TRUNZ
WATER SYSTEMS
SWISS MADE

TSPC
Trunz Solar Power Center

COMPACT PHOTOVOLTAIC SYSTEMS FOR RURAL ELECTRIFICATION

www.trunzwatersystems.com

COMPACT PHOTOVOLTAIC SYSTEMS FOR RURAL ELECTRIFICATION

The Trunz Water Systems AG division of R + D has developed a wide range of compact photovoltaic systems (TSPC), well-known in the market as Solar Power Centers. This independent and innovative solution is based on the latest developments in photovoltaic technology and includes our international experience in the field of rural electrification.

The difference between the TSPC and other commercially available systems on the market is its high energy efficiency which leads to an optimization in the equipments costs.
In order to increase the generated power by the photovoltaic modules and to make a more efficient use of the same ones, this TSPC incorporates the following elements:

1- The MPPT charge controller used in all systems allows a 10 – 30 % increase in the energy provided by the panels depending on the battery charge. The lower the battery charge is (when a fast charging is required) the higher is the increment of potency provided by the modules, which differs from the conventional controllers.

Charge Controller MPPT-20-80 A

2- The gel batteries, maintenance free, allow for the possibility to place them in the same cabinet with the controllers, inverters and protections; in order to decrease the wiring distance. As a consequence, there is a lower energy loss and an increment on the systems reliability because these parts come assembled and tested at the factory. This system has another important advantage: it can be installed directly reducing the assembly time and allowing for a fast start up of operation for the whole system. The life time of these batteries is from 12 to 15 years. On request, we can supply OpzV batteries with a life time of 15 – 18 years.

Solar Batteries 200 - 600 Ah C-100

3- The inverters used in the TSPC are pure senoidal wave. They have 3-5 % more efficiency than modified senoidal wave. The inverters include a low voltage disconnection system to protect the batteries against excessive charge which can reduce the life time. On the other hand these inverters diminish substantially the interference with audio and video equipment.

Inverter 200 – 3000 W

4- TSPC systems with 400 W or more output power can optionally be fitted with a 24 VDC connector in order to directly connect horizontal refrigerators with DC power to the batteries. This special equipment has an exceptional low energy consumption and operation expenses; it includes an isolation of 11 cm thickness and an optimized refrigeration system for operation by photovoltaic systems.

Refrigertor and freezer DC, 138, 238, 142 and 176 L

5- The solar modules used in the TSPC are made of monocrystalline silicon solar cells with a conversion efficiency of over 15 % (type: TSM 160M-24). Optionally, we supply modules with a unique back-contact-technology and a conversion efficiency of 19.7 % and 160 Wp (60 cells). Those modules were initially developed for network supply but use of charger controllers with MPPT allow a connection in series to increase the output.

Solar modules 160 Wp, 24 V

6- Another optional element which can be added to the TSPC is the solar tracking system. This solution increases the solar energy received by the modules by 25-35 % throughout the entire year. In summer, in some locations, it supports an increase in the energy by 55 %. The solar tracking system is robust and strong enough to resist winds of 150km/h. It has a maintenance frequency of 5 years. We recommend this solar tracking system for solutions with 6 modules of 160 Wp and more.

Solar Tracking System for 500, 1600 y 2400 Wp

The brand name TSPC comes together with "max" which emphasizes the systems ability for optimization of systems to achieve a higher amount of energy output Wp.

The product family TSPC max starts with the one module system of 160Wp (TSPC max -200) followed by the module systems 2; 4; 6; 12 and 24.

TSPC max-400

Description	Quant.	Power W	Hours Funct.	Energy Wh/day
fluorescent lamps compact	6	15	5	450
21 inch color tv	1	65	10	650
TV receiver, Satellit	1	25	10	250
Radio	1	10	8	80
Other electronic devices	1	50	2	100
Refrigerator 165 L, 24 VDC	1			170
TOTAL				1700

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Technical data

Description	Units	TSPC max-3000	TSPC max-1500	TSPC max-1000	TSPC max-700	TSPC max-400	TSPC max-200
External dimensiones	L x A X A mm	On request	1700 x 600 x 850	850 x 600 x 850	600 x 600 x 850	600 x 600 x 850	600 x 600 x 850
Net Weight	Kg.	1'850 kg	760 kg	385 kg	260 kg	140 kg	80 kg
Regulator	MPPT	80 A	60 A	60 A	30 A	20 A	20 A
Inverter	Power	3000 W	1500 W	1000 W	700 W	400 W	200 W
Efficiency	%	93%	91%	90%	89%	88%	86%
Voltage	Vac	220/110	220/110	220/110	220/110	220/110	220/110
Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60
Type of inverter	Vac	t.Sinus	t.Sinus	t.Sinus	t.Sinus	t.Sinus	t.Sinus
Maximum Power (inverter)	3 min.	3450 W	1725 W	1150 W	800 W	460 W	230 W
Maximum Power (inverter)	10 sec.	4500 W	2250 W	1500 W	1050 W	600 W	300 W
Battery bank capacity	Ah-V	1200 Ah-48 V-C100	600 Ah-48 V-C100	600 Ah-24 V-C100	400 Ah-24 V-C100	200 Ah-24 V-C100	200 Ah-12 V-C100
Battery type	Solar, gel	750 Ah, 2 V, OPzV	750 Ah, 2 V, OPzV	226 Ah, 2 V, OPzV	226 Ah, 12 V	226 Ah, 12 V	226 Ah, 12 V
Autonomy of system	Cloudy or rainy	3 days	3 days	3 days	3 days	3 days	3 days
Solar Modules	Wp	3840 Wp	1920 Wp	960 Wp	640 Wp	320 Wp	160 Wp
Module type	monocristalline	160 Wp	160 Wp	160 Wp	160 Wp	160 Wp	160 Wp
Average Energy Supplied	4/6 hours of sun	13165/19745 Wh/day	6440/9660 Wh/day	3180/4780 Wh/day	2100/3150 Wh/day	1040/1560 Wh/day	510/760 Wh/day
Mounting structure for solar modules	Mast (flat-roof)	4, each 6 modules	2, each 6 modules	1, 6 modules	1, 4 modules	1, 2 modules	1, 1 modul
Solar Tracking System	optional	2-Etatrack 1500	Etatrack 1500	Etatrack 1000	Etatrack 700	N/A	N/A
Increase of energy	%	15-30 %	15-30 %	15-30 %	15-30 %	N/A	N/A
Ø Operation time	Estimation 6 kWh/m2						
TWB 002 (*)		24 hours	24 hours	12 hours	8 hours	4 hours	2 hours
TSB 002 (**)		20 hours	9 hours	4,5 hours	3 hours	1,5 hours	-

* power consumption incl. borehole pump 400W
** power consumption incl. borehole pump 1050W

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