

# HBL



## Tubular Gel VRLA Battery

An Ideal solution for **Solar Photovoltaic Applications**



### Applications

- ◆ Rural Electrification
- ◆ Street Lighting / Home Lighting
- ◆ Telecommunication
- ◆ Offshore Platforms
- ◆ Hybrid Power Systems
- ◆ Navigational Aids

**HBL Power Systems Limited** is an acknowledged leader in the field of specialized batteries and DC power systems. A strong R & D Focus and a broad product range enables HBL to offer its customers the appropriate technology suited for their applications.

## Requirements of photovoltaic applications

Charge input from solar arrays some times is insufficient to keep the batteries fully charged. During sun-less days, batteries are discharged but not charged. These conditions result in battery operating in Partial State of Charge (PSOC), Cycling and Deep-cycling. Also, solar systems are installed in open atmosphere exposing the batteries to extreme temperatures. Other lead acid batteries fail in such conditions due to sulphation, stratification, corrosion and plate shedding. Moreover, remote solar installations make water top-up difficult and costs money.

*To meet such rigors of usage, HBL introduces a maintenance free [NO WATER TOP-UP] **Tubular Gel VRLA battery** with a combination of Tubular plate and gelled electrolyte, which is perfect fit for solar applications.*

## Innovative Product Features

### Grid

**Fine Cry**<sup>™</sup> high pressure die-cast tubular spines, manufactured with state of art designed machines for best corrosion resistance

### Alloy

Specially formulated **HBC**<sup>™</sup> alloy for best cyclic performance even at elevated temperatures

### Paste

**Tetra Base**<sup>®</sup> specially engineered paste formula to enhance the cycle life for deep discharge

### Tubular Plate

Microporous, high acid resistance tubular gauntlets along with improved slurry filled process improves the active material retention with in the positive plate for longer life

### Gel

Electrolyte gel filled with high surface silica using specially designed **Thixo Gel**<sup>®</sup> formula for improved high temperature performance

### Module

Improved modular enclosure design for better heat dissipation

## Features & Benefits

- ▶ Tubular positive plates - proven cycling and deep cycling capabilities
- ▶ Gelled electrolyte - no stratification and no failure due to PSOC
- ▶ Valve regulated - no water top up during service life
- ▶ Antimony free alloy - longer shelf life because of very low self discharge
- ▶ High pressure die-cast spine grids - rate of grid corrosion is very low & higher float life
- ▶ **SUPPLIED IN FILLED AND CHARGED CONDITION** - 100% capacity on first discharge
- ▶ Versatile in mounting - can be mounted both in horizontal and vertical orientation

# Technical Characteristics

## Performance

### Design Float life:

20 years life at 25°C on full float-2 Volt  
16 years life at 25°C on full float-12 Volt

### Cyclic Endurance:

2100 cycles as per IEC 61427  
1800 cycles as per IEC 896-2

### Design Cycle life:

#### 2 Volt

2100 cycles at 80% Depth of Discharge at 35°C  
6000 cycles at 20% Depth of Discharge at 35°C

#### 12 Volt

1575 cycles at 80% Depth of Discharge at 35°C  
4500 cycles at 20% Depth of Discharge at 35°C

### Conforming Standards :

IEC 60896-21 & 22  
TEC/GR/TX/BAT-003/02 March 2011  
IEC 61427  
DIN 43539 P5 (Deep discharge recovery)  
IEEE 1188, 1189

### Operating temperature:

Range : -20°C to +55°C

(Optimum life can be obtained at 35°C )

## Operation

### Charger settings:

Chargers of constant potential type with temperature compensation and current limit feature are to be used

### Standalone SPV System

Regulation Voltage:  $2.400 \pm 0.005$  V/cell at 25°C  
Charge Current Limit : upto  $0.40C_{10}$ A Max

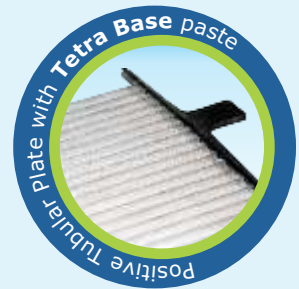
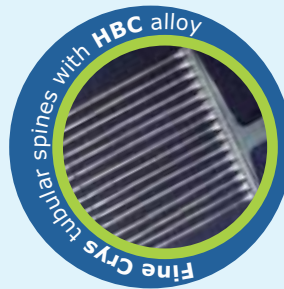
### Hybrid SPV System

Float Charge :  $2.250 \pm 0.005$  V/cell at 25°C  
Boost Charge :  $2.350 \pm 0.005$  V/cell at 25°C  
Charge Current Limit : upto  $0.40C_{10}$ A Max

### AC Ripple:

Ripple current shall not exceed 3% RMS w.r.t batteries nominal capacity

Ripple voltage shall not exceed 1% RMS w.r.t batteries nominal voltage rating



## Certifications:



ISO 9001



ISO 14001



OHSAS 18001



UL Recognized component



**2 volt is offered in Standard & Compact series.**

- ▶ Standard series in flame retardant PPCP container with powder coated MS modules
- ▶ Compact series in ABS container with MS modules also offered
- ▶ Compact series can also be offered as individual cells for installation in existing modules

# PRODUCT RANGE

Model	Nominal Capacity (Ah) at C10	No. of basic cells per module	Capacity at 1.85 ECV (Ah)				Basic Monobloc/Module Dimensions & Weights			
			120 Hr	100 Hr	48 Hr.	24 Hr.	Length (mm)	Width * (mm)	Height (mm)	Weight (Kg)

## 12 Volt Monoblocs

12 TGI 60	60 Ah	---	90	84	76	71	410	174	230	28.0
12 TGI 75	75 Ah	---	112	105	94	89	529	172	230	35.5
12 TGI 80	80 Ah	---	120	112	101	95	529	172	230	35.5
12 TGI 100	100 Ah	---	150	140	126	119	526	221	230	44.5
12 TGI 120	120 Ah	---	180	168	151	142	526	221	270	48.5
12 TGI 135	135 Ah	---	203	189	170	160	522	280	273	61.0
12 TGI 150	150 Ah	---	225	210	189	178	522	280	273	64.5
12 TGI 160	160 Ah	---	240	224	202	190	522	280	273	64.5

## 2 Volt Standard Series

2 TGI 200	200 Ah	8	300	280	252	237	755	375	261	130
2 TGI 240	240 Ah	8	360	336	303	285	755	386	310	154
2 TGI 280	280 Ah	8	420	392	353	332	755	375	338	170
2 TGI 300	300 Ah	4	450	420	378	356	755	386	209	100
2 TGI 320	320 Ah	4	480	448	404	379	755	386	209	100
2 TGI 360	360 Ah	4	540	504	454	427	755	375	224	117
2 TGI 400	400 Ah	4	600	560	504	474	755	386	251	125
2 TGI 440	440 Ah	4	660	616	555	522	755	386	251	129
2 TGI 480	480 Ah	4	720	672	605	569	755	386	280	147
2 TGI 500	500 Ah	4	750	700	631	593	755	386	280	147
2 TGI 625	625 Ah	3	938	875	788	741	579	629	216	146
2 TGI 700	700 Ah	3	1050	980	883	830	579	629	239	166
2 TGI 775	775 Ah	3	1163	1085	977	919	579	629	271	185
2 TGI 850	850 Ah	3	1275	1190	1072	1008	579	629	271	195
2 TGI 1000	1000 Ah	3	1500	1400	1261	1186	589	629	314	232
2 TGI 1175	1175 Ah	3	1763	1645	1482	1393	589	629	369	251
2 TGI 1250	1250 Ah	3	1875	1750	1576	1482	589	629	369	276

## 2 Volt Compact Series (for discharge currents equal to 3 hr. and above)

2 TGI-CD 200	200 Ah	8	300	280	252	237	805	388	227	124
2 TGI-CD 300	300 Ah	8	450	420	378	356	805	388	302	171
2 TGI-CD 400	400 Ah	4	600	560	504	474	805	388	207	113
2 TGI-CD 500	500 Ah	4	750	700	631	593	805	388	244	141
2 TGI-CD 600	600 Ah	4	900	840	757	711	805	388	282	165

Note:

- \* Width up to cell terminal (2 Volt Models)
- Dimensions Specified are without bottom mounting arrangements & front covers
- Dimensions given in the General arrangement drawing will supersede the dimensions mentioned in the catalogue

- Nominal Capacity is at a discharge rate of 10 hours to an end cell voltage of 1.80 V at 25°C
- Other special designs & configurations of the battery system for specific application shall be provided on request
- Seismic compliant modules for specific layouts shall be provided upon request at extra cost
- In accordance with its policy of continuous improvement the company reserves the right to change specifications and designs without notice. Illustrations, data, dimensions and weights given in this brochure are for guidance only and cannot be held binding on the company.

# HBL

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