









# LITHIUM-ION BATTERY

PRODUCT BROCHURE

## TIANNENG INTERNATIONAL CO.,LIMITED

-  +86-572-6058015
-  +86-572-6058015
-  [info@tianneng.com](mailto:info@tianneng.com)
-  [www.tiannengglobal.com](http://www.tiannengglobal.com)
-  Block C.6/F shun shing plaza, 50 stanley street, central, Hong Kong

-  Tianneng Group Official
-  Tianneng Group Official (@GroupTianneng)
-  Tianneng Group







**\$10.8 billion**

2022 Annual Sales

**A+H Listed**

6888.19.SH/00819.HK

**4000+**

Patents

**No.29**

Global New Energy Enterprise Ranking

# Company Profile

Tianneng is a Global Leading New Energy Company committed to providing environmentally-friendly battery solutions for various industries worldwide since 1986.

Tianneng now has more than 30,000 employees and more than 130 subsidiaries around the world. There are 17 production bases in 7 provinces in China and 1 oversea manufacturing center in Vietnam is under construction. Tianneng set up 7 R&D centers to constantly develop technology and keep innovation in the area of lead acid batteries, lithium batteries, hydrogen Fuel Cells, and Sodium-ion batteries.

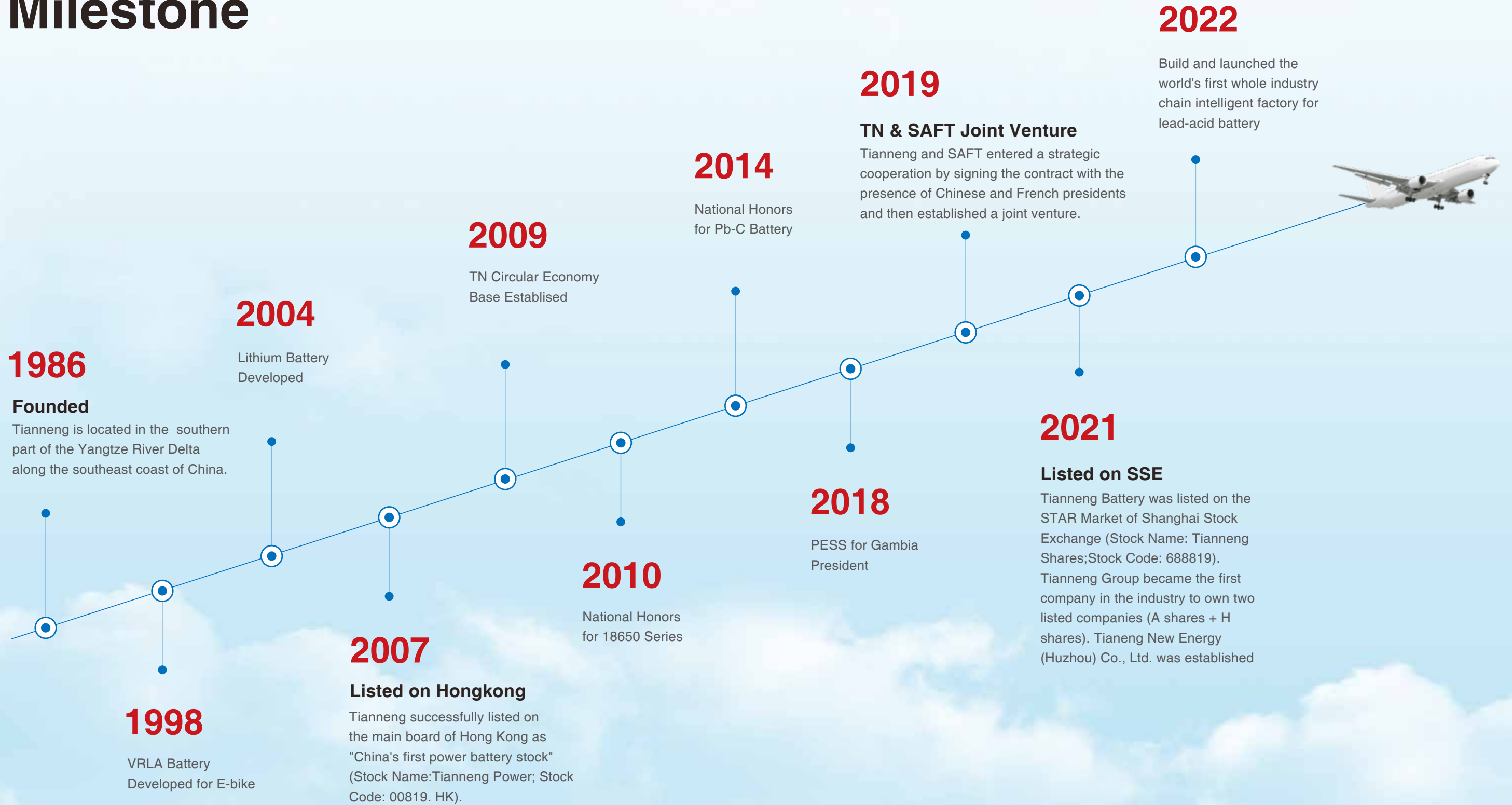
## Honor:

- Top 10 in the Chinese battery industry
- Top 500 Chinese enterprises
- Global top 500 new energy enterprises

## Main Business areas:

- Battery and system Solutions (Motive, SLI, Energy Storage)
- Battery Recycling Solutions (Lead Acid battery recycling, Lithium-ion battery recycling)

# Milestone



# Global Footprint

- 100+ Countries Footprint.
- 11+ Oversea Branches.
- Tianneng has a global footprint around the world, our business covering more than 100 countries and regions.

- **Market Performance**  
2022 Global Delivery: **110Gwh+**

## Headquarters

**HQ:** Huzhou, Zhejiang, China  
**INT HQ:** Hongkong, China

## Branch

**APAC:** Vietnam, Thailand, Indonesia, Philippines, Australia & New Zealand

**India:** India

**MENA (Middle East and North Africa) :** South Africa, Turkey

**Americas:** America, Argentina, Colombia

**Europe:** Netherlands, Germany



● Headquarters    ● Office    ● Office & factory

# Technology R&D

## Strong research and development strength

 <p><b>170+</b> Define industry standards</p>	 <p><b>4800+</b> Industry patents</p>	 <p><b>2</b> CNAS laboratories</p>
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### Excellent safety performance

The diaphragm adopts wet-process PE high-strength film, the battery self-discharge rate is low, and the safety performance of heavy impact and extrusion is excellent; A variety of safety additives are added to the electrolyte, and the battery performs well in safety tests such as overcharge, hot box, and short circuit; The cap adopts PTC thermistor element and CID power-off structure, and the safety performance is further guaranteed;



### Long cycle life

The ternary lithium battery adopts NCM (523) coating series, and the negative electrode adopts secondary particle artificial graphite, which has excellent cycle performance and can be cycled more than 1200 times at room temperature (EOL 70%); LFP lithium battery products have been stocked with ultra-long life products (10,000 times) that meet the 15-year warranty, meeting various practical application needs in domestic and overseas markets;



### The structure of the battery cell is better to meet the high current capacity

Through the finite element thermal simulation analysis of the electrode, the lightweight of the current collector and the separator, the hole structure of the negative electrode is improved, the cell structure is optimized to the maximum, the performance is improved, and the safety is guaranteed; the maximum meets 1C charging and 3C discharging;



### Cells with high energy density and lighter weight

Better ternary and LFP material design greatly improves energy density; NCM reaches 200Wh/kg, LFP reaches 165Wh/kg;



### Better high temperature performance

55 °C discharge capacity ratio > 100%



### Customized Design BMS

Customized design according to application scenarios, more precise control and management, more protection, and smarter; Sufficient margin is reserved for components, and the selection is more reasonable;



### Integrated pack bracket design

Compared with the splicing brackets on the market, the integrated battery bracket is adopted, and the structure is firmer and more stable, while meeting mass mechanized production;



# Intelligent Manufacturing



## Intelligent manufacturing

Fully automatic production line, control the cleanliness to 100,000 grades; control the temperature at  $25^{\circ}\text{C}\pm 3^{\circ}\text{C}$ ;

## Whole process quality management

Realize the quality control of the whole process of products and the management of the whole life cycle to achieve continuous improvement and quality improvement



# Li-ion Cell Solution

Tianneng provides a variety of cell solutions, including NCM cylindrical cell, LFP cylindrical cell, LFP pouch cell, LFP prismatic cell, to meet the motive, traction, telecom, energy storage, reserve and other application scenarios.

## Product Series

Cylindrical Cell

Pouch Cell

Prismatic Cell



# Cylindrical Cell

## Production Appearance



## APPLICATION

- Moped
- E-bicycle
- E-scooter
- Electric tools
- 3C products

## PRODUCT FEATURE

### NCM

- **Cycle Life:**  
800 times@100%DOD, 0.5C/1C,25 °C
- **Energy Density:**  
up to 200 Wh/kg.
- **Self-discharge Rate:**  
≤4%, 100%SOC under room temperature one month.
- **Operating Temperature:**  
Charging: 0~45°C;  
Discharging: -20~60°C;  
Storage: -10~45 °C .

### LFP

- **Cycle Life:**  
1500 times@100%DOD,0.5C/1C,25 °C
- **Energy Density:**  
up to 140Wh/kg.
- **Self-discharge Rate:**  
≤4%, 100%SOC under room temperature one month.
- **Operating Temperature:**  
Charging: 0~45°C;  
Discharging: -20~60°C;  
Storage: -10~45 °C .

## Cylindrical Cell (NCM)

S/N	Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Operating Voltage Range (V)	Max continuous Discharging Current (A)	Material
1	TLNC18650-2000P	3.6	2.1	2.75~4.20	3C	NCM
2	TLNC18650-2600P	3.6	2.55	2.75~4.20	3C	NCM
3	TLNC18650-2600R (Low resistance)	3.6	2.55	2.75~4.20	3C	NCM
4	TLMFC26700-4000P	3.7	4.0	2.75~4.20	2C	NCM+LMO
5	TLMFC26700-4800P	3.7	4.8	2.75~4.20	2C	NCM+LMO

## Cylindrical Cell (LFP)

S/N	Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Operating Voltage Range (V)	Max continuous Discharging Current (A)	Material
1	TLFC26700-4000P	3.2	4.0	2.00~3.65	2C	LFP
2	TLFC26700-4500P	3.2	4.5	2.00~3.65	2C	LFP
3	TLFC32700-6000	3.2	6.0	2.00~3.65	3C	LFP

# Pouch Cell

## Production Appearance



### PRODUCT FEATURE

- **Cycle Life:**  
up to 2000 cycles@100%DOD.
- **Energy Density:**  
up to 162Wh/kg.
- **Self-discharge Rate:**  
≤ 4%, 100%SOC under room temperature one month.
- **Operating Temperature:**  
Charging: 0~45°C;  
Discharging: -20~60°C;  
Storage: -10~45 C.

### APPLICATION

- E-scooter
- Low speed EV
- Golf Cart
- Electric forklift
- Telecom
- household energy storage

### Pouch Cell

S/N	Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Operating Voltage Range (V)	Dimension (mm)			Max continuous Discharging Current (A)	Material
					Thickness (Max.)	Width (Max.)	Height (Max.)		
1	TLFPO11146300-50	3.2	50	2.50~3.65	11.2	146	300	3C	LFP
2	TLFPO13161230-50	3.2	50	2.50~3.65	13.0	161	232	3C	LFP

# Prismatic Cell

## Production Appearance



### PRODUCT FEATURE

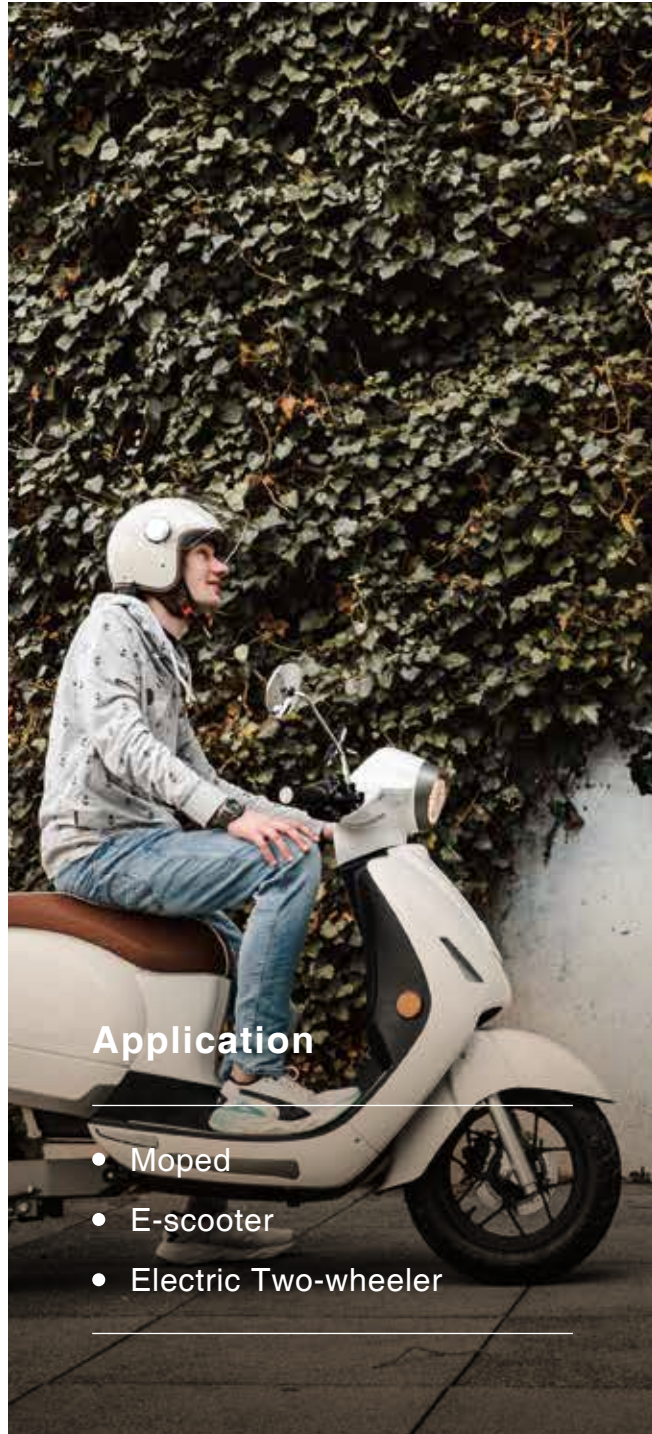
- **Cycle Life:**  
4000-6000cycles@100%DOD
- **Energy Density:**  
up to 156 Wh/kg.
- **Self-discharge Rate:**  
≤ 4%, 100%SOC under room temperature one month.
- **Operating Temperature:**  
Charging: 0~45°C;  
Discharging: -20~60°C;  
Storage: -10—45 C

### APPLICATION

- Low speed EV
- Golf Cart
- Electric forklift
- Telecom
- Household energy storage
- Industrial and commercial energy storage

### Prismatic Cell

S/N	Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Operating Voltage Range (V)	Dimension (mm)				Max continuous Discharging Current (A)	Material
					Thickness	Width	Height	Total Height		
1	TLFPR50160119-100	3.2	100	2.50~3.65	50±0.5	160±0.5	116±0.5	119±0.5	1C	LFP
2	TLFPR79148120-150	3.2	150	2.50~3.65	79.2±0.5	148.5±0.5	116.5±0.5	120.5±0.5	1C	LFP
3	TLFPR71173207-280	3.2	280	2.50~3.65	71.7±0.5	173.8±0.5	204.9±0.5	207.5±0.5	1C	LFP



**Application**

- Moped
- E-scooter
- Electric Two-wheeler



**Application**

- Golf Cart
- Electric Tricycle
- Low-speed EV



**Application**

- AGV/UGV
- Sweeper
- Wheelchair

# Motive Battery Solution

We provide green Li-ion motive battery solutions for a variety of application scenarios, involving commuting, sightseeing, distribution, sanitation and more. Our power products have long service life, strong power, large capacity, long mileage and stable product performance.

**Product Series**

TMLiN Series

TMLiF Series

# TMLiN Series

NCM Material Battery for Motive

The TMLiN series are specially designed for two-wheeled electric vehicles, in line with most two-wheeled electric vehicle models, excellent quality, strong reliability, excellent user reputation.

## Product Appearance



### PRODUCT FEATURE

- **Cycle Life:**  
≥800 times@100% DOD.
- **Capacity:**  
≥70%@-20°C, ≥95%@55°C.
- **Energy Density:**  
About 130wh/KG
- **IP Grade:**  
IP65/IP67
- **Temperature:**  
Charging: 0~45°C;  
Discharging: -20~60°C;  
Storage: -10~45°C.

### APPLICATION

- E-bike
- Electric motorcycle
- E-scooter
- Electric tricycle
- AGV

### TMLiN Series

S/N	Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Dimension (±2mm)			Weight (Kg)±5%	Recommended motor Power	Recommended charger Current	Max continuous Discharging Current (A)
				L	W	H				
1	TMLiN-2412S1	25.9	12	142	100	80	1.6	≤110W	2	6
2	TMLiN-2424S1	25.2	24	245	135	120	5.5	≤800W	5	48
3	TMLiN-4808S2	48	8	228	117	74	2.93	≤350W	2	8
4	TMLiN-4810S1	48	10	370	110	75	4	≤350W	3	10
5	TMLiN-4810S4	48	10	228	117	74	2.96	≤350W	2	10
6	TMLiN-4810S5	48	10	480	90	60	3.73	≤350W	3	10
7	TMLiN-4812S1	48	12	370	110	75	4.2	≤350W	3	12
8	TMLiN-4812S2	48	12	370	132	90	4.8	≤350W	3	12
9	TMLiN-4812S7	48	12	248	142	72	4.15	≤350W	3	12
10	TMLiN-4815S1	48	15	370	132	90	5	≤350W	3	15
11	TMLiN-4815S8	48	15	248	142	72	4.2	≤350W	3	15
12	TMLiN-4816S4	48	16	181	156	160	5.93	≤350W	3	16
13	TMLiN-4820S1	48	20	440	132	90	6.5	≤500W	5	20
14	TMLiN-4820S4	48	20	181	156	160	5.98	≤500W	5	20
15	TMLiN-4820SG	48	20	283	147	76	5.7	≤500W	5	20
16	TMLiN-4824S2	48	24	250	152	147	8.5	≤500W	5	24
17	TMLiN-4824S3	48	24	470	139	90	7.7	≤350W	3	15
18	TMLiN-4824S5	48	24	184	156	263	9.6	≤500W	5	24
19	TMLiN-4824S6	48	24	184	156	263	8.4	≤500W	5	24
20	TMLiN-4824S7	48	24	184	156	263	8.9	≤500W	5	24
21	TMLiN-4825S1	48	25	181	156	235	8.7	≤500W	5	25
22	TMLiN-4828S3	48	28	184	156	263	9.05	≤500W	5	28
23	TMLiN-4828S4	48	28	470	139	90	8.2	≤350W	3	15
24	TMLiN-4828S5	48	28	184	156	263	9.8	≤500W	5	28
25	TMLiN-4858S1	48.1	58	772.5	240	65	17	≤1200W	12	60
26	TMLiN-4870S1	51.8	70	580.4	120	245	23	≤1500W	14	60
27	TMLiN-4870S2	50.4	72	365	330	168	28	≤1500W	14	60
28	TMLiN-6020S1	60	20	181	156	215	7.7	≤800W	5	20
29	TMLiN-6020S4	60	20	184	156	263	9.5	≤800W	5	20
30	TMLiN-6025S1	60	25	184	156	263	9.5	≤800W	5	25
31	TMLiN-6030S1	60	30	280	210	155	11.7	≤1000W	5	30
32	TMLiN-7220S1	72	20	181	156	235	8.94	≤1200W	5	20
33	TMLiN-7230S1	72	30	280	210	155	13.45	≤1200W	5	30
34	TMLiN-7230S2	72	30	230	180	315	15.5	≤1200W	6	30

# TMLiF Series

LFP Material battery for Motive

The TMLiF series are specially designed and developed for Tricycle、Golf、AGV/UGV、Clean Robot etc, the service life can reach 1500~3500 times, excellent quality, strong reliability, excellent user reputation.

## Product Appearance



### PRODUCT FEATURE

- **High reliability:**  
LiFePO4 cell.
- **Fully replaceable with current batteries (Lead-acid, Ni-Cd).**
- **Maintenance free:**  
50% lighter than lead acid batteries.
- **Long cycle life:**  
1500-3500@80%DOD

### APPLICATION

- Electric tricycle
- Electric motorcycle
- Golf
- AGV/UGV
- Clean Robot
- Low-speed EV

### TMLiF Series

S/N	Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Dimension (±2mm)			Weight (Kg)±5%	Recommended motor Power	Recommended charger Current	Max continuous Discharging Current (A)	Remark
				L	W	H					
1	TMLiF-2440S1	25.6	40	280	198.8	161	10.8	≤1000W	20	40	AGV
2	TMLiF-24100S1	25.6	100	376	319.2	160	24	≤1200W	20	100	AGV
3	TMLiF-2460S1	22.4	60	290	286	200	20.5	≤1000W	30	100	AGV
4	TMLiF-4820S3	48	20	184	156	263	9.2	≤500W	5	20	
5	TMLiF-4820S4	51.2	20	205	145	180	9	≤500W	5	20	Replace lead acid
6	TMLiF-4824S4	48	24	184	156	263	10	≤500W	5	24	
7	TMLiF-4840S1	48	40	410	250	120	18.5	≤1000W	20	40	AGV
8	TMLiF-4855S2	51.2	55	430	300	150	25.4	≤1500W	10	55	AGV
9	TMLiF-4860S1	48	60	460	300	180	24	≤1500W	12	60	AGV
10	TMLiF-6020S1	64	20	220	210	174	11	≤800W	5	30	Replace lead acid
11	TMLiF-6020S2	64	20	210	183	180	11	≤800W	5	30	Replace lead acid
12	TMLiF-6021C1	60.8	21	210	183	180	11	≤800W	5	30	
13	TMLiF-6030S1	60	30	183	156	285	15	≤1000W	9	30	
14	TMLiF-6030S3	64	30	200	160	333	17.7	≤1000W	15	50	AGV
15	TMLiF-6050	60.8	52	480	266	248	36.8	≤2000W	25	50	
16	TMLiF-6060C1	60.8	60	420	240	210	32	≤2000W	15	60	
17	TMLiF-60100C1	60.8	100	700	310	210	55	≤3000W	20	100	
18	TMLiF-60150C1	60.8	150	760	420	240	85	≤4500W	30	150	
19	TMLiF-6450S5	64	50	235	180	365	28	≤1000W	15	50	
20	TMLiF-7221C1	73.6	21	216	205	180	12.5	≤1000W	5	30	
21	TMLiF-7230S1	73.6	30	220	160	333	19.65	≤1500W	15	50	AGV
22	TMLiF-7245C1	73.6	45	460	240	210	25	≤1500W	10	45	
23	TMLiF-7250C1	73.6	50	460	240	210	26.5	≤2000W	12	50	
24	TMLiF-7260C1	73.6	60	520	240	210	40	≤2000W	15	60	
25	TMLiF-72100C1	73.6	100	700	310	210	70	≤3500W	20	100	
26	TMLiF-72150C1	73.6	150	910	420	240	95	≤5000W	30	150	
27	TMLiF-4855S1	51.2	55	470	334	208	27	≤1500W	20	55	Golf Cart
28	TMLiF-48100S1	51.2	100	600	300	250	47	≤2500W	20	100	Golf Cart
29	TMLiF-48100S2	51.2	100	440	330	240	44	≤2500W	20	100	Golf Cart
30	TMLiF-48100S3	48	100	520	338	150	40	≤2500W	20	100	AGV
31	TMLiF-48150S1	51.2	100	460	370	248	57	≤2500W	20	150	Golf Cart
32	TMLiF-48200S1	48	210	1104	190	316	92	≤5000W	40	200	Golf Cart
33	TMLiF-6045S2	60.8	45	420	240	210	22.5	≤1200W	10	45	Golf Cart
34	TMLiF-72100S1	76.8	100	550	380	250	65	≤3500W	30	100	Golf Cart
35	TMLiF-742100S1	73.6	210	900	465	245	140	≤7000W	50	210	Golf Cart



# Traction Battery Solution

Tianneng provides lithium-ion power battery solutions for traction applications such as electric forklift Forklift and stacker Stacker. The products have very good user experience, high stability, easy operation, low noise, and no pollution. They are widely used in warehousing, logistics, Handling and other places.

## Product Series

TILiF Series

# TILiF Series

Lithium-ion battery for Traction

The TILiF series are used for all kinds of forklift and other industrial vehicles traction batteries, mostly customized according to customer needs, products with high power and reliability.

## Product Appearance



### PRODUCT FEATURE

- **Long cycle life, 3500@80%DOD;**
- **High safety:**  
Meet the safety standards for electric vehicles and can withstand the most stringent safety requirements such as squeezing, needling and burning
- **High rate:**  
According to the demand, the maximum 2C rate charging and the maximum 5C rate discharge
- **Easy replacement:**  
according to the volume and weight of the original lead-acid battery design replacement;
- **Temperature adaptability:**  
Charging: 0~45°C;  
Discharging: -20~60°C;  
Storage: -10~45°C.

### APPLICATION

- Electric Forklift
- Electric Four-wheels
- Sweeper
- Electric Tricycle
- Lift Truck

### TILiF Series

S/N	Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Dimension (±2mm)			Total Weight (Kg)±5%	Counter weight (Kg)±5%	Rated discharging current(A)	Peak discharging current(A)	Charge port	Discharge port	Forklift model
				L	W	H							
1	TILiF-24206S1	25.6	206	620	210	610	82.5	N	150	200@10s	SBE160	SBE160	Crown Pallet forklift
2	TILiF-24206S2	25.6	206	750	356	560	285	160	250	300@5s	REMA320	REMA320	Xianfeng/XTA40
3	TILiF-24206S3	25.6	206	750	356	560	290	160	250	300@5s	REMA160A		Xianfeng/XTA40
4	TILiF-24206S4	25.6	206	650	248	535	96	N	100	200@10s	REMA160A	SB175A	Heli pallet forklift
5	TILiF-24206S5	25.6	206	657	197	675	91	N	100	300@10s	REMA80		BT forklift
6	TILiF-24206S6	25.6	206	657	197	675	92	N	100	300@10s	REMA160A		POHONG
7	TILiF-24206S7	25.6	206	657	245	570	260	N	100	300@10s	REMA80		BAIZUN
8	TILiF-24206S8	25.6	206	610	270	517	83	N	160	300@30s	REMA160A	MRC160	Jungheinrich/ERE225
9	TILiF-24206S9	25.6	206	813	269	620	320	180	200	350@5s	REMA320A	SB350	XIANFENG/XP80
10	TILiF-24206S10	25.6	206	648	248	548	160	60	150	300@10s	REMA160A	SB175A	LIDA/ES16
11	TILiF-24206S11	25.6	206	660	145	750	170	90	150	350@5s	REMA160A		LIDA/L10
12	TILiF-24300S1	25.6	300	792	212	550	125	N	150	300@10s	REMA160A	REMA160A	HYSTER/L02
13	TILiF-24300S2	25.6	300	823	271	627	320	180	150	200@10s	REMA160A		NOBLELIFT
14	TILiF-24300S3	25.6	300	788	209	628	112	N	150	300@10s	REMA160A		LINDE/P30C
15	TILiF-24165S1	25.6	165	595	173	510	64	N	100	200@10s	REMA160A	REMA160A	Standing driving forklift
16	TILiF-24150S1	25.6	150	640	193	543	74	N	100	150@30s	REMA160A		Pallet forklift
17	TILiF-24150S2	25.6	150	560	232	540	108	48	100	200@30s	REMA160A	SB175A	NICHIYU/FBD10
18	TILiF-24150S3	25.6	150	798	208	550	252	135	150	300@5s	REMA160A		Xianfeng/XE20
19	TILiF-24150S4	25.6	150	658	238	480	205	105	150	200@10s	REMA160A		ONEN/EQA1545
20	TILiF-24150S5	25.6	150	640	195	540	78	N	90	150@30s	REMA160A		Pallet truck
21	TILiF-24280S1	25.6	280	650	249	625	261	155	150	280@10s	REMA160A		JIAWODE/CPD20
22	TILiF-24230S1	25.6	230	620	280	625	298	200	100	250@10s	REMA160A		LINDE/T20
23	TILiF-48450S1	51.2	450	1028	570	660	1000	540	200	400@10s	REMA320A	REMA320A	HANGCHA/2.5T
24	TILiF-48450S2	51.2	450	835	634	784	1118	770	200	500@5s	REMA320A	Outgoing line	JD/E20P

TILiF Series													
S/N	Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Dimension (±2mm)			Total Weight (Kg)±5%	Counter weight (Kg)±5%	Rated discharging current(A)	Peak discharging current(A)	Charge port	Discharge port	Forklift model
				L	W	H							
25	TILiF-48450S3	51.2	450	1030	500	792	1277	306	200	450@10s	REMA320A	REMA320A	HELI/CPD20
26	TILiF-48450S4	51.2	450	1028	570	660	1000	540	250	500@10s	REMA320A	REMA320A	HANGCHA/CPD25
27	TILiF-48450S5	51.2	450	835	634	784	1120	737	200	500@30s	REMA320A	REMA160	LINDE/E20P
28	TILiF-48412S1	48	412	980	540	627	750	430	200	400@10s	REMA160A	SB350	Toyota/8FB25
29	TILiF-48412S2	51.2	412	825	625	570	856	600	200	400@10s	REMA320A	REMA160	LINDE/E16C
30	TILiF-48412S3	51.2	412	815	740	479	600	266	300	500@30s	REMA320A	SB350	Toyota/7FB15
31	TILiF-48412S4	51.2	412	980	465	780	700	322.5	150	300@30s	REMA320A	REMA160	HANGCHA/CPD15
32	TILiF-48412S5	51.2	412	970	715	500	850	483	200	400@10s	REMA320A	SB175A	HELI/CPD18
33	TILiF-48412S6	51.2	412	905	815	475	873	275	200	400@10s	REMA320A	SB350	Toyota/7FB2025
34	TILiF-48412S7	51.2	412	1028	760	495	790	415	200	500@10s	REMA320A	SB350	TCMFB20
35	TILiF-48412S8	51.2	412	825	625	570	856	270	250	500@30s	REMA320A	REMA160A	LINDE/E16C
36	TILiF-48412S9	51.2	412	740	430	470	353	N	200	400@10s	REMA320A	SB350	Sumitomo/New 1.5T
37	TILiF-48412S10	51.2	412	740	430	470	445	N	200	400@10s	REMA320A	SB350	Sumitomo/New 2T
38	TILiF-48412S11	51.2	412	825	625	625	410	N	250	500@30s	REMA320A	REMA160A	LINDE/E16C
39	TILiF-48412S12	51.2	412	825	784	634	425	N	250	500@30s	REMA320A	REMA160A	LINDE/E20P
40	TILiF-48412S13	51.2	412	740	430	435	215	N	200	400@10s	REMA320A	SB350	-
41	TILiF-48412S14	51.2	412	740	430	435	215	N	200	400@10s	REMA320A	REMA160A	-
42	TILiF-48412S15	51.2	412	1220	355	780	900	500	200	400@10s	REMA320A	SB175A	JIAWODE/FBRF20
43	TILiF-48300S1	51.2	300	985	462	650	735	432	150	400@10s	REMA320	REMA320	Balanced forklift
44	TILiF-48300S2	51.2	300	1220	355	784	925	320	150	300@10s	REMA160A	REMA320	HYSTER/R14-R20
45	TILiF-48300S3	51.2	300	780	490	540	585	N	200	450@10s	REMA160A	SB175A	Tractor forklift
46	TILiF-48300S4	51.2	300	980	465	780	700	430	150	300@30s	REMA160A	REMA160A	HANGCHA/CPD15
47	TILiF-48300S6	48	300	900	550	330	180	N	150	200@30s	SB175A	SB175A	AGV
48	TILiF-48500S1	51.2	500	1028	570	600	380	N	200	500@3s	REMA320A	SB175A	HYSTER/J2.0
49	TILiF-48500S2	51.2	500	1030	762	515	1125	647	200	500@5s	REMA320A	SB350	FOLANGSI

TILiF Series													
S/N	Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Dimension (±2mm)			Total Weight (Kg)±5%	Counter weight (Kg)±5%	Rated discharging current(A)	Peak discharging current(A)	Charge port	Discharge port	Forklift model
				L	W	H							
50	TILiF-48206S1	51.2	206	700	500	387	142	N	100	200@30s	REMA160A	SB175A	Tractor forklift
51	TILiF-48206S2	51.2	206	955	372	565	600	N	100	200@10s	REMA160A	SB175A	Toyota/7FBR15
52	TILiF-48206S3	51.2	206	955	372	565	440	288	100	200@30s	REMA160A	SB175A	Toyota/7FBR15
53	TILiF-48560S1	51.2	560	905	815	475	873	N	200	600@3s	REMA320A	SBX350A	Toyota/7FB25
54	TILiF-48618S1	51.2	618	833	632	784	1125	677	160	300@30s	REMA320A	REMA160A	LINDE/E16P
55	TILiF-48280S1	51.2	280	920	420	250	225	N	280	350@10s	REMA160A	SB175A	Fruit picking machine
56	TILiF-48280S2	51.2	280	950	334	550	175	N	150	300@10s	REMA160A	REMA320A	MIMA/MEB60
57	TILiF-48280S3	51.2	280	1025	775	495	780	437	280	400@10s	REMA160A	SBX350A	TCM FORKLIFT
58	TILiF-48280S4	51.2	280	1040	330	670	415	180	200	450@10s	REMA	REMA	XIANFENG/XP80
59	TILiF-48519S1	51.2	519	974	412	785	850	552	300	500@10s	REMA320A	SBX350A	XIANFENG/115RRE
60	TILiF-48519S2	48	519	1028	498	744	730	375	300	500@10s	REMA320A	SBX350A	BAIZUN/2T
61	TILiF-48460S1	51.2	460	1220	352	740	890	600	150	400@10s	REMA320A	REMA160A	LINDE/R16
62	TILiF-84618S1	83.2	618	1050	915	863	1830	987.5	200	600@3s	REMA320A	REMA320A	HELI/CPD50
63	TILiF-84618S2	83.2	618	1070	625	628	582	N	200	600@3s	REMA320A	REMA320A	ANLI/Tractor forklift
64	TILiF-84560S1	83.2	560	948	585	815	437	N	200	600@10s	REMA320A	SBX350A	Toyota/7FB30
65	TILiF-84560S2	80	560	1023	849	625	1480	758.5	200	500@3s	REMA320A	SBX350A	LINDE/E30S
66	TILiF-84560S3	83.2	560	1028	711	809	1500	238	200	600@10s	REMA320A	SBX350A	HELI/CPD35
67	TILiF-84560S4	80	560	1000	660	561	465	N	200	560@30s	REMA320A	SBX350A	LIUGONG/1826
68	TILiF-84300S1	76.8	300	800	750	400	274	N	150	300@10s	REMA160A	Outgoing line	Sanitation vehicle
69	TILiF-84412S1	83.2	412	1030	700	790	1375	893	200	400@10s	REMA320A	REMA320A	BAOLI/3T
70	TILiF-84412S3	80	412	1023	849	625	1458	915	300	500@30s	REMA320A	REMA160A	LINDE/E30S
71	TILiF-84412S4	80	412	1025	710	820	1300	855	250	350@10s	REMA320A	REMA160A	HANCHA/3T
72	TILiF-84412S5	80	412	1138	680	480	450	N	350	500@30s	REMA320A	SBX350A	LIUGONG/CLGA 3.5T
73	TILiF-84346S1	96	346	840	752	710	382	N	200	400@10s	REMA160A	REMA320A	AGV
74	TILiF-84460S1	80	460	695	645	557	330	N	300	500@10s	REMA320A	SBX350A	Toyota/7FB30





**Application**

- Residential
- Solar Energy
- Other renewable energy



**Application**

- UPS/EPS
- Telecommunication
- Electric Power



**Application**

- Alarm&safety System
- Signal
- Monitor

# Reserve/Energy Storage Solution

Tianneng provides a variety of battery solutions for backup and energy storage applications. The products have excellent performance, stability and reliability, and are widely used in communication equipment, home storage, lead-acid replacement scenarios, UPS/EPS, etc.

## Product Series

TTLiF

TELiF

TLLiF

# TTLiF Series

Telecom lithium battery

TTLiF series lithium ion battery, for access to network equipment, mobile communication, transmission equipment and other systems in the base station to provide reliable backup power. Products are widely used in solar base station, outdoor standard cabinet, frequent power outage base station and other types of telecom base station.

## Product Appearance



### PRODUCT FEATURE

- Prismatic LiFePO4 cell , higher reliability ;
- Maintenance free with standard 19” design easy installation ;
- Long cycle life, 3500@80%DOD ;
- Built-in BMS, with over charge, over-discharge, over-current, short circuit and other protection functions ;
- Parallel expansion supports, to meet multiple applications ;
- RS485/CAN ;

### APPLICATION

- Solar Base Station
- Outdoor Standard Cabinet
- Frequent power outage base station

### TTLiF Series

S/N	Model	Nominal Voltage (V)	Nominal Capacity (AH)	Dimension (±3mm)			Weight (Kg) ±5%	Charge and discharge limited current of BMS (A)
				L	W	H		
1	TTLiF-4830S1	48	30	483	365	88 (2U)	18.6	10/20
2	TTLiF-4830S2	51.2	30	483	365	88 (2U)	19.1	10/20
3	TTLiF-4850S1	48	50	483	400	133 (3U)	30.3	50/50
4	TTLiF-4850S2	51.2	50	483	400	133 (3U)	31.5	50/50
5	TTLiF-48100S3	51.2	100	483	550	133 (3U)	46	50/100
6	TTLiF-48150	51.2	150	483	603	133 (3U)	66	100/100
7	TTLiF-48200	51.2	200	483	500	244 (5.5U)	81	80/200

# TELiF Series

Energy Storage Li-ion battery for household

Tianneng TELiF series battery have extended long life with cost-effective price, with excellent consistence ensured by fully automated production line. The Pack boast high safety, strong compatibility with a broad range of operation temperature, it is highly suited to household energy storage application.

## Product Appearance



Rack-mounted



Ground-stacked



Wall-mounted

### PRODUCT FEATURE

- **High reliability:**  
LFePO4 cell.
- **Fully replaceable with current batteries (Lead-acid, Ni-Cd).**
- **Maintenance free with 19 inch standard rack design, wall-mounted or stackable style , easy installation.**
- **Long cycle life:**  
3500~6000 cycles.
- **Built-in BMS management system with interface RS485/RS232**
- **Optimum adaptation to variety applications with series & parallel expansion support**

### APPLICATION

- Telecommunication
- Data Center
- Industrial Application
- Wind Power
- Solar Power
- Electric Power

### TELiF series

S/N	Model	Nominal Voltage (V)	Nominal Capacity (AH)	Dimension (±3mm)			Weight (Kg) ±5%	Max continuous charge and discharge current (A)	Remark
				L	W	H			
1	TELiF-48100S3 (Rack mounted)	51.2	100	483	550	133 (3U)	46	100/100	
2	TELiF-48150 (Rack mounted)	51.2	150	483	603	133 (3U)	66	100/100	
3	TELiF-48100S5 (Wall-mounted)	51.2	100	520 540	142	470(EU) 500(US)	47.2	50/100	
4	TELiF-48200S3 (Wall-mounted)	51.2	200	800	142	590	96.5	100/200	
5	TELiF-4850GL (Stackable type,low voltage)	51.2	50	600	210	180	27	25/50	1-10 in parallel
6	TELiF-48100GL (Stackable type,low voltage)	51.2	100	600	210	300	48	50/100	1-6 in parallel
7	TELiF-4850GH (Stackable type,,high voltage)	51.2	50	600	210	160 (Module) 250 (High-voltage box)	26.5 (Module) 23 (High-voltage box)	50/50	3-10 in series

# TLLiF Series

Energy Storage Li-ion battery in place of lead acid battery

The TLLiF series battery are mainly used in lead-acid replacement scenarios. Compared with lead-acid batteries on the market, lithium batteries have advantages such as long cycle life, short charging time and small space occupation.

## Product Appearance



### PRODUCT FEATURE

- **High reliability:** LFePO4 cell.
- **Fully replaceable with current batteries (Lead-acid, Ni-Cd).**
- **Optimum adaptation to variety applications with series & parallel expansion support.**
- **Long cycle life:** 1500~4000 cycles.

### APPLICATION

- Household solar power
- UPS
- Signal
- EPS
- Base station

### TLLiF series

S/N	Model	Nominal Voltage (V)	Nominal Capacity (AH)	Dimension (±3mm)				Weight (Kg) ±5%	Max continuous charge and discharge current(A)
				L	W	H	TH		
1	TLLiF-1206S1	12.8	6	90	70	101	107	0.75	3/6
2	TLLiF-1206S2	12.8	6	151	65	94	100	0.8	3/6
3	TLLiF-1207S1	12.8	7	151	65	94	100	1.06	3.5/7
4	TLLiF-1209S1	12.8	9	151	65	94	100	1.34	4.5/9
5	TLLiF-1212S1	12.8	12	151	98	95	101	1.5	6/12
6	TLLiF-1224S1	12.8	24	181	77	167	167	2.9	12/24
7	TLLiF-1230S1	12.8	30	165	175	125	125	3.7	15/30
8	TLLiF-1233S1	12.8	33	195	132	170	175	4.9	16.5/30
9	TLLiF-1242S1	12.8	42	197	165	170	170	5.7	21/42
10	TLLiF-1254S1	12.8	54	229	138	212	217	6.7	27/54
11	TLLiF-1284S1	12.8	84	260	169	213	218	10.2	42/60
12	TLLiF-12100S1	12.8	100	328	172	215	220	13.1	50/100
13	TLLiF-12100S2	12.8	100	256	165	210	215	11	100/100
14	TLLiF-12150S1	12.8	150	483	170	240	240	19.2	75/100
15	TLLiF-12200S1	12.8	200	522	238	218	220	27	100/100
16	TLLiF-25100S2	25.6	100	532	206	215	217	24	100/100
17	TLLiF-25120S1	25.6	120	484	170	240	240	27.50	60/120
18	TLLiF-25120S2	25.6	120	340	300	260	260	32	60/120
19	TLLiF-25150S1	25.6	150	330	300	210	210	35.00	60/120
20	TLLiF-25200S1	25.6	200	440	380	200	200	45.00	100/100

# Cooperation Case Product

TMLiN/TMLiF Series

## TMLiN/TMLiF Series for AGV Power

### Customer Information:

Customer L is a world-famous commercial cleaning robot company.

### Background:

Traditional lead-acid batteries cannot meet the requirements of convenience and endurance of commercial cleaning robots due to many reasons, such as low energy density, large volume, large weight, and large self-consumption.

### Product matching:

As a leading enterprise of power batteries, Tianneng can provide customized and cost-effective power lithium battery PACK.



Application	Customized demand	Strong power	Durability	Certificate
Solution	<b>Flexible design</b> According to the space requirements, the lithium battery cells are designed in series and parallel to meet the size of the battery compartment.	<b>1~3 Crate</b> High-rate lithium battery cell is selected to meet the high current discharge demand of the equipment. Intelligent BMS, real-time detection of battery status and timely alarm, to ensure safety.	<b>2000~6000</b> Provide 2000-6000 cycle life according to actual working conditions.	<b>Compliance</b> Certificate of shipment; Certification of product access, product performance and safety

### High-lights:

1. Cooperated in the development of three products, which were successfully mass-produced and continuously supplied to the market;
2. Completed the complete set of UN38.3 shipping certificate and CE, RoHS, Reach, CE, IEC, ISO and other relevant certification tests;

# Cooperation Case Product

TLLiF Series

## TLLiF Series for Solar Energy Storage

**Location:** South America

**Application:**

Household solar energy storage

Battery model

Voltage: 24V

Capacity: 100Ah-200Ah.

**Product adaptability:**


LiFePO4 cell — safe and higher reliability;  
≥3650 Cycles — Meet the owner's life requirements;  
50% lighter than lead acid batteries — Easy to install and maintain; Series or parallel connection — suitable for Various applications


**The total capacity of the project is 3.3Mwh, which perfectly solves the electricity problem of more than 1,000 households in remote areas**



# CONTACT US NOW!

## TIANNENG INTERNATIONAL CO.,LIMITED

 +86-572-6058015

 +86-572-6058015

 info@tianneng.com

 www.tiannengglobal.com

 Block C.6/F shun shing plaza, 50 stanley street, central, Hong Kong

 Tianneng Group Official

 Tianneng Group Official (@GroupTianneng)

 Tianneng Group

