



检测  
CNAS L0095



2007002171A

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No.: GJW2009-0112

# 检验报告

TEST REPORT

NAME OF SAMPLE: Valve Regulated Sealed Lead Acid Batteries

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CLIENT: SHENZHEN CENTER POWER TECH. CO., LTD.

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CLASSIFICATION OF TEST: Commission Test

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Guangzhou Vkan Certification and Testing Institute (CVC—former GTIHEA)



# 检 验 报 告

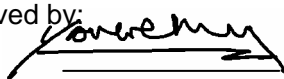
## TEST REPORT

No.: GJW2009-0112

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Name of product: Valve Regulated Sealed Lead Acid Batteries	Trade mark: Vision
Type/Model by: CL300 2V 300Ah CL600 2V 600Ah CL800 2V 800Ah	Sample status: —
Manufacturer by: SHENZHEN CENTER POWER TECH. CO., LTD.	Commissioned by: SHENZHEN CENTER POWER TECH. CO., LTD.
Manufacturer address: Center Power Industrial park, Tongfu Industrial District Dapeng Town, 518120, shenzhen, P. R. China	Commissioner address: Center Power Industrial park, Tongfu Industrial District Dapeng Town, 518120, shenzhen, P. R. China
Quantity of sample: 9	Sampled by: —
Sample identification: CL300 1#~3# CL600 1#~3# CL800 1#~3#	Sampling at (place): —
Means of receiving: Submitted by Manufacturer	Means of sampling: —
Classification of test: Commission Test	Sampling date: —
Receiving date: 2009-02-12	Completing date: 2009-04-13
Tested according to: IEC 60896-21:2004, IEC 60896-22:2004	Test item: 11 items
<p>Test conclusion:</p> <p>The Valve Regulated Sealed Lead Acid Batteries Submitted by SHENZHEN CENTER POWER TECH. CO., LTD. are tested according to IEC 60896-21:2004 Stationary lead-acid batteries- valve regulated types-methods of test and IEC 60896-22:2004 Stationary lead-acid batteries- - valve regulated types-requirements</p> <p>The test items are Gas emission , High current tolerance, Short circuit current and d.c. internal resistance, Internal ignition from external spark sources, Protection against ground short propensity, Content and durability of required markings, Valve operation, Flammability rating of materials, Intercell connector performance, Discharge capacity and Stability against mechanical abuse of units during installation</p> <p>The results of the tested items comply with the relevant requirements of the standard.</p> <div style="text-align: right;">  <p>Seal of CVC Date of Issue: 2009.04.13</p> </div>	

Approved by:



Huang Kun

Reviewed by:



Zhang Siyao

Tested by:



Description and illustration of the sample:

The samples' status is good.

Description of the sampling procedure:

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Description of the deviation from the standard, if any:

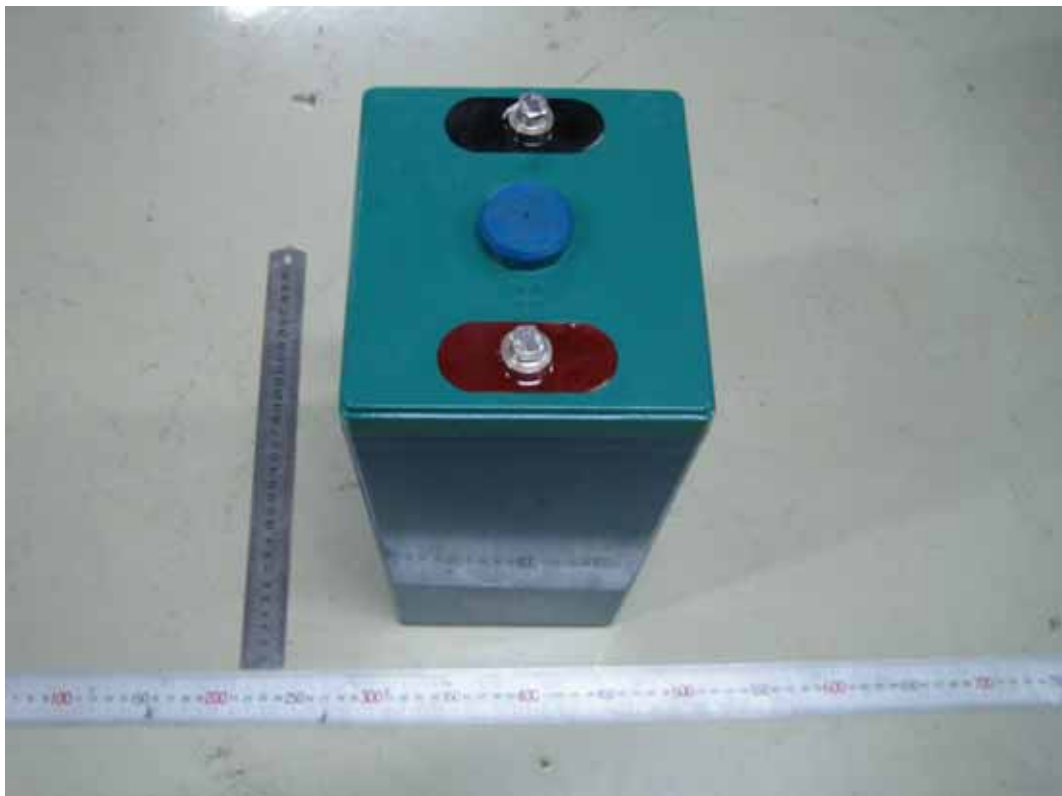
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Remarks:

Throughout this report a comma is used as the decimal separator.

Photos and markings

CL300 (3V, 200Ah)



Photos and markings

CL600 (2V, 600Ah)



**Photos and markings**

**CL800 ( 2V, 800Ah)**



IEC 60896-21:2004 IEC 60896-22:2002			
Cl.	Requirement – Test	Result	Verdict
<b>6</b>	<b>Safe operation requirements</b>		
<b>6.1</b>	<b>Gas emission</b>		State the value
	The test methods are according to clause 6.1.1 to 6.1.14 which are stated in the standard IEC 60896-21		
	Requirement and application: At the rated float charge voltage; state data for all applications: ml gas per cell, h and Ah at 20 ; Requirement and application: at 2,40Vpc overcharge voltage conditions; state data for all applications: ml gas per cell, h and Ah at 20 ;	see appended table A	
<b>6.2</b>	<b>High current tolerance</b>		
	The test methods are according to clause 6.2.1 to 6.2.6 which are stated in the standard IEC 60896-21		State the value
	Requirement and application: Measure unit voltage, inspect and document the status of the top-lead and terminals of each unit after 30s current flow; Pass for all applications: Show evidence of no incipient melting or of no loss of electrical continuity after 30s of high current flow (value to be stated). After the completion of the specified discharge duration, the test shall stand for 5minutes in open circuit and their voltage measured and reported.	The discharge current : 1000A(CL300), 1500A(CL600), 2000A(CL800), (which are specified by the manufacturer). after 30s of high current flow the samples showed no incipient melting or of no loss of electrical continuity  see appended table B	
<b>6.3</b>	<b>Short circuit current and d.c. internal resistance</b>		
	The test methods are according to clause 6.3.1 to 6.3.6 which are stated in the standard IEC 60896-21		State the value
	Define prospective short-circuit value $I_{sc}$ and internal resistance $R_i$ of all units of a type range	see appended table C	
<b>6.4</b>	<b>Protection against internal ignition from external spark sources</b>		
	The test methods are according to clause 6.4.1 to 6.4.6 which are stated in the standard IEC 60896-21		

IEC 60896-21:2004 IEC 60896-22:2002			
Cl.	Requirement – Test	Result	Verdict
	Requirement and application: induce sparks near representative valve/barrier assemblies during emission Pass for all application: no evidence of rapid combustion or explosion beyond valve/barrier assemblies	No evidence of rapid combustion, no explosion beyond valve/barrier assemblies.	P
<b>6.5</b>	<b>Protection against ground short propensity</b>		p
	The test methods are according to clause 6.5.1 to 6.5.9 which are stated in the standard IEC 60896-21 Requirement and application: Operate units in different orientations and apply d.c. gradient; Pass for all applications: No evidence of ground short and leakage phenomena;	No evidence of ground short, no leakage.	P
<b>6.6</b>	<b>Content and durability of required markings</b>		
	the durability of the marking shall be tested, consistent with 1.7.13 of IEC 60950-1, Requirement and application: see table 9 and Table 10 in the standard IEC 60896-22	The markings and following information are readable after rubbed 15s with water, petroleum, solution of sodium carbonate, and 40% in weight of H <sub>2</sub> SO <sub>4</sub> in water respectively.	P
<b>6.7</b>	<b>Material identification</b>		P
	The test methods are according to clause 6.7.1 to 6.7.4 which are stated in the standard IEC 60896-21		P
	Requirement and application: Inspect case and /or cover for ISO 1043-1 materials symbols. expose to chemicals. Pass for all applications: ISO symbols present on the outside of the cover or/and Case. Symbols shall remain readable after exposure to chemicals and remain in place	The ISO marking would be shown if it is required. ABS material	
<b>6.8</b>	<b>Valve operation</b>		P
	The test methods are according to clause 6.8.1 to 6.8.3 which are stated in the standard IEC 60896-21	CL300: Open: 19Kpa, Closed: 12Kpa	P
	Requirement and application: Overcharge units and detect gas flow from the valve; Pass for all applications: Gas release detected before and after stress	CL600: Open: 19Kpa, Closed: 12Kpa CL800: Open: 19Kpa,	



IEC 60896-21:2004 IEC 60896-22:2002			
Cl.	Requirement – Test	Result	Verdict
	temperature impact test.	Closed: 12Kpa	
<b>6.9</b>	<b>Flammability rating of materials</b>		P
<b>6.9.3</b>	The test methods are according to clause 6.9.1 to 6.9.4 which are stated in the standard IEC 60896-21	Flammability rating level : UL 94V-0	p
	Requirement and application Determine flammability rating of case and cover material; State data for all applications: State the flammability rating level for samples of thickness equivalent to that of case and cover.		
<b>6.10</b>	<b>Intercell connector performance</b>		
	The test methods are according to clause 6.10.1 to 6.10.2 which are stated in the standard IEC 60896-21	CL300: Maximum temperature: 59 ; CL600: Maximum temperature: 58 ; CL800: Maximum temperature: 60 ;	State the value
	Requirement and application: Measure and report maximum intercell connector temperature reached; State data for all applications: State maximum temperature reached.		
<b>6.11</b>	<b>Discharge capacity</b>		P
	The test methods are according to clause 6.11.1 to 6.11.12 which are stated in the standard IEC 60896-21	see appended table D	State the value
	Requirement and application: Determine actual capacity $C_a$ ; $C_a$ to be at least $x$ % of $C_{rt}$ with all units at all rates shown below ; 10h \ 8h \ 3h \ 1h \ 0,25\ 1,80Vpc \ 1,75Vpc \ 1,70Vpc \ 1.60Vpc 1.60Vpc\ $C_a \geq 95\% C_{rt}$		
<b>6.12</b>	<b>Charge retention during storage</b>		N
	The test methods are according to clause 6.12.1 to 6.12.7 which are stated in the standard IEC 60896-21		N
	Requirement and application: Determine charge retention factor $C_{rt}$ after 6 months of storage; Comply for all applications: $C_{rt} \geq 70\%$		
<b>6.13</b>	<b>Float service with daily discharges</b>		N
	The test methods are according to clause 6.13.1 to 6.13.5 which are stated in the standard IEC 60896-21		

IEC 60896-21:2004 IEC 60896-22:2002			
Cl.	Requirement – Test	Result	Verdict
	Requirement and application: see table 9 and Table 17 in the standard IEC60896-22		
<b>6.14</b>	<b>Recharge behavior</b>		N
	Requirement and application: Rbf24h 24h Recharge behavior factor 90% Rbf168h 168h Recharge behavior factor 98%		
<b>6.15</b>	<b>Service life at an operating temperature of 40 °C</b>		N
	The test methods are according to clause6.15.1 to 6.15.5 which are stated in the standard IEC 60896-21		N
	Requirement and application: Brief duration exposure time: 500days; Medium duration exposure time: 750days; Long duration exposure time: 1100days Very long duration exposure time: 1700days.		
<b>6.16</b>	<b>Impact of a stress temperature of 55 °C or 60 °C</b>		N
	The test methods are according to clause6.16.1 to 6.16.8 which are stated in the standard IEC 60896-21		N
	Requirement and application: At 55 Capacity monitored with 3h rate discharge test: Brief duration exposure time 150days; Medium duration exposure time 250days; Long duration exposure time 350days; Very long duration exposure time 500days.		
<b>6.17</b>	<b>Abusive over-discharge</b>		N
	The test methods are according to clause6.17.1 to 6.17.15 which are stated in the standard IEC 60896-21		N
	Requirement and application:determine capacity ration Caod ,unbalanced sting over-discharge Coad, Coad 0,80(for the string)		
	Requirement and application:determine capacity ration Caoc ,unbalanced sting over-discharge Coac, Coac 0,90(for the string)		
<b>6.18</b>	<b>Thermal runaway sensitivity</b>		N

IEC 60896-21:2004 IEC 60896-22:2002			
Cl.	Requirement – Test	Result	Verdict
	The test methods are according to clause 6.18.1 to 6.18.14 which are stated in the standard IEC 60896-21		N
	Requirement and application: Comply for all applications: Achieve at least 1 week below 60 at 2,45Vpc and at least 24h below 60 at 2,60Vpc; Show ultimate time to 60 or ultimate temperature after 168h at 2,45Vpc and 2,60Vpc.		
<b>6.19</b>	<b>Low temperature sensitivity</b>		N
	The test methods are according to clause 6.19.1 to 6.19.13 which are stated in the standard IEC 60896-21		N
	Requirement and application: show abusive low temperature service capacity (Cals) of all unit and report eventual freezing induced damages.		N
<b>6.20</b>	<b>Dimensional stability at elevated internal pressure and temperature</b>		N
	The test methods are according to clause 6.20.1 to 6.20.6 which are stated in the standard IEC 60896-21		
	Requirement and application: Show dimensional change in percentage and in mm		
<b>6.21</b>	<b>Stability against mechanical abuse of units during installation</b>		P
	The test methods are according to clause 6.21.1 to 6.21.6 which are stated in the standard IEC 60896-21	No leakage detectable after two times two drops.	P
	Requirement and application: Show leakage inspection results; No leakage detectable after two times two drops.		

Table A: 6.1 Gas emission												
Type	CL300				CL600				CL800			
Uflo(V)=2.25 ml /(Ah · h · cell)	The 1 <sup>st</sup>	The 2 <sup>nd</sup>	The 3 <sup>rd</sup>	The 4 <sup>th</sup>	The 1 <sup>st</sup>	The 2 <sup>nd</sup>	The 3 <sup>rd</sup>	The 4 <sup>th</sup>	The 1 <sup>st</sup>	The 2 <sup>nd</sup>	The 3 <sup>rd</sup>	The 4 <sup>th</sup>
		0.00 32	0.00 34	0.00 20	0.00 29	0,00 40	0,00 38	0,00 34	0,00 32	0,00 38	0,00 39	0,00 37
at 2,40Vpc overcharge ml /(Ah · h · cell)	0.035				0,038				0,036			

Table B: 6.2 High current tolerance									
Type	CL300			CL600			CL800		
The discharge current	1000A(CL300),			1500A(CL600),			1500A(CL600),		
No.	b1#	b2#	b3#	b1#	b2#	b3#	b1#	b2#	b3#
(Voltage after the test)	2,14	2,15	2,13	2,13	2,14	2,14	2.12	2.13	2.13

Table C: 6.3 Short circuit current and d.c. internal resistance									
Type	CL300			CL600			CL800		
No.	b1#	b2#	b3#	b1#	b2#	b3#	b1#	b2#	b3#
Short-circuit: (A)	4600	4570	4620	8300	8340	8350	9680	9830	9850
Resistance:(m )	0,56	0,57	0,58	0,35	0,33	0,31	0,24	0,25	0,26

Table D: 6.11 Discharge capacity															
Type	CL300					CL600					CL800				
C No	C <sub>10</sub> (Ah)	C <sub>8</sub> (Ah)	C <sub>3</sub> (Ah)	C (Ah)	C <sub>0.25</sub> (Ah)	C <sub>10</sub> (Ah)	C <sub>8</sub> (Ah)	C <sub>3</sub> (Ah)	C (Ah)	C <sub>0.25</sub> (Ah)	C <sub>10</sub> (Ah)	C <sub>8</sub> (Ah)	C <sub>3</sub> (Ah)	C (Ah)	C <sub>0.25</sub> (Ah)
Crt	300	293	252	195	111	600	582,4	522	364	222	800	665	554	430	325
1 #	321	305	261	200	113,5	627	596	532	372	227	840	700	590	456	349
2 #	324	306	261	199	113,6	626	597	532	371	227	836	710	589	455	350
3 #	322	307	262	200	113,8	528	596	533	372	226,	841	704	591	454	352
4 #	323	306	261	201	113,5	627	595	532	373	226	837	706	590	458	354
5 #	325	306	261	200	113,7	626	596	532	371	226,2	836	707	588	459	356
6 #	324	307	261	201	114	628	595	533	372	227,1	838	708	588	453	355
%of Crt															
Type	CL300					CL600					CL800				
1 #	107,0	104,1	103,6	102,6	102,3	104,5	102,34	101,92	102,2	102,25	105,0	105,3	106,5	106,0	107,4
2 #	108,0	104,4	103,6	102,1	102,3	104,3	102,5	101,92	101,92	102,25	104,5	106,8	106,3	105,8	107,7
3 #	107,3	104,8	104,0	102,6	102,5	104,7	102,34	102,11	102,2	101,8	105,1	105,9	106,7	105,6	108,3
4 #	107,7	104,4	103,6	103,1	102,3	104,5	102,2	101,9	102,47	101,8	104,6	106,2	106,5	106,5	108,9
5 #	108,3	104,4	104,0	102,6	102,4	104,3	102,34	101,9	101,92	101,89	104,5	106,3	106,1	106,7	109,5
6 #	108,0	104,8	103,6	103,1	102,7	104,7	102,2	102,11	102,2	102,3	104,8	106,5	106,1	105,3	109,2

## 注 意 事 项

### Important

1. 报告无检验单位公章无效。

The test report is invalid without the official stamp of CVC,

2. 未经本试验室书面同意，不得部分地复制本报告。

Any photocopies or part photocopies of the test report are forbidden without the written permission from CVC,

3. 报告无负责人、审核人签名无效。

The test report is invalid without the signatures of Author and Reviewer,

4. 报告涂改无效。

The test report is invalid if altered,

5. 对检验报告若有异议,应于收到报告之日起十五天内向检验单位提出。

Objections to the test report must be submitted to CVC within 15 days,

6. 一般情况,委托检验仅对来样负责。

Generally, commission test is responsible for the tested samples only,

7. 检验结果中“N”表示“不适用”,“P”表示“通过”,“F”表示“不通过”。

As for the test result, “N” means “not applicable”, “P” means “pass” and “F” means “fail”,

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