MOTIVE POWER

Eternity TECHNOLOGIES

QUASAR™

Carbon Nano Motive Battery

CNT TECHNOLOGY

HIGH ENERGY ON DEMAND™

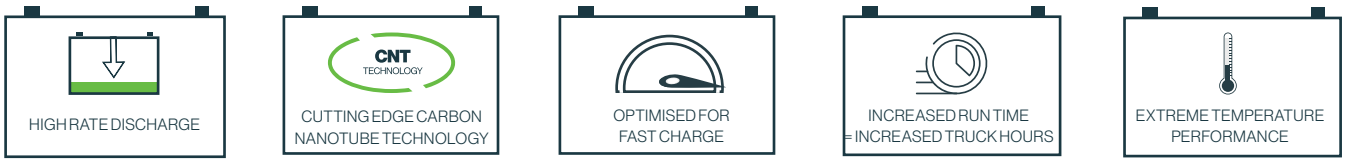
QUASAR™ - High Energy On Demand

With an extensive product range available, Eternity Technologies prides itself on world-class product design, production processes, technical development, cost structure and global location.

Eternity Technologies ongoing commitment to delivering industry leading product, at the cutting edge of product development delivers QUASAR.

QUASAR batteries deliver increased performance for today's demand for high performance in energy demanding applications.

Developed by Eternity Technologies, QUASAR utilises industry leading thin tube positive plate technology along with carbon nanotube technology in the negative plate to deliver high energy density, improved high rate discharge performance with fast charging capability.



2x faster recharge | **up to 25% increased run time** | **up to 50% higher performance at cold temperature**

™

Applications:

Multi Shift Applications - 24/7

VNA Applications

Cold Storage Applications

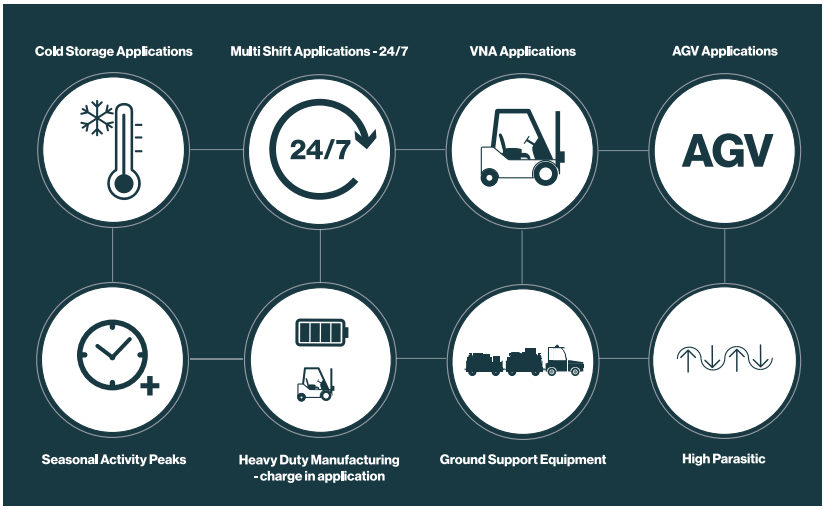
Seasonal Activity Peaks

Ground Support Equipment

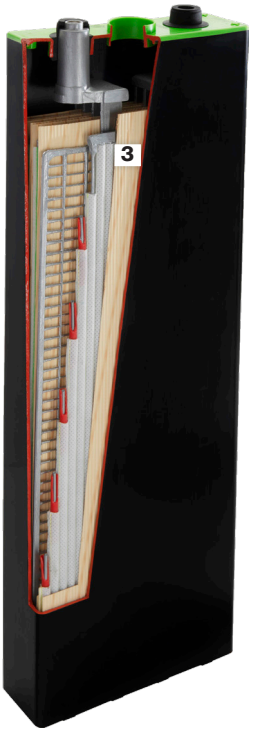
Heavy Duty Manufacturing - charge in application

High Parasitic Loads

AGV Applications



QUASAR™ Technology



CNT
TECHNOLOGY

1. Positive plate

The QUASAR positive plate utilises thin tube technology. The advantages of this are:

- Higher discharge rates due to increase in active material surface area
- Higher energy density vs PZS
- Increased active material ultilisation vs PZS
- Gauntlet - increased fabric thickness vs PZS

3. Separator

QUASAR uses a market leading phenolic resin separator made in Germany. Different than standard PZS separator, this separator is used due to the heavy-duty operating demands placed on the QUASAR product. The advantages of this are:

- Higher porosity leading to higher electrolyte volume resulting in higher energy density
- Lower internal resistance
- Excellent oxidation resistance

2. Negative plate

The QUASAR negative plate contains CNT (Carbon Nanotube Technology).

Carbon Nanotubes increase the negative plates fast charge capability. The Carbon Nanotubes work as conductors to the charging current and accepts charge easily with little resistance. The advantages of this are:

- Fast charging (40% start current) with no degradation to life
- Improves thermal operational ranges
- Improves charge acceptance

Recyclable

Compliant with

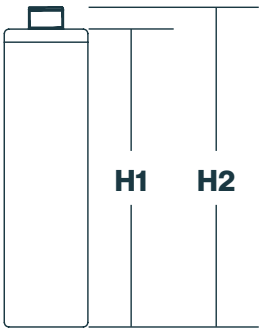
EN60-254-1 & EN60-254-2
IEC254-1 & IEC254-2

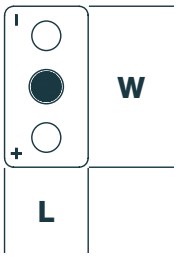
QUASAR™ - Weight, Capacity and Dimension Charts

Standard cell configuration			Quasar cell configuration							
DIN Cell Type	Height H1 (mm) Height H2 (mm)	Length (mm)	QUASAR Cell Type	Weight (kg)	QUASAR (Ah)	QUASAR Energy Output (Wh)*	24V (kWh)	36V (kWh)	48V (kWh)	80V (kWh)
3 PzS-ET 270	463.5 / 493.5	65	QUA600	16.5	300	600	7.2	10.8	14.4	24.0
4 PzS-ET 360	463.5 / 493.5	83	QUA800	20.6	400	800	9.6	14.4	19.2	32.0
5 PzS-ET 450	463.5 / 493.5	101	QUA1050	26.9	525	1050	12.6	18.9	25.2	42.0
6 PzS-ET 540	463.5 / 493.5	119	QUA1200	31.0	600	1200	14.4	21.6	28.8	48.0
7 PzS-ET 630	463.5 / 493.5	137	QUA1350	35.2	675	1350	16.2	24.3	32.4	54.0
8 PzS-ET 720	463.5 / 493.5	155	QUA1650	41.6	825	1650	19.8	29.7	39.6	66.0
9 PzS-ET 810	463.5 / 493.5	173	QUA1800	45.6	900	1800	21.6	32.4	43.2	72.0
10 PzS-ET 900	463.5 / 493.5	191	QUA2100	49.8	1050	2100	25.2	37.8	50.4	84.0
3 PzS-ET 375	569.0 / 599.0	65	QUA780	20.7	390	780	9.4	14.0	18.7	31.2
4 PzS-ET 500	569.0 / 599.0	83	QUA1040	25.8	520	1040	12.5	18.7	25.0	41.6
5 PzS-ET 625	569.0 / 599.0	101	QUA1320	33.8	660	1320	15.8	23.8	31.7	52.8
6 PzS-ET 750	569.0 / 599.0	119	QUA1560	39.0	780	1560	18.7	28.1	37.4	62.4
7 PzS-ET 875	569.0 / 599.0	137	QUA1760	44.3	880	1760	21.1	31.7	42.2	70.4
8 PzS-ET 1000	569.0 / 599.0	155	QUA2080	52.3	1040	2080	25.0	37.4	49.9	83.2
9 PzS-ET 1125	569.0 / 599.0	173	QUA2320	57.4	1160	2320	27.8	41.8	55.7	92.8
10 PzS-ET 1250	569.0 / 599.0	191	QUA2650	62.6	1325	2650	31.8	47.7	63.6	106.0
3 PzS-ET 465	713.5 / 743.5	65	QUA990	25.8	495	990	11.9	17.8	23.8	39.6
4 PzS-ET 620	713.5 / 743.5	83	QUA1280	32.3	640	1280	15.4	23.0	30.7	51.2
5 PzS-ET 775	713.5 / 743.5	101	QUA1680	42.2	840	1680	20.2	30.2	40.3	67.2
6 PzS-ET 930	713.5 / 743.5	119	QUA1980	48.7	990	1980	23.8	35.6	47.5	79.2
7 PzS-ET 1085	713.5 / 743.5	137	QUA2270	55.1	1135	2270	27.2	40.9	54.5	90.8
8 PzS-ET 1240	713.5 / 743.5	155	QUA2640	65.1	1320	2640	31.7	47.5	63.4	105.6
9 PzS-ET 1395	713.5 / 743.5	173	QUA2950	71.6	1475	2950	35.4	53.1	70.8	118.0
10 PzS-ET 1550	713.5 / 743.5	191	QUA3360	78.1	1680	3360	40.3	60.5	80.6	134.4

± 5% weight tolerance
H1: Height over lid
H2: Overall height including connector and bolt
Torque: 23Nm

Not to scale





Advantages over traditional lead acid batteries...

- Higher energy density resulting in increased performance
- Extra long running times due to increased capacity
- Ultra energy efficient due to low resistance
- Reduced operating temperatures for increased cycle life and battery lifetime
- Cost savings due to increased efficiency
- Fast charging from 20 to 100% SOC in 4 hours
- Suitable for opportunity charging

Increased running hours

Increased operating hours & lower operating temperatures result in a significant increased battery life. This results in more truck hours than a standard lead acid battery.

more truck hours

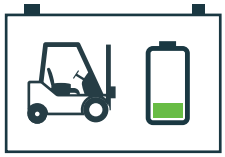
standard truck hours

HIGH ENERGY ON DEMAND™

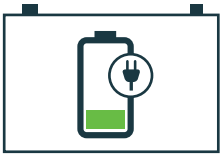
QUASAR™ - High Performing Charging

Fast Charging QUASAR Battery

The QUASAR battery can be fully charged in only 4 hours from 80% depth of discharge.

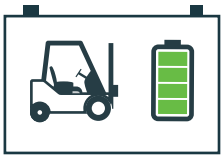


Fast charge profile



Approved charger

Fully charged in 4 hours



Increased running time

Fast charge allows for maximum output with a reduced initial investment suitable for multi-shift applications...

Standard lead acid battery

Shift (8hrs)	Battery 1	Battery 2	Battery 3
SHIFT 1			
SHIFT 2			
SHIFT 3			

QUASAR

Shift (8hrs)	Battery 1	Battery 2
SHIFT 1		4hrs + 4hrs
SHIFT 2	4hrs + 4hrs	
SHIFT 3		4hrs + 4hrs

In use

On charge

Cooling

Opportunity Charging

Unlike standard batteries, QUASAR batteries allow for opportunity charging to give you those extra running times when required.

This allows the user to charge during breaks in production to give maximum flexibility.

Cold Storage

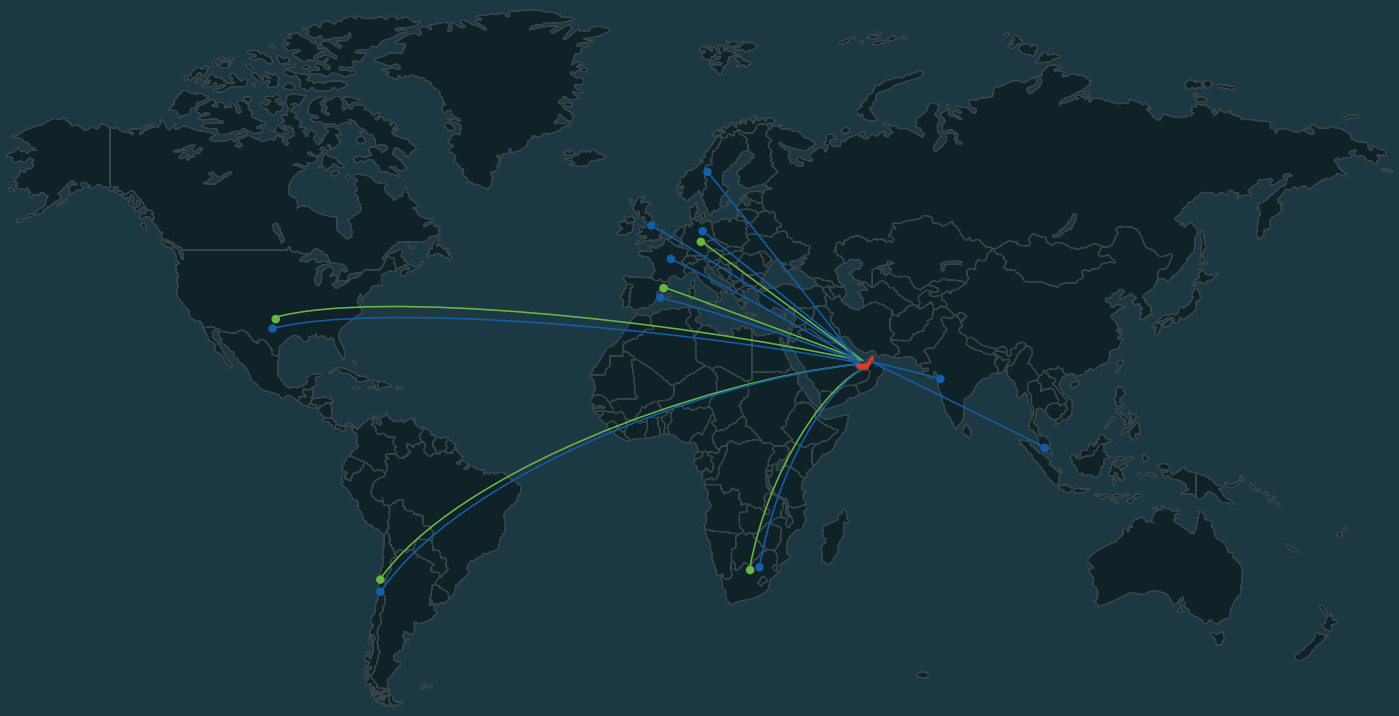
In standard batteries, the lower the operating temperature results in a lower capacity. QUASAR has increased initial capacity and is therefore suitable for extreme temperature variants, for example, cold stores and outdoor applications such as ground support.

cold stores + QUASAR™ HIGH ENERGY ON DEMAND = up to 50% higher run time at cold temperature vs PZS

High temperatures

The lower operating temperature of the QUASAR product makes it also the ideal battery for outdoor applications in extreme high temperatures.

A global leader in the industrial battery market providing world-class products for Motive Power and Reserve Power applications.



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