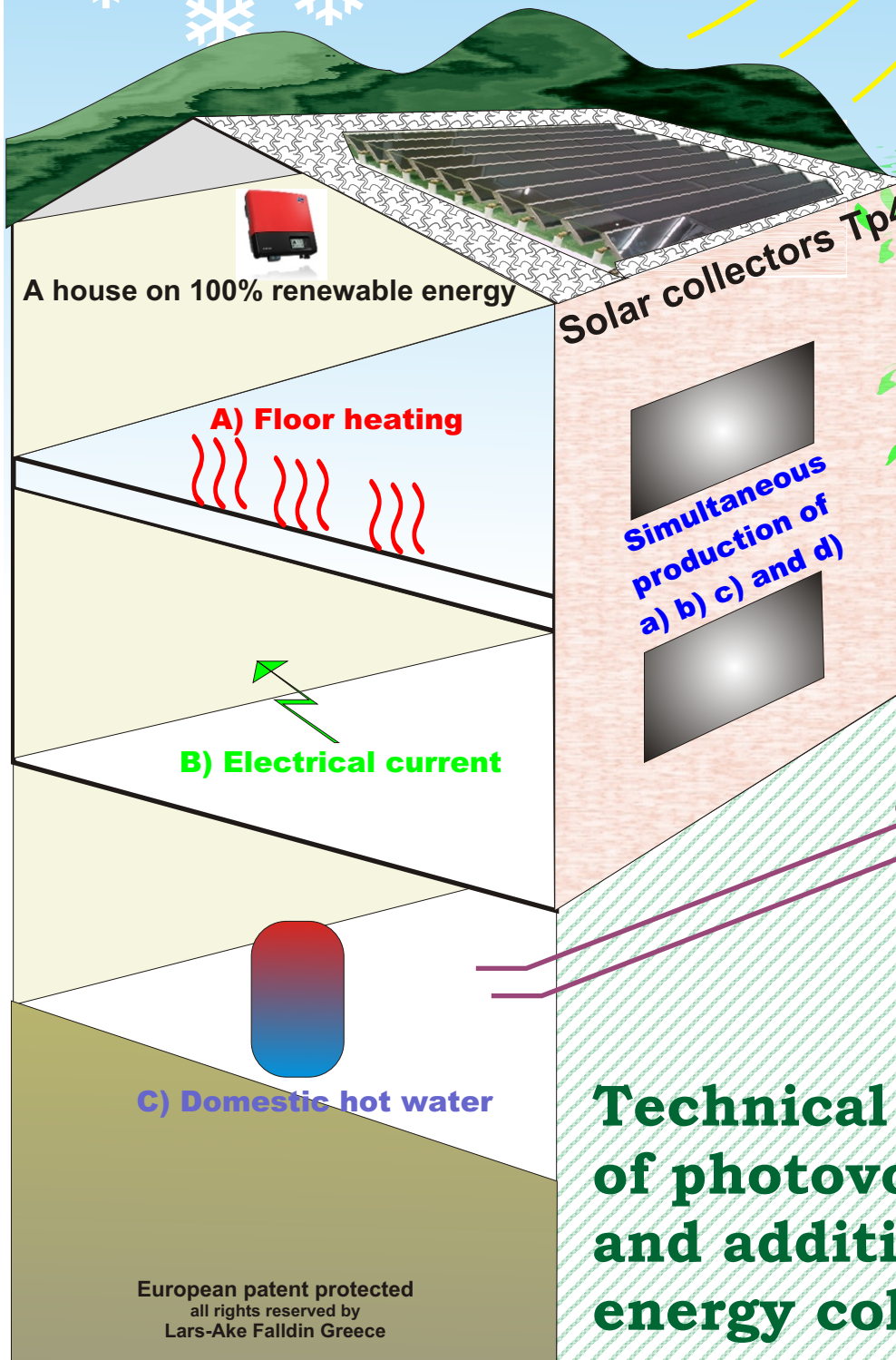
Changes in weather
alteration of the collectors



Thermodynamics on the one
and
photovoltaics on the other

**SOLAR-ENERGY
REVOLUTION !!!**

- Double faced hybrid solar collectors TP4
- * thermodynamics for floor heating systems
- ** photovoltaics with hybrid cooling effect
- *** domestic hot water
- **** swim-pool heating
- Automatic rotation by requirements & season



A house on 100% renewable energy

Solar collectors Tp4

Simultaneous
production of
a) b) c) and d)

Solar pergola



D) Swimming pool heating

TKM/TP4

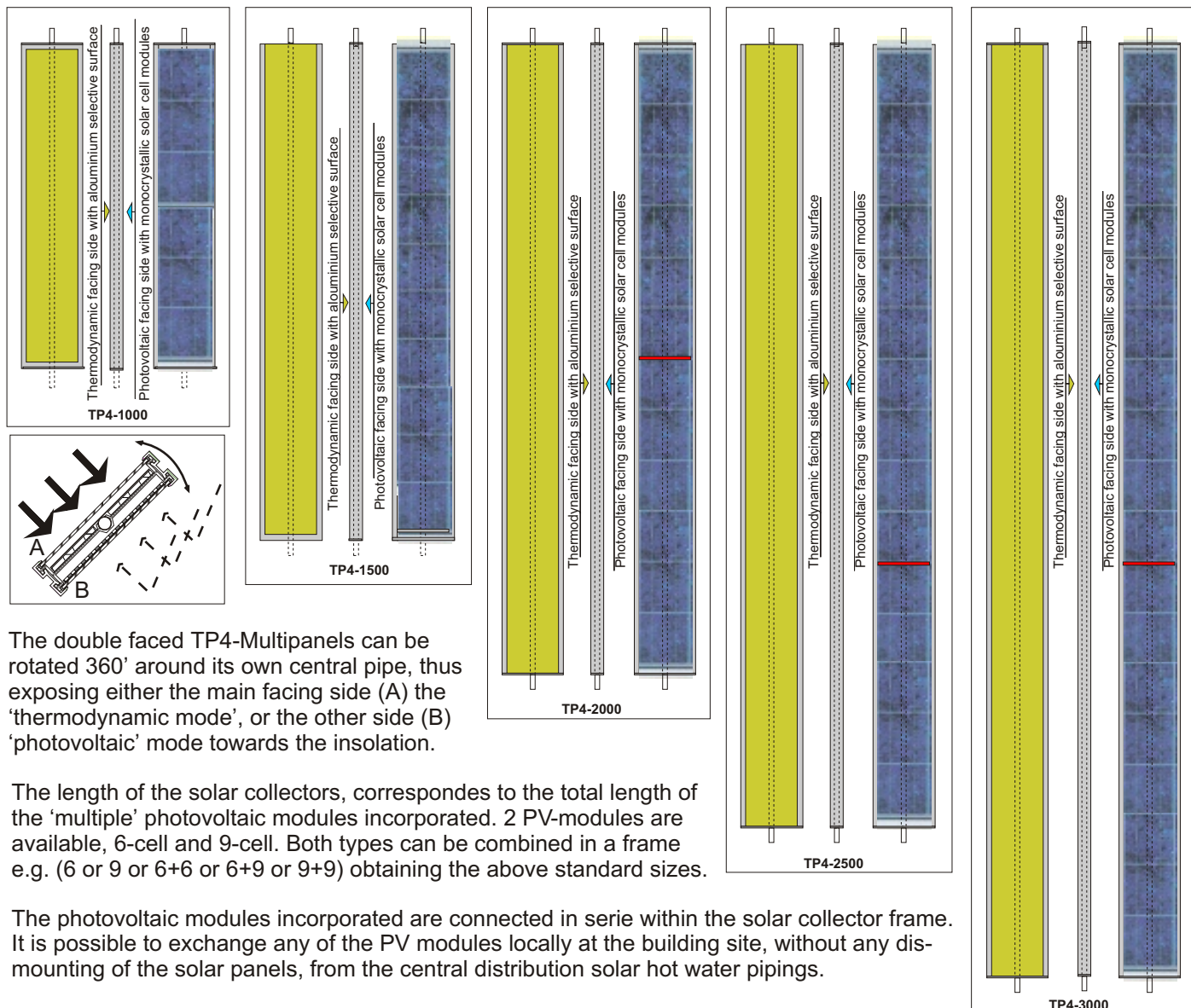
**Technical characteristics
of photovoltaic modules
and additive material for
energy collection & usage**

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Tel 30-210-5555523 Fax 30-210-5555668 mobil. 30-693-2231959
www.thermicsol.com Email:lars.f@thermicsol.com www.tp4-enersol.com

Technical characteristics of solar Twin-faced Multi-Panel TP4-Enersol



The double faced TP4-Multipanels can be rotated 360° around its own central pipe, thus exposing either the main facing side (A) the 'thermodynamic mode', or the other side (B) 'photovoltaic' mode towards the insolation.

The length of the solar collectors, corresponds to the total length of the 'multiple' photovoltaic modules incorporated. 2 PV-modules are available, 6-cell and 9-cell. Both types can be combined in a frame e.g. (6 or 9 or 6+6 or 6+9 or 9+9) obtaining the above standard sizes.

The photovoltaic modules incorporated are connected in serie within the solar collector frame. It is possible to exchange any of the PV modules locally at the building site, without any dis-mounting of the solar panels, from the central distribution solar hot water pipings.

Modul M6 GYS-23D (6x6" cells)

Technical specifications

Dimensions	980 x 176 x 6 mm
Maximum Power	25 Watt
Module efficiency	14.58%
Open Voltage (Voc)	3,76 V
Short Current (Isc)	8,60 A
Mpp Voltage (Vpm)	3,10 V
Mpp Current (Ipm)	8,11 A
Max System Voltage	1000 V
Power Tolerance	+/- 10 %
Temp. Coefficient voltage	-12,84 mV/°K
Temp. Coefficient current	+ 4,93 mA/°K
Temp. Coefficient power	- 0,43 %
Norm STC (AM1.5, 1000W/m2, 25°C)	

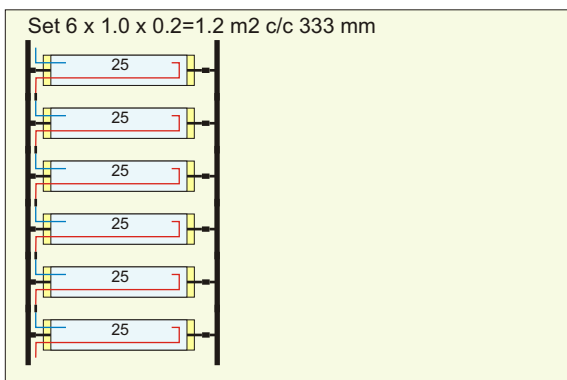
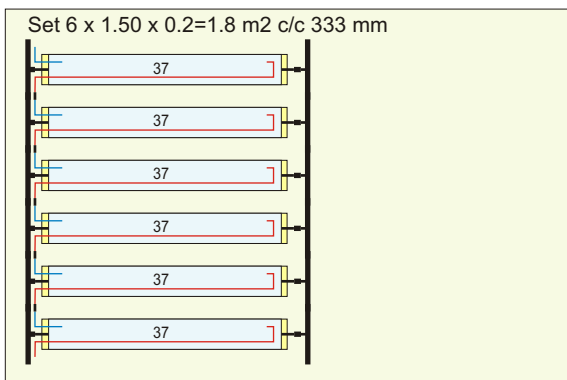
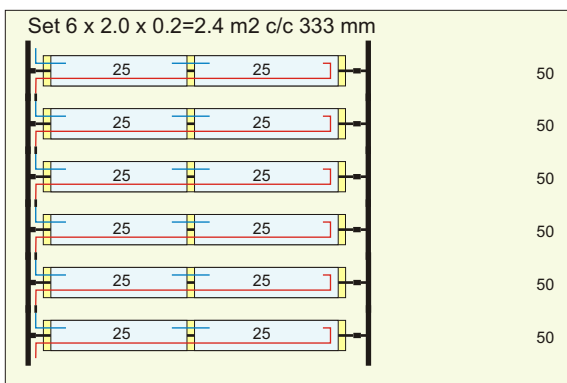
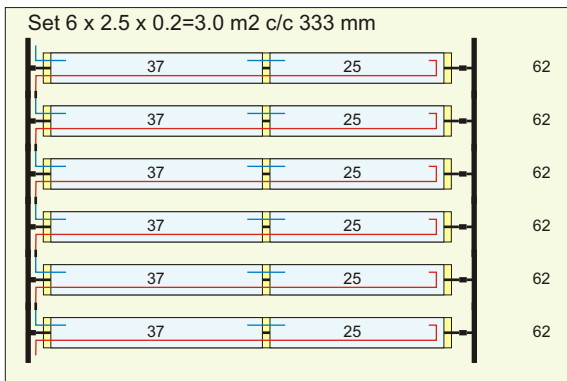
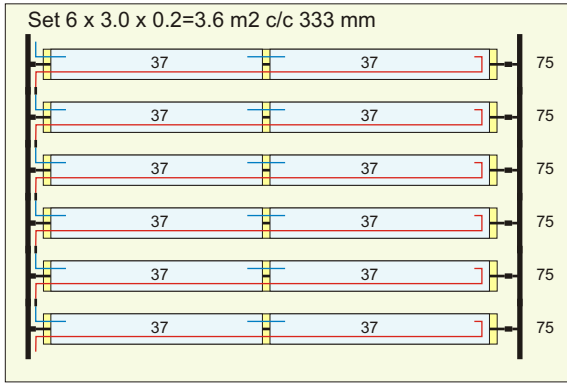
Modul M9 GYS-37D (9x6" cells)

Technical specifications

Dimensions	1460 x 176 x 6 mm
Maximum Power	37,5 Watt
Module efficiency	14.58 %
Open Voltage (Voc)	5,64 V
Short Current (Isc)	12,9 A
Mpp Voltage (Vpm)	4,65 V
Mpp Current (Ipm)	8,11 A
Max System Voltage	1000 V
Power Tolerance	+/- 10 %
Temp. Coefficient voltage	-12,84 mV/°K
Temp. Coefficient current	+ 4,93 mA/°K
Temp. Coefficient power	- 0,43 %
Norm STC (AM1.5, 1000W/m2, 25°C)	

Panel type	TP4-1000	TP4-1500	TP4-2000	TP4-2500	TP4-3000	Παρατηρήσεις
Panel length	996	1476	1976	2466	2946	mm
Panel width	198	198	198	198	198	mm
Panel height	50	50	50	50	50	mm
Hydro-pipe length	1146	1626	2126	2616	3096	mm
Collector weight	7.6	11.2	14.4	18.0	21.6	kg
Module combination	1xM6	1xM9	2xM6	M6+M9	2xM9	mm (6" 156)
Nom. Output	25 W	37.5 W	50 W	62.5 W	75 W	Watt

Solar collector mounting sets



Solar set output data

Each mounting set consists of 6 panels
with 2 modules of 9+9 cells = 18 PV-cells
Mounting area 3,253 m x 2,0 m = 6,5 m²

Electrical connection	Pm	Vpm	lpm
All in serie	1 x 6	450W	55,8V 8,1A
twin combination	2 x 3	450W	27,9V 16,2A
triple combination	3 x 2	450W	18,6V 24,2A
All in paralell	6 x 1	450W	9,3V 48.4A

Each mounting set consists of 6 panels
with 2 modules of 6+9 cells = 15 PV-cells
Mounting area 2,75 m x 2,0 m = 5,5 m²

Electrical connection	Pmax	Vmpp	lpm
All in serie	1 x 6	375W	46,50V 8,1A
twin combination	2 x 3	375W	23,25V 16,2A
triple combination	3 x 2	375W	15,50V 24.2A
All in paralell	6 x 1	375W	7,75V 48.4A

Each mounting set consists of 6 panels
with 2 modules of 6 cells = 12 PV-cells
Mounting area 2,25 m x 2,0 m = 4,5 m²

Electrical connection	Pm	Vpm	lpm
All in serie	1 x 6	300W	37,2V 8,1A
twin combination	2 x 3	300W	18,6V 16,2A
triple combination	3 x 2	300W	12,4V 24.2A
All in paralell	6 x 1	300W	6,2V 48.4A

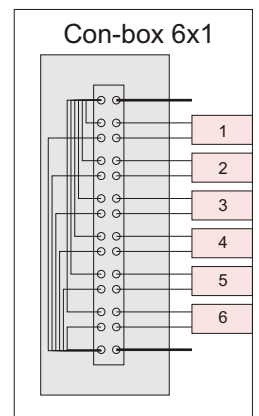
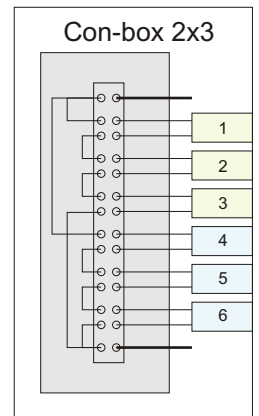
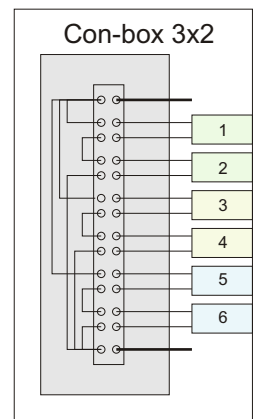
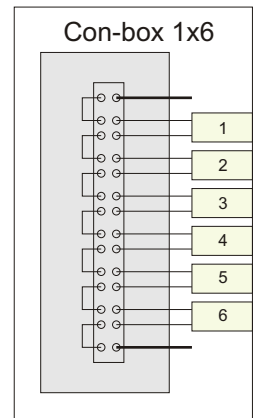
Each mounting set consists of 6 panels
with 1 modules of 9 cells = 9 PV-cells
Mounting area 1.75 m x 2,0 m = 3.5 m²

Electrical connection	Pm	Vpm	lpm
All in serie	1 x 6	225W	27,90V 8,1A
twin combination	2 x 3	225W	13,95V 16,2A
triple combination	3 x 2	225W	9,30V 24.2A
All in paralell	6 x 1	225W	4.65V 48.4A

Each mounting set consists of 6 panels
with 1 modules of 6 cells = 6 PV-cells
Mounting area 1,25 m x 2,0 m = 2,5 m²

Electrical connection	Pm	Vpm	lpm
All in serie	1 x 6	150W	18,6V 8,1A
twin combination	2 x 3	150W	9,3V 16,2A
triple combination	3 x 2	150W	6,2V 24.2A
All in paralell	6 x 1	150W	3.1V 48.4A

Wiring boxes

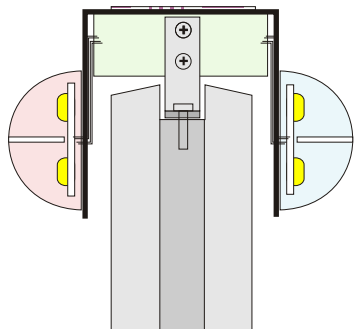


Picture

Item & description

Code

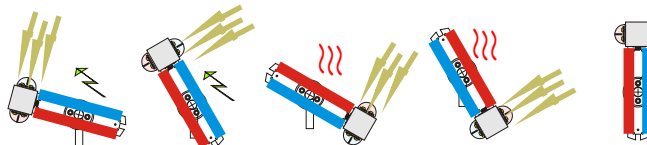
Price



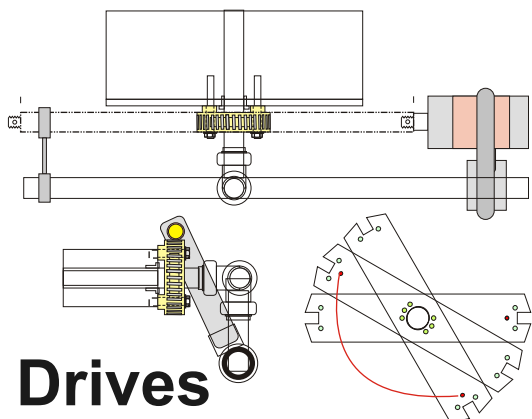
Twin faced solar tracking system TP4

The double faced tracking eye rotates together with the collectors tracking panels towards the sun. Depending on season and functional mode it operates with one or the other sensor eye which is positioned on the front collector.

A special feature is the automatic safe and clean vertical position in which the panels are exposed to the rain for self cleaning and also protected against snow and hail.



Tracker



Rotating device TP4 Worm-Gear Drive

On the central pipe of each collector is mounted a worm-gear wheel in brass.

Paralell to the distribution pipe goes the worm-gear axes in stainless steel, laying upon the brass wheels and fixed onto the distribution pipes.

The electric motor is mounted in the front turning the endless screw to position the panels.

The motor has several switches incorporated in order to make seasonal changes of functioning side and automatic safety positioning for rain, snow and hail.

Technically one motor can cover the rotation of up to 5 collector sets (10 meters) in a row.

Drives

Sunny Boys

Complete & simple. Converters Sunny Boy

Easiness in communication and control, friendly to the user and more efficient then ever before, the converters 3000 TL, 4000 TL and 5000 TL make a new prototype in conversion technology.

Modern graphic screen shows all the daily input and output electricity data, easily installed with twin input ports for comparing of efficiency and wireless communication possibility by Bluetooth contineous surway of installation, makes the new generation Sunny Boy an excellent tool.

With a maximum efficiency output of 97% the 4000 TL and 5000 TL offers the connection of multiple collector-sets without any transformer.

Optimal energy output and high flexibility is of great value for the installer as well as increased compatibility to most types of PV-modules makes it perfect for even the most complex requirements.

2000HF
2500HF
3000HF

3000TL
4000TL
5000TL

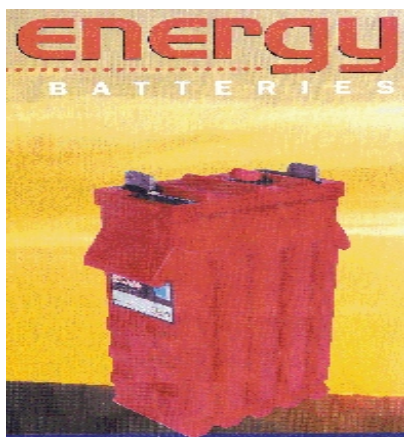
2100TL
3300TLS HC

3300
3800

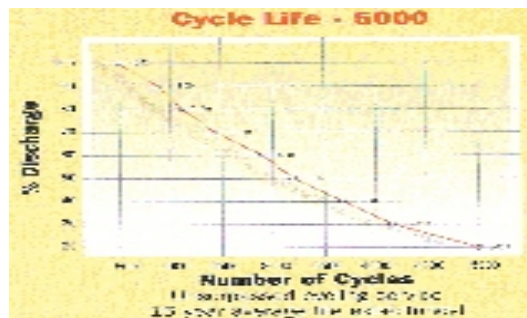
1100
1200
1700
2500
3000



Converters



Accumulators. High performance 5000 cycles



Series	Model	Hours (100)	(20)	(10)	L	W	H	Weight Kg Dry	Wet
5000	6 CS 17PS	770	546	453	559	210	464	81	100
5000	6 CS 21PS	963	6 83	567	559	248	464	99	123
5000	6 CS 25PS1	1156	820	681	559	286	464	115	145

Accumulators