



Green SC Solutions EN

HARNESSING SOLAR ENERGY



Enabling Reliability



TURNKEY PROJECTS

Plastic & Steel Recycling Plants

PVC/HDPE/PET/Bottle Manufacturing Plants
 TMT Bar, Hot Rolling, Cold Rolling, Metal Scrap Plants
 Tube Mill CDS CTL Plants

Tube Mill, CRS, CTL Plants





Customized Plants

- Corrugated Sheet Forming Plants
- Wastage Recycling Retreating Plants
- Paper Bag, Cup Making Plants
- Fish, Poultry Feed & Farming Plants
- TSR Natural Rubber Plants
- Laundry and Toilet Soap Plants
 Roof Sheet Farming Machine



Solar Power Plants

ON/OFF Grid Plants (1-20MW)
 Solar Planels, Modules & Arrays
 Batteries & Invertors
 Solar Street Light, Lanterns
 Solar Pumping System



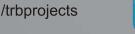
Food & Beverages Plants

- Mineral Water Plants
- Beer & Carbonated Beverages Plants
- Tomato Processing Plants
- Biscuits, Bread Plants
- Ice Cube Making Plants
- Food Packaging & Processing Plants
- Fruit Pulp Juice Plants

Edible Oil Expelling & Refining Plants

- Peanut, Palm & Palm Kernel oil Plants
- Cottonseed, Cocoa, Sesame, Moringa oil Plants
- Oil Refinery Plants
- Solvent Extraction Plants
- Oil Filling Plants
- Cattle Feed Plants

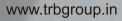














projet clé en main



Usines de recyclage de plastique et d'acier

- Plantes de fabrication de PVC / HDPE / PET / bouteille
- Barres TMT, laminage à chaud, laminage à froid,
 - usines de ferraille
- Usine de tubes, CRS, CTL

Centrales solaires

Solaire ON / OFF Grid Plants (1-20MW) Planules solaires, modules et tableaux Batteries & Inverseurs Lampadaire solaire, lanternes Système de pompage solaire



Alimentation et boissons

- Plantes d'eau minérale
- Bière & Boissons gazéifiées Plantes
- Usines de transformation des tomates
- Biscuits, Plats à Pain
- Cubes de glace
- Emballages et usines de transformation des aliments
- Usines de jus de pulpe de fruits



Usines d'expulsion d'huile comestible

- Huile de cacahuète, palmier et palmier
- Graines de coton, cacao, sésame, huile de Moringa
- Usines de raffinage d'huile comestibles
- Usines d'extraction de solvant
- Plantes de remplissage d'huile
- Aliments pour bétail





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Plantes personnalisées

- Usines de fabrication de tôles ondulées
- Wasting Recycling Retreating Plants
- Sac en papier, fabrication de tasse
- Poissons, aviculture et plantes agricoles
- TSR Caoutchouc naturel
- Usines de savon et de savon de toilette
- Machine de fabrication de toiles







PRODUCTS

0	Solar PV Modules
0	Solar Battery
9	Solar Home Lighting System
•	Solar Lantern
•	Solar Street Lighting System
•	Solar Charge Controller
0	Solar Hybrid Inverter / UPS

SOLUTIONS

0	Solar Power Pack
0	Solar for telecom use
3	Solar Power plant (Off grid / Stand-alone Roof-top / Ground mounted)
0	Solar Pumping System
•	Grid feed Solar Power Plant
8	Customized Engineering Solution



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INTRODUCTION

"TRB GROUP" is in the business for more than 50 years and growing its presence globally. **TRBEX IMPEX PVT. LTD.** is a flagship company of the TRB group which was established under the dynamic leadership of our Late Chairman Sh. Ved Prakash Aggarwal and his legacy is being carried forward by our current Chairman Sh. Rajesh Aggarwal.

PIONEER AND VISION

Sh. Rajesh Aggarwal, a modest man who made a humble beginning with a grand vision, has come a long way in 25 years, but if something has not changed along the way. It is his modesty and his vision "To provide products rich in quality and goodness across an ever growing network of consumers, with a motto of **'Everyday Everywhere'** making our products an essential part of the life for every individual".



Rajesh Aggarwal Managing Director

"From Humble Past to Glorious Present"

"The journey of a thousand miles is made up of a million steps , but the most important one is always the first step".

QUALITY POLICY

Quality is about trust. Each and every one of us has the power to influence this trust through our dedication towards our passion and leadership. "We are committed to manufacture and supply quality products which exceed customer satisfaction and market requirements". TRB has served Africa with wide variety of product and services. It has been in the business of accomplishing Turnkey Projects from past 10 years in different countries of African continent. Our Quality Policy summarizes the essential elements of our commitment for excellence.

TRB is a responsible group with a vision of understanding the consumer's need, quality, distribution, business acumen and above all, a constant drive to keep bettering ourselves.

We believe that with our continued commitment to excellence in every aspect of whole some production and distribution. We are going to keep discovering newer, bigger and brighter horizons for ourselves, our partners, and above all, the most valued – our consumers.





SOLAR PV MODULES MONO & POLY / MULTI CRYSTALLINE

- 3 20 Watt
- 30 130 Watt
- 140 300 Watt

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FEATURES Industry Standard Efficiency Industry Standard E



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SOLAR

SYSTEM SOLUTIONS

X TECHNICAL SPECIFICATIONS

Max Power @ STC	3	1	5	10	20	37	40	50	60	75	80	100	125	150	170	200	240	250	300
Open Circuit Voltage @ STC	10.69	10.60	21.38	21.38	21.38	21.38	21:74	21.74	21.74	21.83	21.82	21.82	21.82	21.82	44-10	44.10	37.20	37.50	43.12
Voltage at Max power @ STC	8.84	8.84	17.68	17.68	17.68	17.68	18.11	18:00	18-04	17.68	38,11	18.11	18.11	18,11	37.10	36.20	31.08	31.56	36.8
Short Circuit Voltage @ STC	0.39	0.61	9.31	0.63	1.79	2.27	2.15	2.98	3.62	4.60	4.73	5.91	7.81	8.75	4.85	5.92	11.25	8.30	1.80
Rated Current @ STC	0.36	0.58	0.29	0.58	1.68	2.10	2.21	2.80	3.37	4,25	4.42	5.55	7.28	8.35	438	5.56	7.78	7.84	8.35
Module weight in Kg. (approx)	0.65	0.96	0.96	7.41	35	142	42	531	-5.7	5.7	9.2	8.8	11.8	199	-34	- 19	182	18.2	22.1
Nos. of Solar Cells	18	18	36	36	30	36	36	36	36	36	36	36	36	36	72	72	60	60	72
Max Fuse Rating		10 Amp 10 Amp								15Amp									
Tc of Open Circuit Voltage		(-)	0.36 %	A				(-)	0.2884	s.A					(-) 0.2884 % /k				
Tc of Short Circuit Voltage		(+	0.06 %	блк				(+)	0.0352	жж					(+) 0.0352 % /k				
Tc of Power		(+)	0.43 %					(-)	0.4080	36./K					(-) 0.4080 % /k				
Junction Box Protection	IP6	5																	
Tollerance of Pmax	++-	3%																	
ormal Operating Cell Temp	45	°C +/- 2	•C																
Standard Test Condition (STC)	10	00 W/m	² ,25°C,	AM 1.5															
Max System Voltage	10	OOVDE																	

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0	Solar Module 3/6 Wp
0	SMF Battery 6V 4/9Ah
0	Lantern Unit with 3W LED/3W LED with Mobile Charger
	Designed for light output of about 4-5 Hrs daily
2012/1	
	SYSTEM COMPONENTS
0	Solar Module 10Wp

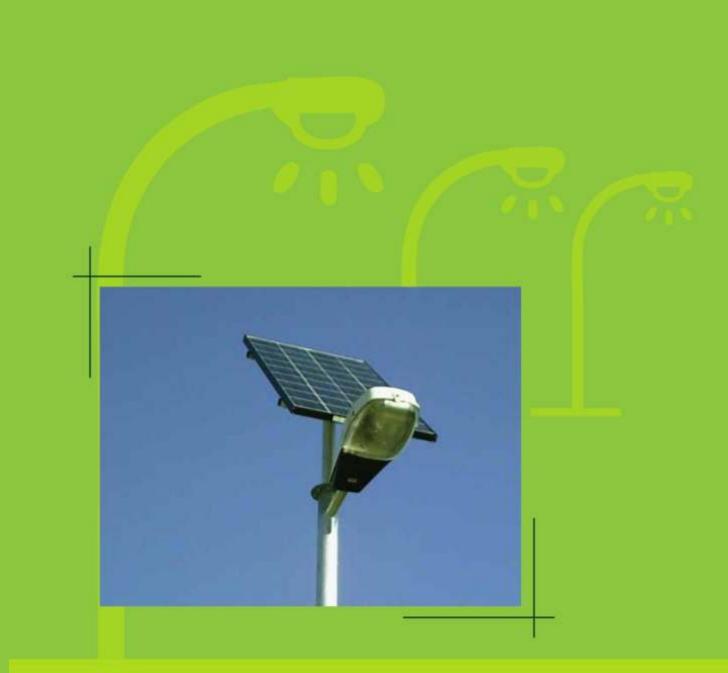
Designed for light output of about 4-5 Hrs daily



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SOLAR STREET LIGHTING SYSTEM

• CFL & LED based

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0	
	Solar Battery
Ø	Luminary (LED /CFL/VAPOUR/EQ)
0	Pole with Battery box 8 Structure
	Automatic Dusk to Dawn or customized
•	Automatic Dusk to Dawn or customized
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SOLAR SYSTEM SOLUTIONS

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** We offer complete EPC/turnkey solution





SOLAR **POWER PLANT** (Off grid /Stand-alone)

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SOLAR **POWER PLANT** GRID FEED

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SYSTEM COMPONENTS Image: Solar Panel Image: Solar Inverter Image: Structure 8 Hardwires Image: Transformer Image: Switchgear Image: Monitoring system





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** We offer complete EPC/turnkey solution

SOLAR

SYSTEM SOLUTIONS **∞EXIDE**



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SOLAR POWER PACK (0.5KW- 5.0 KW)

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NXT







SOLAR HYBRID INVERTER/UPS

Hybrid: Two input energy sources for Battery

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RANGE

0	650VA/12V & 850VA/12V
0	875VA/24V 8 1450VA/24V
0	3.0 KVA/36V
0	2.5KVA/48V, 3.0KVA/48V & 3.5 KVA/
0	5 KVA/48V & 5 KVA/96V
0	10 KVA/120V 8 10 KVA/180V

TECHNICAL SPECIFICATIONS

Parameters	Normal	Mode	UP	S Mode					
Solar Inverter									
Mains AC Voltage Range	100 - 280	V (Wide)	1	80 - 260 V					
Output Voltage @ 12V/24V/36V/48V	200 - 22	D V AC	200	0 - 220 V AC					
Output Frequency	50 Hz +2	0.5 Hz	50	50 Hz +/- 0.5 Hz					
Charge Over Time	< 40 m	nSec		< 10 mSec					
Battery Low Cut Voltage	10.5	Vdc							
Charging Current (Mains)	Normal Charg	e - 13 A +/- 1A							
	High Charge -	15 A +/- 1A							
Output Waveform	Pure Sine Wa	ve							
Normal / UPS Overload	120% (for 5 5	ec)							
Normal / UPS Short Circuit	300% (for 15e	ic]							
Technology	DSP Based Si	ne Wave Technol	logy						
Auto Reset Feature	Available								
Solar Power Panel	SL No.	Rating	System Voltage	SPV Panel	Charge Controller				
	1	650VA	12V	750WP (Max)	40A				
	2	850VA	12V	750WP (Max)	40A				
				1350WP (Max)	70A				
	3	875VA	24V	1500WP (Max)	40A				
	4:	1000VA	24V	1500WP (Max)	40A				
				2700WP (Max)	70A				
	- 55	1450VA	24V	1500WP (Max)	40A				
				2700WP (Max)	70A				
Solar Charge Controller	1								
Technology	DSP Based Int	telligent Battery	charging and						
	Charge Sharin								
Charge Controller Type	PWM								
Solar PV Current	650 VA - 40 A	mps							
	850 VA - 40 /	70 Amps							
	1000 VA - 40	70 Amps							
	1450 VA - 40	70 Amps							
Peak Battery Charging Current	30 A								
Charge Controller Efficiency	⇒/= 95%								
PV Reverse Polarity Protection	Available								
Reverse Current flow to PV									

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Introduction:

After 10 years of experience in VRLA with Shin Kobe, Exide (INDIA) has finally launched new CEIL NXT with the cycle life unmatched with competition nationally and internationally with its unique feature of 5 hours quick recharge option.

Features:

- Deep cycle application
- Fast recovery from deep discharge
- Extended cycle life
- Fast recharge capability
- Excellent charge retention
- International size
- Free from orientation constraints
- Eco-friendly

Specification Table

		1		Rat	ed Cop	acity (A	h) at 27°C			(D	imension	s in mm	1		(Kg.) Resistance	Maximum
Battery Type	Nominal Valtage (V)	20hr. 1.75 V/cell	10hr. 1.75 V/cell	5hr. 1.75 V/cell	3hr. 1.75 V/cell	1.75	90 mins. 1.75 V/cell	60 mins 1.75 V/cell	30 mins 1.75 V/cell	Overall Height +/-3	Height up to lid +/-3	Length +/-2	Width +/-2	Weight (Kg.) +/-5%		Discharge Current (Amps)
NXT 17-12	12	17	15.5	14.0	13.0	12.0	11.0	9.5	7.5	167	167	181	76	5.90	15	255
NXT 26-12	12	26	23.5	21.0	19.5	18.0	17.0	14.5	11.5	175	175	166	125	9.60	10	390
NXT 42-12	12	42	38.0	34.0	31.5	29.5	27.5	23.0	19.0	170	170	197	165	13.80	8	420
NXT 65-12	12	65	58.5	52.5	49.0	45.5	43.0	36.0	29.5	174	174	350	166	22.00	8	500
NXT 100-12	12	100	98.0	81.0	75.0	70.0	66.0	55.0	45.0	235	235	407	173	35.00	6	600
NXT 150-12	12	150	135.0	121.5	112.5	105.0	99.0	82.5	67.5	240	240	557	172	50.00	6	900
NXT 200-12	12	200	180.0	162.0	150.0	140.0	132.0	110.0	90.0	240	240	533	250	67.00	5	1200

Note: Batteries are despatched from factory at minimum 90% state of charge. Full capacity is achieved after a minimum ten numbers of charge - discharge cycle at full depth or 3 months of continuous float operation.

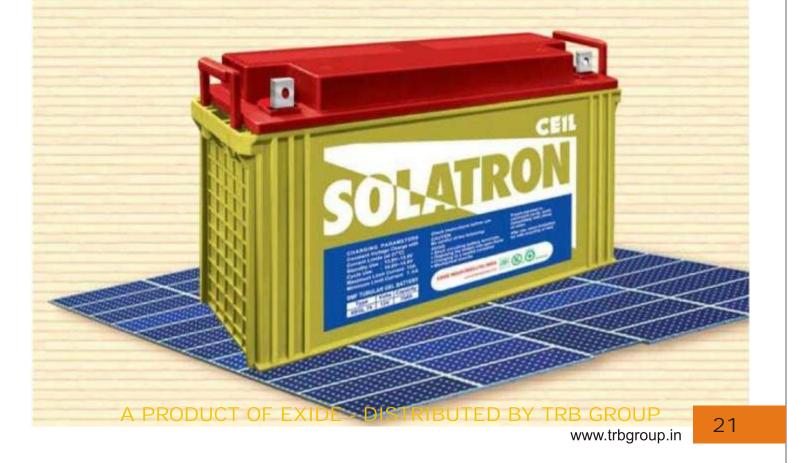
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Gel technology to store Solar energy





Exide India launches SOLATRON SGL series with unique GEL Technology specially developed for renewable energy applications. Exide India has integrated this technology in accordance with state-of-the-art manufacturing and quality procedure to satisfy environmental, economic & technical demands.

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SYSTEM

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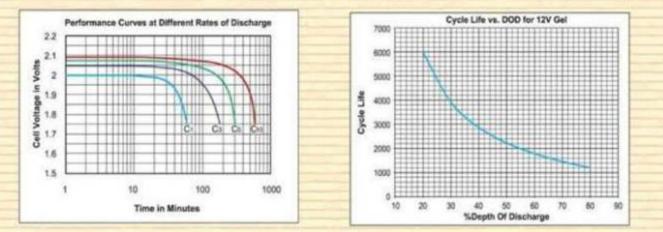
A key to a successful Solar Photovoltic System is the careful integration of all components and proper selection of battery. The Batteries are exposed to variable temperature, insufficient charging, daily cycling as well as operating in Partial State of Charge condition. Such applications need legendary toughness with reliability of tubular and maintenance free convenience of VRLA and nothing can be better than CEIL SOLATRON GEL series. The performance of Tubular Gel conforms to IEC 61427, IEC 60896 - 21/22.

Applications:

Solar Lantern
Solar street lighting
Solar photovoltic system
Solar power plant
Hybrid system power back-up Benefits:

Sealed maintenance free – no topping up ever
 Excellent deep discharge capability
 High recharge efficiency
 Superior cycle life . Less sensitive to temperature . Long shelf life . Greater design life - best value for money . Supplied factory charged

Battery Voltage Type (V)		Rated Cap at 2	acity (Ah) 7°C			(Dir			
	CI0 1.75V/cell	C20 1.75V/cell	Weight (Kg.) ± 5%	Internal Resistance (m-ohm)	Length ± 5	Width ± 5	Height ± 5	Max. Discharge Current	
65GL 40	12	40	45	19.4	10.0	350	166	174	240
6SGL 75	12	75	82	34.6	7.0	407	173	235	450
65GL 100	12	100	105	44.4	6.0	557	172	240	600
65GL 150	12	150	165	65.5	5.0	533	250	240	900
65GL 200	12	200	220	83.8	4.0	428	287	400	1200





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LOW MAINTENANCE TUBULAR BATTERY FOR SOLAR PV APPLICATION







For over 60 years, Ceil Industries Ltd., has pioneered battery technology in India. It is the only company in South and South East Asia which designs and manufactures lead acid batteries from 7Ah to 20400Ah. Exide offers the latest series of tubular batteries, manufactured in its state-of-the art ISO 9001 : 2008, ISO 14001: 2004 certified factories to meet the growing demand both in domestic and export market. Ceil 12V and 6V low maintenance Tubular battery for Solar photovoltaic application comes with high quality TORR Tubular plate and its performance characteristics conform to IS 13369 : 1992 with latest amendments.

PRODUCT FEATURES

TORR TUBULAR TECHNOLOGY

Available in SOLA-TUBULAR range
 PPCP
Container
 Tubular Positive Plates
 Pasted
Negative Plates
 High tensile, acid resistant Polyester
Gauntlets
 High porosity Envelope Separators
 Microporous Ceramic Vent Plug
 Heavy duty
Terminal
 Low resistance Fasteners.

Ceil Tubular Batteries have the spines or the positive plate support cast at high pressure (100 Bar) in imported HADI machine which ensures void free structure and consistant grain orientation and can protect the plate support from anodic corrosion. This in turn ensures higher reliability and Jonger life. Ceil Torr Tubular plates are also cast with low antimony content which reduces the topping up frequency, making the battery low maintenance type. This also keeps the float charging current at a lower value, thus minimises the total energy requirement needed to keep the battery in charged condition during standby float application.

APPLICATION : SOLAR HOME LIGHTING SOLAR STREET LIGHTING SOLAR PHOTOVOLTAIC POWER PLANTS TRAFFIC SIGNALLING

Benefits

- Specially designed for arduous SPV application.
- Manufacturing with TORR Tubular Technology which stands for reliable and consistent performance.
- Designed to operate in partial state of charge condition.
- Ideally designed for cyclic application.
- Superior voltage and energy output profile.
- · Excellent charging efficiency :
- ♦ AH efficiency In excess of 90% ♦ WH efficiency In excess of 80%
- Service life comparable with the best of the international brands.
 Designed cycle life at C10 discharge at 25°C :
 1500 surface to 50% DOD, a 2000 surface to 50% DOD, a 5000 surface to 50% DOD.
 - 1500 cycles to 80% DOD
 4 3000 cycles to 50% DOD
 5000 cycles to
 20% DOD
- Supplied in factory charged condition ensures optimal quality and ready to us.
- Ultra low maintenance
- Low rate of self discharge
- 6V mono-blocks are supplied with MS Cabinet (fitted suitable exhaust system) or MS Stand (knock down condition) in 48V configuration - ideally designed for outdoor application.

Charging Characteristics of Solar Batteries:

Model of Operation	Voltage Setting per mono-block uni	for ambient temperature 25-30°C	Current Settings
	12V mono-block	6V mono-block	
Float Voltage	13.7V ± 0.1V	6.85V ± 0.1V	Maximum - 20% of battery Ah capacity
Bulk Voltage	14.5V ± 0.1V	7.25V ± 0.1V	Minimum - 10% of battery Ah capacity
Low Voltage Disconnect	11.1V ± 0.1V	5.55V ± 0.1V	

Temperature Compensation : (reference 25°C) Float : -18mV/°C/12Vunit

Cyclic

 /°C/12Vuni	

Technical Data

Type of	Nominal	Capacity @C10	Cell W	leight	01	verall Dimension		Container
Battery Voltage	to 1.80 v.p.c at 27°C	Without Acid ± 5%	With Acid ± 5%	Length ± 5	Width ± 5	Height* ± 5	Туре	
	(Ab)	(Kg)	(14g)	(mm)	(mm)	(mm)		
6LMS20L	12	20	12.0	18.0	260	172	240	PPCP
6LMS40	12	40	12.0	23.5	410	176	282	PPCP
6LMS40L	12	40	14.0	26.5	410	176	282	PPCP
6LMS75	12	75	20.0	32.0	410	176	282	PPCP
6LMS75L	12	75	22.5	42.5	530	220	287	PPCP
6LMS100L	12	100	30.0	57.0	500	187	416	PPCP
6LMS120L	12	120	31.4	48.5	530	220	287	PPCP
6LMS150L	12	150	44.0	66.3	500	187	416	PPCP
6LMS200L	12	200	54.0	78.0	500	187	416	PPCP
3LMS300	6	300	44.0	66.3	500	187	416	PPCP

*Height upto Terminal Top



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SOLAR HOME LIGHTING SYSTEM

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SYSTEM COMPONENTS

(Solar Module
	Solar Battery
Ø	Luminary (LED /CFL)
	Solar Hybrid Inverter / UPS
Ο	Structure for module
	Cables & accessories













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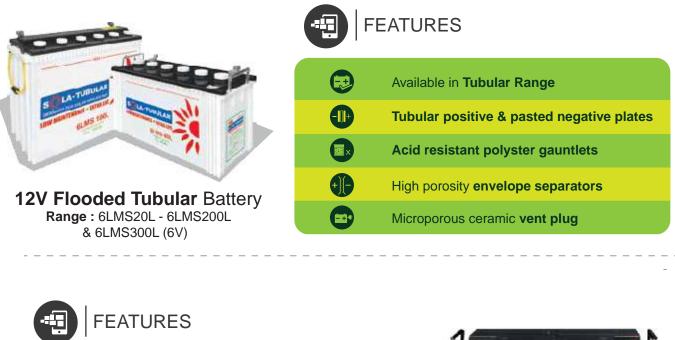
SOLAR BATTERIES

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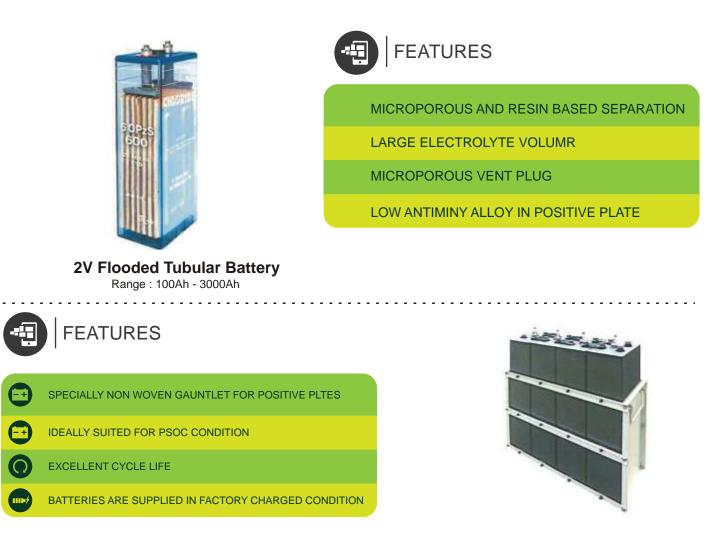




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2V Flooded Tubular Battery Range : 300Ah - 1000Ah



AGM VRLA Battery Range : 160Ah - 5000Ah







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SOLAR FOR TELECOM TOWER



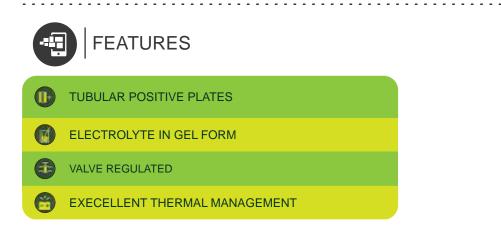






2V Tubular Gel Range : 200Ah - 1000Ah

	ROBUST TORR TUBULAR SPINE WITH Pb-Ca-Sn ALLO
	NEGATIVE PLATE Pb-Ca ALLOY GRID
i	FLAME ARRESTING VENT PLUG HOUSING LONG LIFE
	RUBBER SAFETY VELVE
	BOLT ON TERMINAL WITH BRASS INSERT





2V Tubular Gel Battery Range : 200Ah - 1000Ah

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** Mismatch of Telecom Revolution & Power availability











COMMERCIALS

- With reduction in the cost of Crystalline Solar PV cell/Modules , Solar Power reaching grid parity soon at this point Cost of Solar Power equals to Grid Power
- Payback time In large solar power for captive use is about 3-4 years
- It is cheaper than DG power
- It can be used to reduce diesel consumption
- Moreover use of solar complies with regulatory requirement

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MAINTENANCE & SERVICING

- E Requires minimal maintenance
- Proven Technology
- Batteries & Inverters comes with 5 years warranty
- Solar Panel comes with 25 years power generation warranty
- Just cleaning of Solar Panel surface with water
- E Low Maintenance cost

COMPLETE SOLUTION

- We offer Complete Solution
- Solar energy available for certain hours everyday
- The strength (irradiance) varies even during its availability
- Thus we need to collect necessary energy when it is available
- For a perfect solution one needs knowledge, skills and experience besides good quality products
- However, only products are not sufficient since mere supply of products does not ensure a proper solution
- Battery back up system is most suitable for African Countries
- We are the Leading Battery manufacturer
- Our Battery comes with 5 years warranty in India

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INSTALLÉ AVEC SUCCÈS

PROJETS EN AFRIQUE OCCIDENTALE ET CENTRALE

Tube Mill Plants Rolling Mill Plants Corrugated Sheet Forming Plants Cut to Length & Slitting Lines Cattle Feed Plants Poultry Farms Blow Moulding Roto Moulding & Injection Units Mineral Water Plants Solar on/off Grid Plants Plastic Recycling Plants & packaging Units







TRB GROUP

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