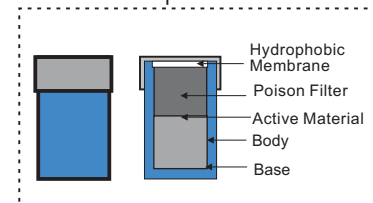


# CELLYTE 6-12TSG Range

**Solar Battery for up to 30°C Operation**  
**Sealed VRLA Solar Monobloc**  
**Introducing New Monobloc Catalyst Technology**  
**Designed for Full Life at 30°C Operation**  
**Capacities: 20Ah. to 300Ah. @ C/100**



**Monobloc Catalyst (Optional)**

## SPECIFICATIONS

**Voltage** ..... 6 & 12 Volt nominal  
**Plates** ..... Extra Heavy Duty  
**Plate alloy** ..... Virgin Pure Lead /1.6% Tin  
**Terminal** ..... Copper insert for SS bolts  
**Container /cover** ... ABS  
**Charge voltage** .... Cycle 2.35 Vpc;  
 Float 2.25 to 2.30 Vpc @ 20 C  
**Specific gravity** ... 1.280  
**Electrolyte** ..... Sulphuric acid thixotropic gel  
**Vent** ..... Self sealing - 2psi operation  
**Operating temperature** : -25 to +55 (However we recommend that the batteries be operated in the temperature range of 20 to 30 C, to obtain full life and optimum performance.)

## EXTRA FEATURES (with optional Catalyst)

- \* Will reduce float current by about 50%
- \* Will reduce gassing by up to 80%
- \* Will minimise water loss
- \* Reduce cell failure due to dry out
- \* Will extend battery float service life due to reduced plate corrosion
- \* Batteries will have full design life when used in temperatures up to 30 C.
- \* Will maintain full battery capacity by preventing depolarization of negative plate
- \* Reduces the possibility of thermal runaway

## DEEP CYCLE APPLICATIONS

- \* Alternative Energy Storage
- \* Solar Photovoltaic/Wind
- \* Cycling/Float Service
- \* Wheelchair/Electric vehicle
- \* Boats/Marine/Navigational Aids
- \* Floor Cleaning machines
- \* Engine Starting
- \* Water Pumping/Golf caddy
- \* Portable medical equipment
- \* Cathodic Protection

## INNOVATIVE FEATURES

- \* Valve Regulated Lead Acid
- \* Fully tank formed plates
- \* Gelled Thixotropic electrolyte
- \* Spill-proof / leak proof
- \* Multi-position usage
- \* Multi-cell container
- \* Low self-discharge
- \* Quality system - ISO 9001
- \* FAA and IATA Approved as NON Hazardous

**Standards** : Manufactured to comply with:-  
 BS EN 60896-2:1996  
 EUROBAT & UL Underwriters Laboratories  
 Fully complies with IEC 60896-21/22-2004  
 when supplied with ABS V-O Case & Cover

### **CELLYTE Solar TSG Bloc Batteries**

In keeping with our philosophy to stay at the forefront of the ever expanding Renewable Energy battery market we have extended our range of gelled electrolyte batteries to include Monobloc battery fitted with a Catalyst increasing the operating temperature at which the battery can be operated up to 30 C without loss of battery life, this is a - World First.

Also included are several innovative features: triple barrier terminal post seal, high Tin / Calcium positive plate alloy for improved, by up to 40%, deep cycle capability of the Solar TSG batteries.

### **Sealed Valve Regulated Construction**

\*These batteries are of the gelled electrolyte technology (Gel). All the electrolyte in the cells is immobilized in a Thixotropic Gel providing a safe non-spillable battery.

### **Gas Recombination System**

\*The gasses generated in the normal charge / discharge use of a rechargeable lead acid battery are internally recombined during normal operating parameters and in normal operational use, more than 99% of the gas generated is recombined.

### **SEC Catvent - Catalyst Vent**

\*SEC's VRLA cells /batteries incorporate the Philadelphia Scientific Monobloc precious metal Catalyst Catvent which prevents the negative plate from depolarizing reduces the cell float current by up to 50%, reduces the cell gassing by about 80%,thus reducing the cell dry out rate which is the major cause of VRLA battery failure

### **Battery Maintenance**

\*The battery has been designed and built such that no addition of electrolyte or water is needed during the life of the battery.

### **Battery Life in Float Service**

\*CELLYTE Solar TSG batteries a suitable for float / standby service with a design life of about 10 -12 years at 20C. when fitted with VRLA Catalyst

### **Batteries Engineered in the USA**

### **Battery Life in Cycle Life**

\*CELLYTE Solar TSG batteries are designed for 550 to 4000 charge/ discharge cycles, battery life will depend on temperature, depth and frequency of cycling, however the use of the Catvent Catalyst will improve life.

### **Battery One-Way Safety Valve**

\*When pressure builds up in the cell the B & S German safety one-way valve opens at 2-3 psi and releases the excessive pressure and then closes. The one-way valve does not allow the ingress of oxygen which is harmful and reduces battery life.

### **Temperature Range for Normal Operation**

\*CELLYTE Solar TSG batteries have a wide operating temperature range -25 C. to +55 C. However for maximum life it is recommended to operate the battery at 15 C. to 30 C.

### **Plate Design and Paste Formulation**

\*SEC has optimised the plate and paste formulation to maximise the operating life of the battery. The High Tin (1.6%) / Calcium plate alloy is used to minimise positive plate corrosion, extend battery life and cycling capability. SEC's special paste formulation will provide excellent recovery from deep discharge, with low self discharge to ensure maximum storage time.





## CELLYTE 6-12TSG Bloc Data & Dimensions

SEC Battery Type	Capacity C/100 1.80 vpc	Capacity C/20 1.75 vpc	Capacity C/5 1.75 vpc	CCA at -18 C 0 F.	CCA at 0 C. 32 F.	Short Circuit Amps	Internal Resistance $\Omega$ Ohms	Female Terminal Type	Battery Weight		Overall Length		Battery Width		Dimensions Height	
									KG	lbs	Inch	mm	Inch	mm	Inch	mm
									6TSG 130*	130	120	92.9	760	1010	3200	3.0
6TSG 220*	221	200	155	1150	1440	5000	2.3	FT 5	31.5	69.3	12.7	323	7.01	178	9.25	235
6TSG 250	255	230	178	1240	1650	5400	2.1	FT 5	33.0	72.6	9.57	243	7.40	188	10.8	275
12TSG 20**	18.8	17.0	13.2	110	165	750	12	FT 3	6.0	13.2	7.07	180	2.99	76	6.61	168
12TSG 30**	28.8	26.0	20.1	190	250	1100	8.2	FT 3	10.0	22.0	6.54	165	4.96	127	6.93	176
12TSG 40	34.3	31.0	24.0	240	320	1500	7.3	FT 3	11.0	24.2	7.72	196	5.16	131	6.34	161
12TSG 50	46.5	42.0	32.5	260	350	1700	6.0	FT 3	14.8	32.56	7.76	197	6.54	166	6.69	170
12 TSG 60	60.9	55.0	42.6	280	380	1900	5.6	FT 3	19.0	41.8	9.02	229	5.43	138	8.43	214
12 TSG 70	72.0	65.0	50.6	390	510	2000	5.5	FT3	21.3	46.9	13.8	350	6.61	168	7.05	179
12TSG 80	77.5	70.0	54.2	410	550	2100	5.4	FT 3	25.5	56.1	10.2	259	6.61	168	8.44	215
12TSG 90	88.6	80.0	61.9	460	620	2400	4.5	FT 3	26.5	58.3	10.2	259	6.61	168	8.46	215
12TSG 100	99.6	90.0	69.7	510	680	2650	4.3	FT 3	30.5	67.1	12.1	307	6.65	169	8.46	215
12TSG 110	111	100	77.4	580	780	2900	3.9	FT 4	32.5	71.5	13.0	330	6.69	170	8.46	215
12TSG 120	122	110	85.1	710	960	3000	3.4	FT 4	34.0	74.8	13.3	339	6.81	173	8.86	225
12TSG 130	133	120	92.9	760	1020	3300	3.1	FT 4	36.0	79.2	13.3	339	6.81	173	8.86	225
12TSG 150	151	136	105	970	1300	4200	2.9	FT 4	42.5	93.5	13.5	342	6.81	173	11.22	285
12TSG 170	168	152	118	1060	1390	4500	2.7	FT 5	48.5	107	19.0	483	6.69	170	9.49	241
12TSG 190	190	171	132	1100	1410	4600	2.5	FT 5	57.0	125	20.9	530	8.23	209	8.86	225
12TSG 210	211	190	147	1150	1440	4700	2.3	FT 5	60.0	132	20.9	530	8.23	209	8.86	225
12TSG 250	255	230	178	1240	1670	5400	2.2	FT 5	66.0	145	20.6	522	9.45	240	8.86	225
12TSG 300	294	265	205	1240	1670	5400	2.2	FT 5	80.5	177	20.6	522	10.55	268	8.66	220

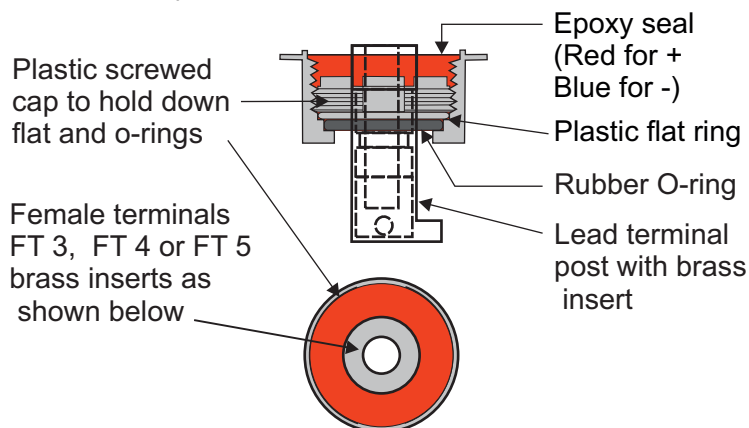
\* Gel size not yet available

\*\* Batteries too small for Catalyst

### The Worlds First - Monobloc Catalyst Battery

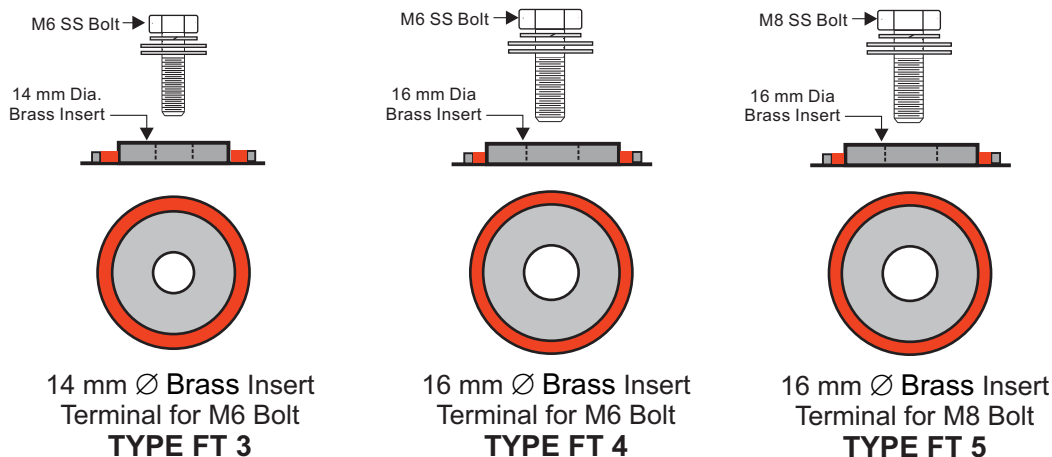
SEC CELLYTE Solar TSG Monobloc batteries are the first to use a **CatVent Catalyst** in the cell head space. This is done for several very good reasons. The Catalyst changes the electrochemical actions within the cell, this causes balance within the cell preventing the negative plate from depolarising over time and improves cell capacity. A healthy balance in the cell will be immediately obvious by a reduction of the cell's float current by up to 50%. What that means is a dramatic reduction, by up to 80% in cell gassing, reduced loss which delays cell dry out\*, reduced positive plate corrosion, reduced cell heating, reducing the risk of thermal run away and a reduction in the energy required to cool the cells / batteries.

\* **Please note:** Battery dry out is one of the major failure modes of VRLA batteries.



**TYPICAL TRIPLE SEAL DETAIL**

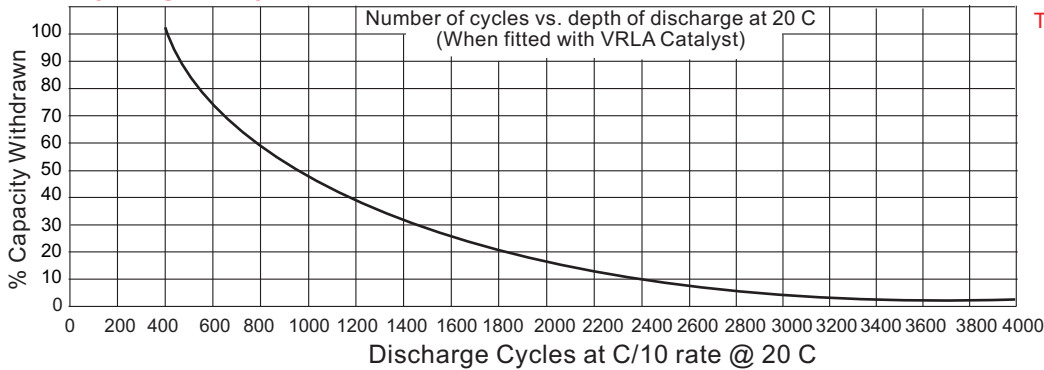
### TYPICAL FEMALE TERMINAL DETAIL







### Cycling Ability

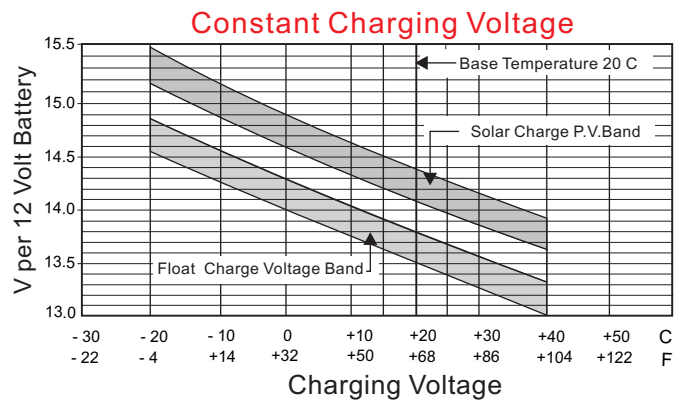
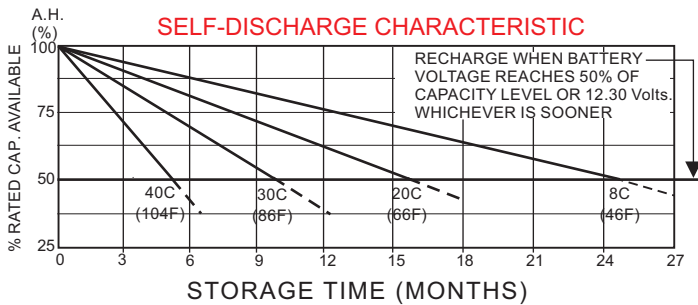


### TYPICAL CYCLIC PERFORMANCE

CAPACITY WITHDRAWN	CYCLES
100%	400
80%	550
50%	950
40%	1200
30%	1450
20%	1800
10%	2400
5%	3000
0-2%	4000

### BATTERY CYCLING - CYCLING ABILITY

The SEC **CELLYTE** 6-12TSG Range of batteries with Virgin pure lead / 1.6% Tin Grid, fitted with VRLA Catalyst, is designed for excellent cycling ability. **CELLYTE** 6-12TSG batteries are capable of 4000 charge / discharge cycles depending on the depth of discharge.



### Benefits of Catalyst in SEC VRLA Batteries

#### Catalyst Reduces Float Current

One of the most immediate, observable effects of installing a catalyst in a VRLA cell is a sudden drop in the float current. Typically float currents are one half or less when a catalyst is installed. Adding a catalyst to the cell prevents some of the oxygen reaching the negative plate and allows the negative plate to stay polarised. This means that less current needs to be supplied to the cell from the charging system, manifesting itself as lower float current, leading to the following benefit :-

#### \* Minimize water loss

Gasses are recombined into water inside the cell rather than exiting the cell. Too much gas leaving the cell can lead to premature dry-out and cell failure. Cell dry is a major cause of VRLA cell failure

#### \* Increased life

There are many potential failure modes of VRLA cells. A number of these failure modes can be mitigated by the catalyst technology such as: Cell dry out, positive plate corrosion, thermal runaway, capacity loss due to negative plate depolarization

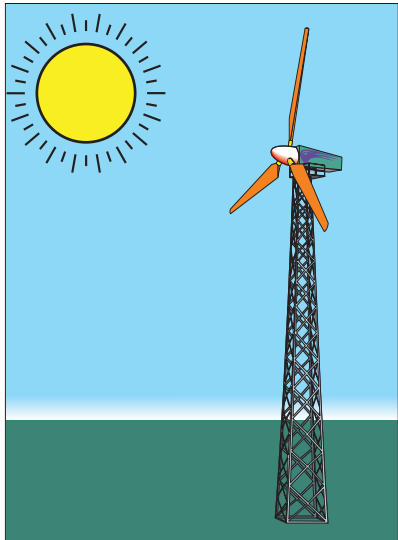
#### \* Minimize positive plate corrosion

A reduction in float current reduces the amount of over-charge on the positive plate which directly impacts the corrosion rate. The design life of a lead acid cell is based on the corrosion of the plate barring any other unforeseen failure modes.

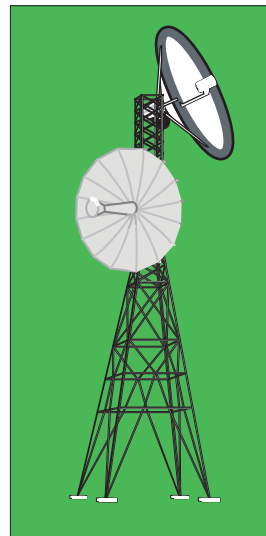
#### \* Maintain cell capacity

Many VRLA cells in service are failing capacity tests because their negative plates are depolarized. In fact significant capacity increases have been seen on some cells just by installing a catalyst.

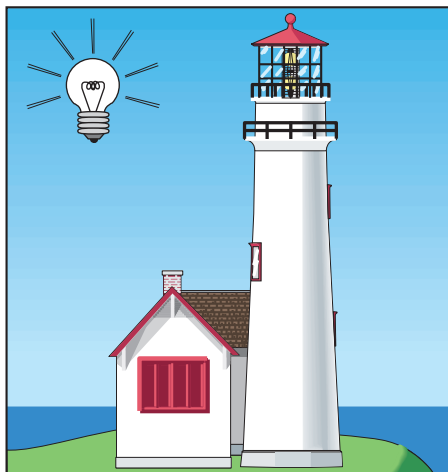
# Typical Solar Gel Battery Applications



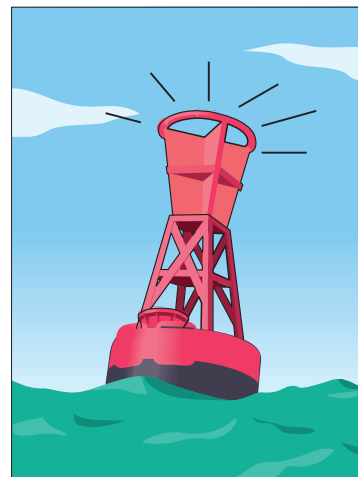
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