

NP SERIES

**VALVE REGULATED LEAD-ACID BATTERIES
SHORTFORM BROCHURE**



RELIABILITY IS YOUR SECURITY

Yuasa NP, NPC and NPH Batteries
Utilising the latest advance design Oxygen

Recombination Technology, Yuasa have applied their 75 years experience in the lead acid battery field to produce the optimum design of Sealed Lead Acid batteries

Features

- Superb recovery from deep discharge
- Electrolyte suspension system
- Gas Recombination
- Multipurpose: Float or Cyclic use
- Usable in any orientation
- Superior energy density
- Lead calcium grids for extended life
- Manufactured World wide
- Application specific designs

TECHNICAL FEATURES

Sealed Construction

Yuasa's unique construction and sealing technique ensures no electrolyte leakage form case or terminals

Electrolyte Suspension System

All NP batteries utilize Yuasa's unique electrolyte suspension system incorporating a microfine glass mat to retain the maximum amount of electrolyte in the cells. The electrolyte is retained in the separator material by meniscus effect and there is no free electrolyte to escape from the cells. No gels or other contaminants are added.

Control of Gas Generation

The design of Yuasa's NP batteries incorporates the very latest oxygen recombination technology to effectively control the generation of gas during normal use.

Low Maintenance Operation

Due to the perfect sealed construction and the recombination of gasses within the cell, the battery is almost maintenance free.

Terminals

NP batteries are manufactured using a range of terminals which vary in size and type. Please refer to details as shown.

Operation in any Orientation

The combination of sealed construction and Yuasa's unique electrolyte suspension system allows operation in any orientation, with no loss of performance or fear of electrolyte leakage. (Excluding continuous use inverted)

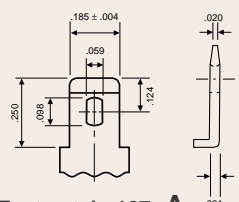
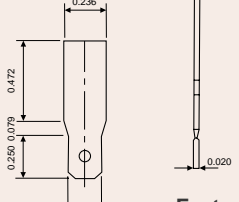
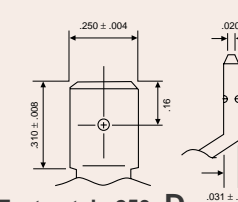
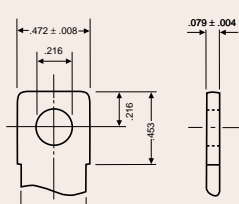
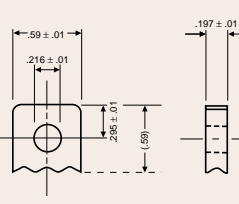
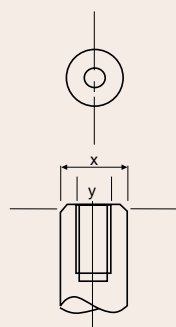
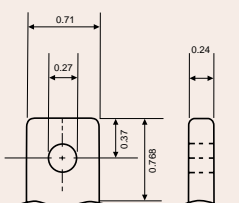
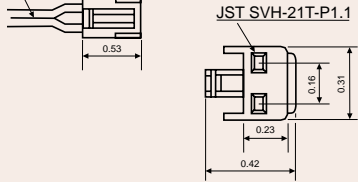
Valve Regulated Design

The batteries are equipped with a simple, safe low pressure venting system which releases excess gas and automatically reseals should there be a build up of gas within the battery due to severe overcharge. However, on no account should the battery be charged in a sealed container.

Lead Calcium Grids

The heavy duty lead calcium alloy grids provide an extra margin of performance and life in both cyclic and float applications and give unparalleled recovery from deep discharge.

Terminals

 <p>Faston tab: 187 A</p> <table border="1"> <thead> <tr> <th colspan="2">INCH = MM</th> </tr> </thead> <tbody> <tr><td>.250</td><td>6.35</td></tr> <tr><td>.185</td><td>4.70</td></tr> <tr><td>.124</td><td>3.15</td></tr> <tr><td>.098</td><td>2.50</td></tr> <tr><td>.059</td><td>1.50</td></tr> <tr><td>.031</td><td>0.80</td></tr> <tr><td>.020</td><td>0.50</td></tr> <tr><td>.004</td><td>0.10</td></tr> </tbody> </table>	INCH = MM		.250	6.35	.185	4.70	.124	3.15	.098	2.50	.059	1.50	.031	0.80	.020	0.50	.004	0.10	 <p>Faston tab: 187 B</p> <table border="1"> <thead> <tr> <th colspan="2">INCH = MM</th> </tr> </thead> <tbody> <tr><td>0.472</td><td>12.00</td></tr> <tr><td>0.250</td><td>6.35</td></tr> <tr><td>0.236</td><td>6.00</td></tr> <tr><td>0.185</td><td>4.70</td></tr> <tr><td>0.079</td><td>2.00</td></tr> <tr><td>0.020</td><td>0.50</td></tr> </tbody> </table>	INCH = MM		0.472	12.00	0.250	6.35	0.236	6.00	0.185	4.70	0.079	2.00	0.020	0.50	 <p>Faston tab: 250 D</p> <table border="1"> <thead> <tr> <th colspan="2">INCH = MM</th> </tr> </thead> <tbody> <tr><td>.310</td><td>7.90</td></tr> <tr><td>.250</td><td>6.35</td></tr> <tr><td>.16</td><td>4.0</td></tr> <tr><td>.031</td><td>0.8</td></tr> <tr><td>.020</td><td>0.5</td></tr> </tbody> </table>	INCH = MM		.310	7.90	.250	6.35	.16	4.0	.031	0.8	.020	0.5
INCH = MM																																														
.250	6.35																																													
.185	4.70																																													
.124	3.15																																													
.098	2.50																																													
.059	1.50																																													
.031	0.80																																													
.020	0.50																																													
.004	0.10																																													
INCH = MM																																														
0.472	12.00																																													
0.250	6.35																																													
0.236	6.00																																													
0.185	4.70																																													
0.079	2.00																																													
0.020	0.50																																													
INCH = MM																																														
.310	7.90																																													
.250	6.35																																													
.16	4.0																																													
.031	0.8																																													
.020	0.5																																													
 <p>Bolt fastened terminal E</p> <table border="1"> <thead> <tr> <th colspan="2">INCH = MM</th> </tr> </thead> <tbody> <tr><td>472</td><td>12.00</td></tr> <tr><td>.453</td><td>11.50</td></tr> <tr><td>.433</td><td>11.00</td></tr> <tr><td>.216</td><td>5.50</td></tr> <tr><td>.079</td><td>2.00</td></tr> </tbody> </table>	INCH = MM		472	12.00	.453	11.50	.433	11.00	.216	5.50	.079	2.00	 <p>Bolt fastened terminal F</p> <table border="1"> <thead> <tr> <th colspan="2">INCH = MM</th> </tr> </thead> <tbody> <tr><td>.59</td><td>15.0</td></tr> <tr><td>.216</td><td>5.5</td></tr> <tr><td>.295</td><td>7.5</td></tr> <tr><td>.197</td><td>5.0</td></tr> </tbody> </table>	INCH = MM		.59	15.0	.216	5.5	.295	7.5	.197	5.0																							
INCH = MM																																														
472	12.00																																													
.453	11.50																																													
.433	11.00																																													
.216	5.50																																													
.079	2.00																																													
INCH = MM																																														
.59	15.0																																													
.216	5.5																																													
.295	7.5																																													
.197	5.0																																													
 <p>Bolt fastened terminal G</p> <table border="1"> <thead> <tr> <th colspan="2">INCH = MM</th> </tr> </thead> <tbody> <tr><td>0.24</td><td>6</td></tr> <tr><td>0.27</td><td>7</td></tr> <tr><td>0.37</td><td>9.5</td></tr> <tr><td>0.71</td><td>18</td></tr> <tr><td>0.768</td><td>19.5</td></tr> </tbody> </table>	INCH = MM		0.24	6	0.27	7	0.37	9.5	0.71	18	0.768	19.5	<p>JST No. VHR-2N I WIRE AWG #20 UL 1007</p>  <p>JST No. VHR-2N (TERMINAL) JST SVH-21T-P1.1</p>	<table border="1"> <thead> <tr> <th>Terminal</th> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>J:</td> <td>17mm</td> <td>M5</td> </tr> <tr> <td>K:</td> <td>20mm</td> <td>M6</td> </tr> <tr> <td>L:</td> <td>10mm</td> <td>M5</td> </tr> </tbody> </table>	Terminal	x	y	J:	17mm	M5	K:	20mm	M6	L:	10mm	M5																				
INCH = MM																																														
0.24	6																																													
0.27	7																																													
0.37	9.5																																													
0.71	18																																													
0.768	19.5																																													
Terminal	x	y																																												
J:	17mm	M5																																												
K:	20mm	M6																																												
L:	10mm	M5																																												

Long Cycle Service Life

Depending upon the average depth of discharge, over a thousand discharge/charge cycles can be expected.

Float Service Life

The expected service life is five years in float standby applications.

Separators

The use of the special separator material provides a very efficient insulation between plates preventing inter-plate short circuits and prohibiting the shedding of active materials.

Long shelf Life

The extremely low shelf discharge rate allows the battery to be stored for extended periods up to one year at normal ambient temperatures with no permanent loss of capacity.

Operating Temperature Range

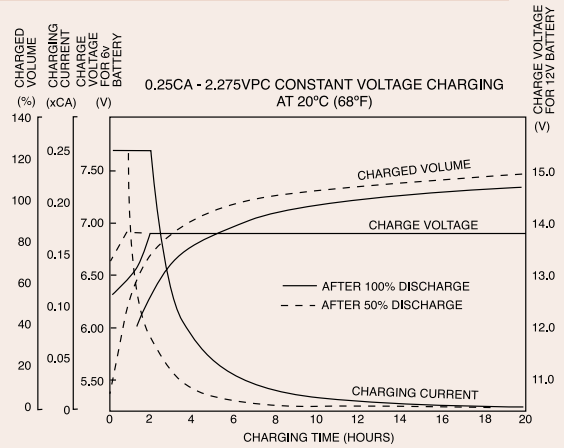
The batteries can be used over a broad temperature range permitting considerable flexibility in system design and location

Charge – 15C to 50C

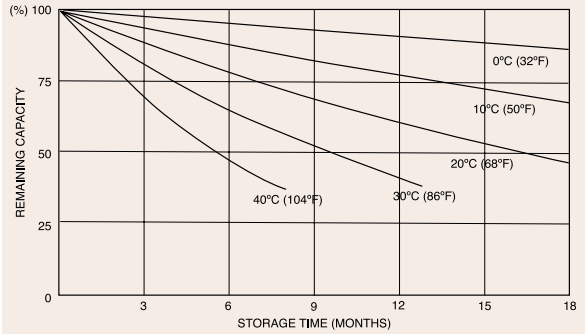
Discharge – 20C to 60C

Storage – 20C to 50C (fully charged battery)

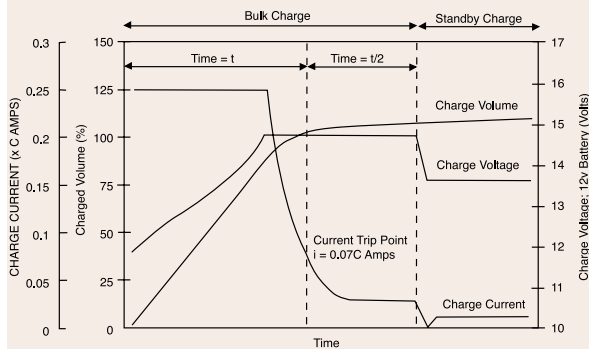
FLOAT CHARGE CHARACTERISTICS



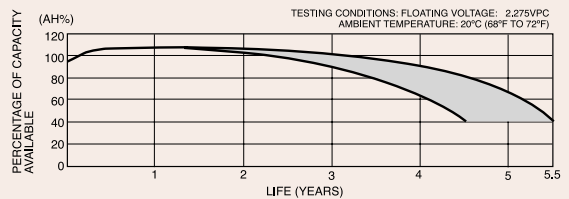
SELF DISCHARGE CHARACTERISTICS



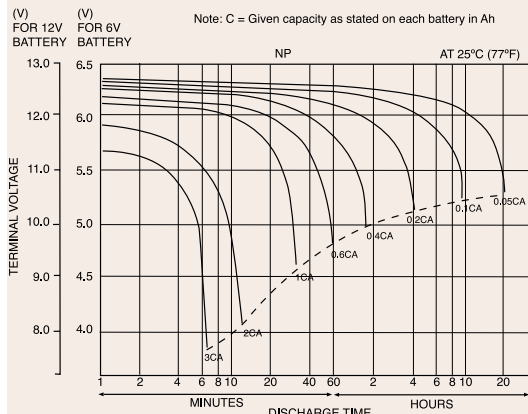
NP SERIES CYCLIC RECHARGE REGIME



FLOAT SERVICE LIFE NP RANGE



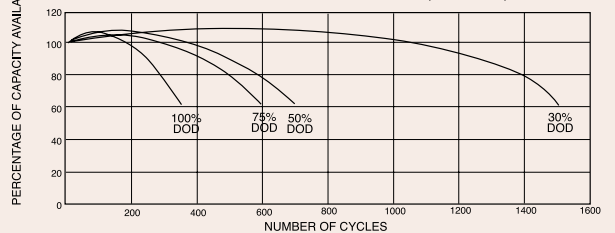
NP DISCHARGE CHARACTERISTICS CURVES AT 25°C (77°F)



TYPICAL DISCHARGE CHARACTERISTICS NPC RANGE

CYCLE SERVICE LIFE IN RELATION TO DEPTH OF CHARGE

TESTING CONDITIONS: DISCHARGE CURRENT: 0.17C Amp. (F.V 1.7V/CELL)
CHARGING CURRENT: 0.09C Amp.
CHARGING VOLUME: 125% OF DISCHARGED CAPACITY
AMBIENT TEMPERATURE: 20°C TO 25°C (68°F TO 77°F)



INTELLIGENT BATTERY CHARGERS

Manufactured to BS3456, IEC335, UL 1236, EN60335, CE mark to EN5008-1

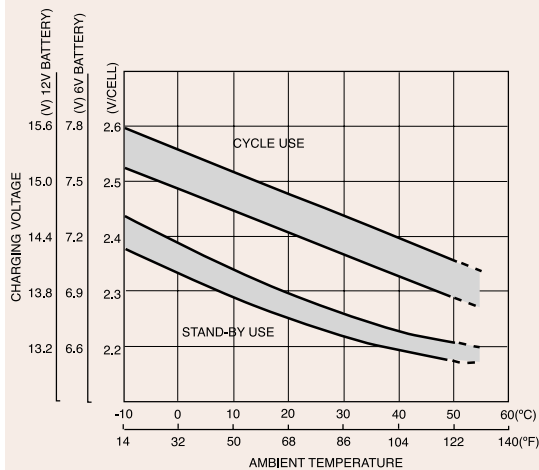
Features

Micro processor controlled
 Short circuit protection
 Reverse polarity protection
 High temperature protection
 Soft start current control
 Fast constant current bulk charge
 3 stage charging CI-CV-float
 Constant voltage float/standby
 Proportional timing
 Flexibility, to match battery specification.

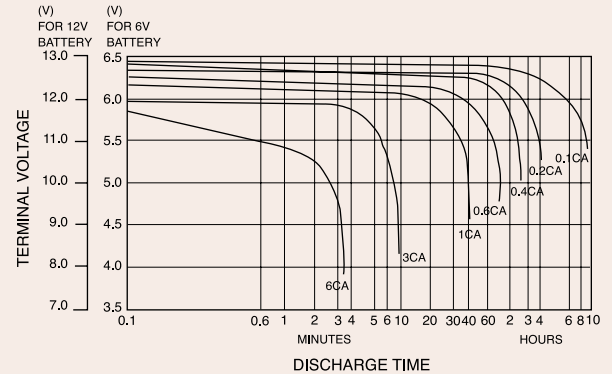
Standard Range

YCP03A12	300mA 12v
YCP03A24	300mA 24v
YCP03A6	300mA 6v
YCP06A12	600mA 12v
YCP06A6	600mA 6v
YCP1.5A12	1.5A 12v
YCP1.5A24	1.5A 24v
YCP1.5A6	1.5A 6v
YCP10A12S	10A 12v
YCP1A12	1A 12v
YCP1A6	1A 6v
YCP2A12	2A 12v
YCP2A24	2A 24v
YCP2A6	2A 6v
YCP3A12	3A 12v
YCP4A12	4A 12v
YCP6A12S	6A 12v
YCP8A12S	8A 12v
YCP8A24S	8A 24v

RELATIONSHIP BETWEEN CHARGING VOLTAGE AND TEMPERATURE



NPH DISCHARGE CHARACTERISTIC CURVES



Standard NP

Available in a wide range of sizes to suit general applications.

NPH/SW

High performance batteries specially designed for applications requiring high rate discharge, supplying up to 50% (NPH), 75% (SW) more power (Watts) for short durations when compared to conventional NP models.

NPC

Specifically designed to suit the arduous requirements of cyclic applications allowing increased cycle life (at least double that of conventional types).

NPL Long Life Model also to BS6290pt4
 Dedicated literature available on request. (NPL Shortform).

Applications

Yuasa NP batteries, having excellent deep discharge recovery characteristics coupled with long life on float standby, are ideal for numerous applications in both cyclic and standby modes. For advice on the use of NP batteries in your particular application please contact our Sales Office.

Charging

For Cyclic Applications see charging characteristic graph.

For Float Standby Applications

Charged at 2.275 volts per cell continuous. Battery will seek its own current level and float fully charged. However, users should be aware that when charging from fully discharged, the battery can draw an initial charge current of approximately 2cA. Care should therefore be taken to ensure that this initial charge current (if ungoverned) is within the output capability of the equipment. Final charge current at 2.275 volts per cell is typically between 0.0005cA to 0.004cA.

CAUTION

Do not Short Circuit
 Do not charge in a sealed container
 Service life and operational characteristics will be affected by temperature
 AC Ripple reduces service life.

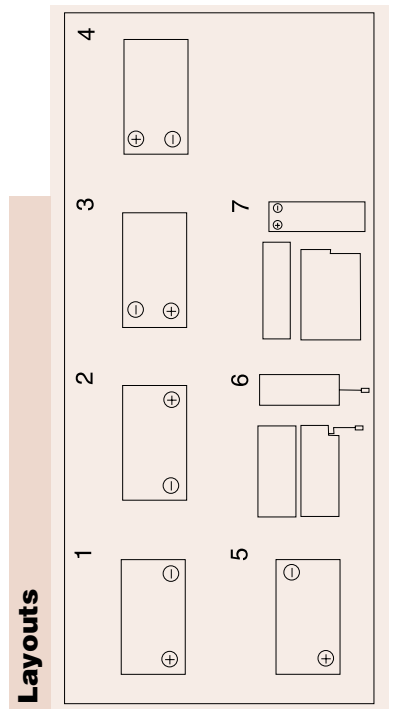
WARNING!

The battery type NP65-121 must never be installed permanently suspended by their handles; they are not designed for this purpose.

	NP1-6	NP1-2.6	NP2.8.6	NP4-6	NP7-6	NP10-6	NP12.6	NP0.8-12	NP1-2-12	NP2-12	NP2.1-12	NP2.3-12	NP2.8-12	NP3.2-12	NP4-12	NP7-12	NP12-12	NP17-12	NP18-12	NP24-12	NP38-12	NP65-12
Nominal Capacity (Ah)	1	1.2	2.8	4	7	10	12	0.8	1.2	2	2.1	2.3	2.8	3.2	4	7	12	17	18	24	38	65
20hr to 1.75vpc 30°C	0.93	1.1	2.5	3.7	6.5	9.2	11.1	0.74	1.1	1.86	1.9	2.1	2.5	2.9	3.7	6.4	11.1	15.7	16	22.3	35.3	60.5
10hr to 1.75vpc 20°C	0.85	1	2.3	3.4	6	8.5	10	0.68	1	1.7	1.75	1.9	2.3	2.7	3.4	5.9	10	14.4	14.5	20.4	32.3	55.3
5hr to 1.70vpc 20°C	0.6	0.7	1.6	2.4	4.2	6	7.2	0.48	0.7	1.2	1.2	1.3	1.6	1.9	2.4	4.2	7.2	10.2	10.3	14.4	22.8	39
1hr to 1.60vpc 20°C	6	6	6	6	6	6	6	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Voltage	54	58	61	72	86.2	85	101	65	61	95	69	76	63	71	75	91	104	89	94	79	83	77
Energy Density (Wh.L.20hr)	24	25	29	28	28.5	30	35	27	25	34	31	29	30	32	27	32	36	33	38	32	32	34
Specific Energy (Wh.kg.20hr)	75	60	30	20	22.5	8	8	270	110	180	60	65	60	50	40	25	16	15	11	9.5	7.5	5
Int. Resistance (m.Ohms)	5	12	28	40	35	40/75	75	4	12	10	21	23	28	32	40/75	40/75	75	170	112	240	300	500
Maximum discharge (A)	15	36	84	1.20	105	300	360	12	36	30	63	69	84	96	120	210	360	500	500	500	500	800
Short Circuit current (A)																						
Dimensions (mm)																						
Length	51	97	134	70	151	151	151	96	97	150	178	178	134	134	90	151	151	181	180	166	197	350
Width	42.5	25	34	47	34	50	50	25	48	20	34	34	67	67	70	65	98	76	76	175	165	166
Height overall	54.5	54.5	64	105.5	97.5	97.5	97.5	61.5	54.5	89	64	64	64	64	106	97.5	97.5	167	167	125	170	174
Weight (Kg)	0.25	0.31	0.57	0.87	1.32	1.93	2.05	0.35	0.58	0.7	0.82	0.95	1.12	1.2	1.75	2.65	4.05	6.1	6.2	9	14.2	23
Terminal	A	A	A	A	A	A/D	D	1	A	B	A	A	A	A	A/D	A/D	D	E/L	E	E/L	J/F	K/G
Layout	5	1	1	5	1	1	1	6	3	7	1	1	3	3	1	4	4	2	2	2	2	2
Terminal Torque Nm	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.45	2.45	2.45	2.45	4.76

NPH2-12FR NPH3.2-12 NPH5-12 NPH12-12 NPH16-12 SW200 NPC8-6 NPC17-12 NPC24-12 NPC30-12 NPC38-12 NPC65-12

Nominal Capacity (Ah)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20hr to 1.75vpc 30°C	2	3.2	5	12	16	16	16	33mpc 10cm	7.4	15.7	22.3	28	35.3	60.5								
10hr to 1.75vpc 20°C	1.82	2.91	4.5	10.8	14.5	14.5	53wpc 5cm	6.8	14.4	20.4	25	32.3	55.3									
5hr to 1.70vpc 20°C	1.5	2.4	3.8	9	12	12	71wpc 3cm	4.8	10.2	14.4	17	22.8	39									
1hr to 1.60vpc 20°C	12	12	12	12	12	12	6	6	12	12	12	12	12									
Voltage	82.7*	69.2*	92.9*	95*	86.4*	47.8**	46	89	79	80.9	83	77										
Energy Density (Wh.L.20hr)	28.5*	27.3*	29.9*	32*	30.9*	16.8**	18	33	32	31.4	32	34										
Specific Energy (Wh.kg.20hr)	66	35	24	16	15	18	15	15	9.5	9	7.5	5										
Int. Resistance (m.Ohms)	14	22.4	35	84	112	45	40	170	240	300	300	500										
Maximum discharge (A)	40	64	100	240	320	150	300	500	500	500	500	800										
Short Circuit current (A)																						
Dimensions (mm)																						
Length	8	134	90	151	181	151	151	181	166	195	197	350										
Width	51	67	70	98	76	51	50	76	175	129	165	166										
Height overall	88	64	106	97.5	167	97.5	97.5	167	125	179	170	174										
Weight (Kg)	0.84	1.4	2	4.2	6.2	2.14	1.8	6.1	9	11.2	14.2	23										
Terminal	A	A	D	D	E	A+D	A	E	E	F	F	G										
Layout	2	3	1	4	2	1	1	2	2	1	2	2										
Terminal Torque Nm	-	-	-	-	2.45	-	-	2.45	2.45	2.45	2.45	4.76										



Yuasa in Europe

In line with Yuasa's policy of development its worldwide manufacturing base, a plan was laid down in 1981 to supply the European market for NP batteries from a factory within the EEC.

In April 1981 as a preliminary move in establishing its European operation the Yuasa sales company was established in Swindon and direct marketing of the NP battery into the UK market began.

Based on the early success of the sales company Yuasa Japan quickly decided to locate a manufacturing plant in the UK

In co-operation with the UK Government, Wales was chosen as the most suitable area and in October 1981 the manufacturing company was set up with a 50,000 square foot factory.

To keep pace with the global increase in demand for Yuasa battery products, the Corporate policy has been to increase manufacturing facilities World wide, here in Europe that has resulted in six expansions of the UK facility to its present size of almost 300,000 square feet, manufacturing 60 international model types.

The UK factory has been granted the Queens Award for export on two separate occasions, with other major achievements including the registration to ISO 9002 since 1990 and recently ISO 14001 in 2000 (both by BSI)

Yuasa Battery UK Ltd is a major contributor to the Yuasa policy to provide World Class products from a World Wide Company.



Yuasa Battery Sales (UK) Ltd

Hawksworth
Industrial Estate, Swindon,
Wiltshire SN2 1EG
Tel: 01793-645700
Fax: 01793-645701
Website: www.yuasa-battery.co.uk

Yuasa Battery (Europe) GmbH

Wanheimer Str. 47
D-40472 Düsseldorf Germany
Tel: 49 211 417900
Fax: 49 211 4179011
Website: www.yuasa-battery.net