

Clean energy for life™

RENEWABLE ENERGY



Trojan batteries are available worldwide through Trojan's Master Distributor Network. We offer outstanding technical support, provided by full-time application engineers.

**For a Trojan Master Distributor near you,
call 800.423.6569 or + 1.562.236.3000 or visit www.trojanbatteryre.com**

12380 Clark Street, Santa Fe Springs, CA 90670 • USA or email re@trojanbattery.com

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IMAGINE A WORLD OF CLEAN ENERGY FOR EVERYONE.

IN KENYA A CHILD LEARNS TO READ AND WRITE IN A CLASSROOM USING CLEAN ENERGY SOURCES...

IN INDIA A FAMILY GATHERS FOR DINNER IN A SMALL LIGHTED DWELLING POWERED BY AN OFF GRID SOLAR HOME SYSTEM...

IN THE UNITED STATES A RURAL RANCH POWERS ITS EQUIPMENT SHED USING A HYBRID POWER SYSTEM...

Alternative sources of energy, which were once only considered a dream, are increasingly becoming a reality. Today, in the developing regions of the world where energy is scarce, over 1.6 billion people live without access to electric power; unable to tend to basic human necessities because of the lack of power for lighting, communications or clean water. In these regions of the world renewable energy resources provide the valuable power resources to allow children to learn, families to prosper and businesses to grow.

In the developed regions of the world the emergence of smart grid technologies and environmental consciousness are having a profound impact on the way we live. Renewable energy sources are transforming our dependence on fossil fuels and inspiring new technologies for clean energy effectively reducing our impact on the environment.

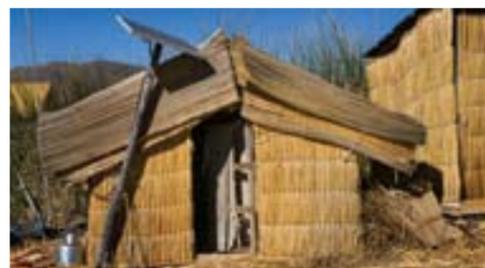
As the leading manufacturer of deep cycle batteries, Trojan Battery Company supplies energy storage for renewable energy applications. We believe in the dream of transforming global energy into resources that are environmentally friendly and that are readily available in all regions of the globe.

At Trojan we are committed to...Clean Energy for Life.



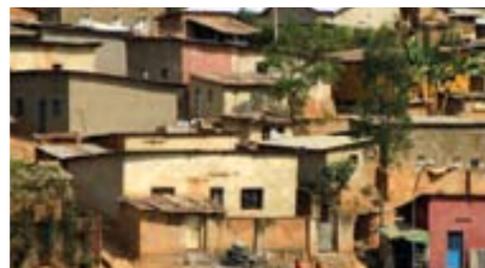
For over 85 years Trojan Battery has focused its experience and expertise in deep cycle technology on manufacturing the highest quality, lead acid batteries available in the industry. If there is one thing we've learned over the years it's that a truly outstanding battery must provide rugged durability, long life and consistent performance day in and day out. As the world's leading supplier of renewable energy batteries, we understand the importance of these performance features in renewable energy applications and that is why we offer the broadest portfolio of high-quality, deep cycle flooded, gel and cycling AGM products available for a wide range of renewable energy applications. With our broad portfolio of renewable energy products you'll find a Trojan battery perfectly suited to your specific application.

RENEWABLE ENERGY MARKETS



Rural Electrification

Today over 80 percent of the world's population live in rural areas where access to electricity is unreliable or even nonexistent. Battery based renewable energy technologies have made it possible to bring stable and reliable power to these remote areas effectively changing the way people live. In these remote locations stand alone systems require exceptionally reliable batteries. Trojan manufactures a wide range of batteries that are reliable, durable and long lasting.



Backup Power

The increase in global energy consumption is placing even greater strain on existing power grids. Many electrical grids are inefficient and unable to consistently meet the demands of growing urban populations. Power outages are becoming more common and the demand for battery backup systems to provide stable power is becoming a valuable part of the overall energy mix. Trojan's deep cycle technology is ideal for supplementing power when the grid goes down.

Off Grid

In locations where access to grid power is unavailable or not economically viable, off grid renewable energy systems provide continuous power for many applications. Off grid systems designed for residential and industrial applications depend upon deep cycle lead acid batteries to provide consistent, reliable access to power under a wide range of environmental conditions. Trojan's deep cycle lead acid batteries are manufactured to deliver the consistent performance required by off grid systems.



Grid Tie and Smart Grid

Deep cycle lead acid batteries are an essential component of grid tie systems with battery backup and smart grid energy management systems. Residential and commercial renewable energy systems that feed power back into the grid benefit from battery backup in the event of temporary grid outages, providing more value for homes and businesses that have invested in renewable energy systems. Smart grid technologies rely on deep cycle batteries to increase overall reliability of the grid.





RENEWABLE ENERGY APPLICATIONS

Solar Home Systems



In developing regions of the world rural electrification programs provide small scale, off grid power systems to provide power to individual households. Solar home systems (SHS) are typically battery based solar systems that provide power to homes that have never had access to electricity. Government agencies, funding institutions and non-government organizations (NGOs) around the world recognize Trojan Battery Company as the leading supplier of deep cycle lead acid batteries for rural electrification programs.

Mini Grids and Distributed Generation



In parts of the world where small rural villages do not have access to centralized power, battery based mini grids powered by renewable energy sources provide reliable electricity where grid expansion is not viable. Renewable energy mini grid systems are a centralized approach to rural electrification efforts in many parts of the world. Mini grid systems require high quality, long lasting battery storage technologies in order to provide the communities they serve with the lowest life cycle system cost while consistently meeting daily energy requirements without service interruption.

Water Pumping and Purification



Solar powered water pumping and purification systems provide essential clean water and are the key to improved health and agricultural productivity for many people in remote parts of the world. Relief organizations rely on these technologies to ensure clean drinking water in emergency situations when centralized power systems have been compromised. Trojan batteries deliver reliable, consistent power to support these important clean water technologies worldwide.

Lighting Systems



Continuing advances in energy efficient lighting technologies, combined with the proven reliability of battery based solar systems, have created a rapidly expanding market for solar lighting applications. Area, highway, parking and security lighting projects that use solar power count on Trojan batteries for dependable power.

Telecommunications

In areas where the electrical grid is unavailable telecom sites powered by battery based solar systems or hybrid solar systems maintain critical power for uninterrupted communications services under a wide range of challenging site and environmental conditions. Telecom systems are designed to provide the highest level of reliability under the worst case conditions in order to minimize network down time and the potential loss of revenue. Trojan is committed to producing world class energy storage products that deliver consistent, reliable power under the harshest conditions.



Industrial Instrumentation and Controls

Solar power is recognized as a cost effective and reliable solution for a broad range of industrial instrumentation and control applications where power availability has a direct impact on cost, reliability and management of resources. To overcome potential power supply problems in remote areas with limited infrastructure, companies utilize battery based systems to provide both primary and back up power. In these installations where system failure can be costly, systems engineers demand the highest quality components for their instrumentation and control system needs.



Signaling and Navigation

Directional signs for traffic control and highway construction, warning signs, crosswalks and school zones are increasingly powered by battery based solar systems. Navigational beacons and marine hazard systems often rely on solar power where minimal power requirements are most cost effectively served by power generated on site. Trojan's broad portfolio of deep cycle lead acid battery technologies provide long lasting solutions for signaling and navigation systems.



Mobile Power Units

Mobile power units that use renewable energy charging sources rely on deep cycle lead acid batteries to provide portable power for a variety of applications from disaster response to temporary power for construction sites. Mobile power units require batteries that are manufactured for rugged, repeated use under any environmental conditions. Trojan's robust design and long life provide the best return on investment no matter how challenging the application.



RE SERIES BATTERIES



RE Series batteries... optimized for Renewable Energy

The RE Series is Trojan Battery's premium line of renewable energy batteries. Engineered specifically for renewable energy applications, the RE Series captures Trojan's historically-proven technology and incorporates advanced features like Trojan's DuraGrid™, MaxGuard® XL separator and Alpha Plus® Paste technologies that provide superior performance, rugged durability and long life. Our product strategy is focused on one simple objective – manufacture the highest quality battery available in the industry which is why our RE Series batteries are tested to IEC standards and we back our quality with a 7-year, worldwide, limited warranty*.



HYDROLINK™ Battery Watering Made Easy

Proper maintenance and periodic watering are important factors in maximizing the performance and life of your Trojan deep cycle flooded batteries. Battery maintenance can be a costly, time-consuming and messy job. With Trojan's HydroLink™ advanced, single-point watering system, precise battery watering is made easy. Trojan's HydroLink watering system is specifically designed to work with deep cycle flooded Trojan batteries**.

* Best-in-class limited warranty offered for the RE Series Only. T105-RE features a 5-year limited warranty.
** HydroLink is not compatible with all Trojan Batteries.
Please visit: www.trojanbattery.com/HydroLink, for more information.



DuraGrid™ Technology

Trojan's DuraGrid Technology is a grid design specifically engineered for the longer life requirements of renewable energy applications. DuraGrid features a thicker grid structure maintaining even greater corrosion resistance effectively increasing the life of the battery for up to 10 years. Trojan's DuraGrid Technology combined with the Maxguard XL separator offers excellent charge efficiency allowing the batteries to charge quickly throughout the life of the battery.

Maxguard® XL Separator

In renewable energy applications batteries may go days without a charge and they frequently operate at partial states of charge. Recognizing the rigorous use required of batteries in renewable energy applications, Trojan incorporated the Maxguard XL advanced separator. Exclusively available in Trojan RE Series batteries, Trojan's Maxguard XL separator is 30 percent thicker than our standard flooded battery separators. The Maxguard XL provides even greater resistance to stratification which is typically a mode of failure in batteries used in renewable energy systems.

Alpha Plus® Paste with T2 Technology™

Trojan's Alpha Plus Paste is a proprietary, high density paste formulation precisely engineered to deliver outstanding battery performance. This high density paste optimizes porosity development in the active material utilizing the active material more effectively resulting in sustained battery performance over a longer period of time. Trojan's T2 Technology features a patent-pending T2 metal agent which is incorporated into Trojan's Alpha Plus Paste further strengthening the electrochemical processing capabilities of Alpha Plus Paste. Together Alpha Plus Paste with T2 Technology increase both sustained capacity and total overall ampere-hours resulting in more operating power for your application. It's a key reason why Trojan batteries consistently outperform the competition.

BCI GROUP SIZE	TYPE	VOLTAGE	CAPACITY ^A Amp-Hours (AH)			KILOWATT (kWh)	DIMENSIONS ^B Inches (mm)			WEIGHT lbs. (kg)
			5-Hr Rate	20-Hr Rate	100-Hr Rate		Length	Width	Height ^C	
903	L16RE-2V	2 VOLT	909	1110	1235	2.47	11-5/8 (295)	7 (178)	17-11/16 (450)	119 (54)
GC2H	T105-RE	6 VOLT	185	225	250	1.50	10-3/8 (264)	7-1/8 (181)	11-3/4 (299)	67 (30)
903	L16RE-A	6 VOLT	267	325	360	2.16	11-5/8 (295)	7 (178)	17-11/16 (450)	115 (52)
903	L16RE-B	6 VOLT	303	370	410	2.46	11-5/8 (295)	7 (178)	17-11/16 (450)	118 (54)

A. The amount of amp-hours (AH) a battery can deliver when discharged at a constant rate at 80°F (27°C) for the 20-Hour and 100-Hour rates and 86°F (30°C) for the 5-Hour rate and maintain a voltage above 1.75 V/cell. Capacities are based on peak performance.
B. Dimensions are based on maximum size. Dimensions may vary depending on type of handle or terminal.
C. Dimensions taken from bottom of the battery to the highest point on the battery. Heights may vary depending on type of terminal.

DEEP CYCLE FLOODED BATTERIES



Trojan Grid Technology

Trojan's grid technology is a lead antimony alloy grid mixture formulated for use with Trojan's Alpha Plus® Paste with **T2 Technology™**. The grid formulation provides exceptional structural adhesion between the Alpha Plus Paste and the grid frame. Thick grids reinforce the strength of the frame and reduce overall corrosion. The overall grid configuration is optimized to enhance current flow through the grid network providing exceptional battery performance, reducing downtime and lowering overall maintenance costs.

Maxguard® T2 Separator

Available in Trojan flooded batteries is our Maxguard® **T2** advanced separator. Trojan's Maxguard **T2** separator features a multi-rib geometry which keeps acid channels open longer enhancing electrochemical processing while reducing the risk of stratification. Maxguard's proprietary rubber-based material formulation inhibits antimony transfer between the positive grids and negative plates; a protection not available in many other competitor batteries. A fortified, thick back web provides even greater separator strength resulting in a more robust battery with increased protection against failures caused by separator degradation. Trojan's Maxguard **T2** advanced separator sustains performance providing exceptionally longer battery life and significantly lowering your operating costs.

Alpha Plus® Paste with T2 Technology™

Trojan's Alpha Plus Paste is a proprietary, high density paste formulation precisely engineered to deliver outstanding battery performance. This high density paste optimizes porosity development in the active material utilizing the active material more effectively resulting in sustained battery performance over a longer period of time. Trojan's **T2 Technology** features a patent-pending **T2** metal agent which is incorporated into Trojan's Alpha Plus Paste further strengthening the electrochemical processing capabilities of Alpha Plus Paste. Together Alpha Plus Paste with **T2 Technology** increase both sustained capacity and total overall ampere-hours resulting in more operating power for your application. It's a key reason why Trojan batteries consistently outperform the competition.

Classic Trojan featuring... **T2 Technology™**

The deep cycle flooded series batteries are the flagship of Trojan's product portfolio. Engineered to provide rugged durability, outstanding performance and long life, Trojan's deep cycle flooded batteries are perfectly suited for use in a variety of deep cycle applications including renewable energy. An all around power house, the deep cycle flooded batteries feature Trojan's historically-proven engineering with **T2 Technology**, an advanced battery technology for maximum sustained performance, longer life and increased total energy.

BCI GROUP SIZE	TYPE	VOLTAGE	CAPACITY ^A Amp-Hours (AH)			KILOWATT (kWh)	DIMENSIONS ^B Inches (mm)			WEIGHT lbs. (kg)
			5-Hr Rate	20-Hr Rate	100-Hr Rate		100-Hr Rate	Length	Width	
GC2	T-605	6 VOLT	175	210	232	1.39	10-3/8 (264)	7-1/8 (181)	10-7/8 (276)	58 (26)
GC2	T-105	6 VOLT	185	225	250	1.50	10-3/8 (264)	7-1/8 (181)	10-7/8 (276)	62 (28)
GC2	T-125	6 VOLT	195	240	266	1.60	10-3/8 (264)	7-1/8 (181)	10-7/8 (276)	66 (30)
GC2H	T-145	6 VOLT	215	260	287	1.72	10-3/8 (264)	7-1/8 (181)	11-5/8 (295)	72 (33)
DIN	TE35	6 VOLT	200	245	271	1.63	9-5/8 (244)	7-1/2 (191)	10-7/8 (276)	68 (31)
902	J305P-AC	6 VOLT	271	330	367	2.20	11-5/8 (295)	7 (178)	14-3/8 (365)	96 (44)
902	J305H-AC	6 VOLT	295	360	400	2.40	11-5/8 (295)	7 (178)	14-3/8 (365)	98 (45)
903	L16P-AC	6 VOLT	344	420	467	2.80	11-5/8 (295)	7 (178)	16-3/4 (424)	114 (52)
903	L16H-AC	6 VOLT	357	435	483	2.89	11-5/8 (295)	7 (178)	16-3/4 (424)	125 (57)

BCI GROUP SIZE	TYPE	VOLTAGE	CAPACITY ^A Amp-Hours (AH)			KILOWATT (kWh)	DIMENSIONS ^B Inches (mm)			WEIGHT lbs. (kg)
			5-Hr Rate	20-Hr Rate	100-Hr Rate		100-Hr Rate	Length	Width	
24	24TMX	12 VOLT	70	85	94	1.13	11-1/4 (286)	6-3/4 (171)	9-3/4 (248)	47 (21)
27	27TMX	12 VOLT	85	105	117	1.40	12-3/4 (324)	6-3/4 (171)	9-3/4 (248)	55 (25)
27	27TMH	12 VOLT	95	115	128	1.54	12-3/4 (324)	6-3/4 (171)	9-3/4 (248)	61 (28)
30H	30XHS	12 VOLT	105	130	144	1.73	13-15/16 (355)	6-3/4 (171)	10-1/16 (256)	66 (30)
N/A	J150	12 VOLT	120	150	166	1.99	13-13/16 (351)	7-1/8 (181)	11-1/8 (283)	84 (38)
921	J185P-AC	12 VOLT	168	205	226	2.71	15 (381)	7 (178)	14-5/8 (371)	114 (52)
921	J185H-AC	12 VOLT	185	225	249	2.99	15 (381)	7 (178)	14-5/8 (371)	128 (58)
N/A	DC-500ML	12 VOLT	361	450	500	6.00	19-1/4 (489)	10-5/8 (270)	16-3/4 (425)	332 (151)

DEEP-CYCLE GEL BATTERIES

CYCLING AGM BATTERIES



Trojan Deep-Cycle Gel batteries are sealed, maintenance-free batteries that deliver superior power in demanding renewable energy applications. Engineered for rugged durability, outstanding performance and long battery life, Trojan's Deep-Cycle Gel batteries feature a number of important design characteristics that provide significant advantages over competing gel products. The gelled electrolyte is a proprietary formulation containing sulfuric acid, fumed silica, pure demineralized, deionized water and a phosphoric acid additive. This exclusive formulation produces a homogenous gel that delivers consistent performance and dramatically long cycle life. Calcium copper lead alloy grids provide longer shelf life and superior corrosion resistance. The heavy-duty grids lock active material onto the grid network to efficiently deliver more concentrated energy to the terminals. Premium grade, double-insulated separators allow maximum charge flow between the plates for optimum performance.

Trojan's cycling absorbent glass mat (AGM) maintenance free batteries for renewable energy applications feature a number of design elements to provide optimum performance. Robust plates extend the life cycle of Trojan's cycling AGM batteries. A separator of glass fibers serves to isolate the positive and negative plates while acting as a blotter to absorb the electrolyte. The separator is maintained under compression between plates to assure contact with plate surfaces. A computer-generated grid design is optimized for high power density. Low calcium grid alloy reduces gas emissions and a flame arresting, one-way pressure relief vent prevent buildup of excessive pressure. Trojan's cycling AGM batteries are low temperature tolerant, shock and vibration resistant and have a low internal resistance for higher discharge current and higher charging efficiency.

BCI GROUP SIZE	TYPE	VOLTAGE	CAPACITY ^A Amp-Hours (AH)			KILOWATT (kWh)	DIMENSIONS ^B Inches (mm)			WEIGHT lbs. (kg)
			5-Hr Rate	20-Hr Rate	100-Hr Rate		100-Hr Rate	Length	Width	
GC2	6V-GEL	6 VOLT	154	189	198	1.19	10-1/4 (260)	7-1/8 (181)	10-7/8 (276)	68 (31)
DIN	TE35-GEL	6 VOLT	180	210	220	1.32	9-5/8 (244)	7-1/2 (190)	10-7/8 (276)	69 (31)
24	24-GEL	12 VOLT	66	77	85	1.02	10-7/8 (276)	6-3/4 (171)	9-5/16 (236)	52 (24)
27	27-GEL	12 VOLT	76	91	100	1.20	12-3/4 (324)	6-3/4 (171)	9-1/4 (234)	63 (29)
31	31-GEL	12 VOLT	85	102	108	1.30	12-15/16 (329)	6-3/4 (171)	9-5/8 (245)	69 (31)
DIN	5SHP-GEL	12 VOLT	110	125	137	1.64	13-9/16 (345)	6-3/4 (171)	11-1/8 (283)	85 (39)
8D	8D-GEL	12 VOLT	188	225	265	3.18	21-1/16 (534)	11 (279)	10-13/16 (233)	157 (71)

BCI GROUP SIZE	TYPE	VOLTAGE	CAPACITY ^A Amp-Hours (AH)			KILOWATT (kWh)	DIMENSIONS ^B Inches (mm)			WEIGHT lbs. (kg)
			5-Hr Rate	20-Hr Rate	100-Hr Rate		100-Hr Rate	Length	Width	
CYCLING AGM BATTERIES										
24	24-AGM	12 VOLT	67	76	84	1.01	10-3/4 (274)	6-13/16 (174)	8-11/16 (220)	54 (24)
27	27-AGM	12 VOLT	77	89	99	1.19	12-9/16 (318)	6-13/16 (174)	8-3/4 (221)	64 (29)
31	31-AGM	12 VOLT	82	100	111	1.33	13-7/16 (341)	6-13/16 (174)	9-3/16 (233)	69 (31)
DUAL PURPOSE AGM BATTERIES										
GC2	6V-AGM	6 VOLT	154	200	221	1.33	10-1/4 (260)	7-1/8 (181)	10-3/4 (274)	65 (29)
8D	8D-AGM	12 VOLT	179	230	254	3.05	20-1/2 (521)	10-9/16 (269)	9-3/16 (233)	167 (76)

A. The amount of amp-hours (AH) a battery can deliver when discharged at a constant rate at 80°F (27°C) for the 20-Hour and 100-Hour rates and 86°F (30°C) for the 5-Hour rate and maintain a voltage above 1.75 V/cell. Capacities are based on peak performance.
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Research and Development

Quality and innovation are the cornerstones of our product development. As the leading manufacturer of deep cycle flooded batteries, Trojan retains two state-of-the-art research and development centers dedicated exclusively to battery technology and innovation. Engineering teams, backed by over 200 years of deep cycle development expertise, work together to innovate and bring to market advanced battery technologies that exceed our customers' expectations for outstanding battery performance.



To ensure the quality and superior performance of our batteries, Trojan applies the most rigorous testing procedures in the industry to test for cycle life, capacity, charger algorithms and both physical and mechanical integrity. Trojan's battery testing procedures adhere to both BCI and IEC test standards. Trojan's state-of-the-art R&D centers include charger characterization and analytical labs, battery prototype and evaluation labs and battery autopsy centers all dedicated to providing you with a superior battery that you can rely on.

Technical Support and Training

At Trojan one of our core strengths is the dedication and support we provide to our customers. Our expertise as the world's leading manufacturer of deep cycle batteries provides us with a unique knowledge and understanding of battery technology in renewable energy applications. We apply this knowledge and experience to the benefit of our customers by offering outstanding technical support provided by experienced engineers. To assist our customers with in-depth understanding of battery technologies and systems specifications, Trojan offers a range of training services that can be customized according to your application and market focus. These training services range from over-the-phone technical support to two-day training seminars and even on-site training sessions. Customers can earn NABCEP Continuing Education credit through our technical training sessions at trade shows.



Reputation Built on Quality, Leadership and Innovation

Founded in 1925 by co-founders George Godber and Carl Speer, Trojan Battery Company is the world's leading manufacturer of deep cycle batteries. From deep cycle flooded batteries to Deep-Cycle Gel and cycling AGM batteries, Trojan has shaped the world of deep cycle battery technology with over 85 years of battery manufacturing experience. With the invention of the golf car battery for the Autoette vehicle in 1952, Trojan pioneered the development of deep cycle battery technology for the golf industry; successfully introducing mobilization to the game of golf. For Trojan, this began a legacy of leadership and innovation that prevails today in the global, deep cycle markets spanning applications for renewable energy, golf, commercial trucking, floor machines, aerial work platforms and recreational vehicles. Today, Trojan batteries are available worldwide through our global network of master distributors.

Headquartered in Santa Fe Springs, CA, Trojan's operations include ISO 9001:2008 certified manufacturing plants in California and Georgia and international offices located in Europe, UAE and Asia. Trojan is a proud member of the Alliance for Rural Electrification (ARE), the Solar Electric Power Association (SEPA), the American Solar Energy Society (ASES), the Battery Council International (BCI) and a technical research partner with the Bulgarian Academy of Sciences.



Environmental Stewardship

At Trojan Battery, when we say, "Clean energy for life™," we mean every word. As proactive supporters of environmental sustainability, our environmental stewardship focuses on clean energy initiatives and recycling programs.

- Trojan batteries are 97% recyclable. The container plastic, battery lead and electrolyte from old deep cycle batteries can be recycled to produce new deep cycle batteries.
- Through its partnership with Southern California Edison (SCE) Trojan saves over 8 million kilowatt hours and cuts CO2 emissions by over 12 million pounds significantly reducing our annual energy consumption and carbon foot print.

