


Inspection Report

Report No.	GG-20-103S
PO No.	
Client	
Manufacturer	REENGRID POWER TECHNOLOGY CO., LTD.
Equipment/Material Inspected	As per Equipment/Material inspected
Technical Specification	As per Drawing / De acordo com o desenho
Inspection date	December 25, 2020
Ref. Standard	IEC 60137:2017
Sample Size	10 Pcs
Inspection Location	No.20, Area 3, No.73, Qiqi Street, Zhongshan District, Dalian, China
Test items	Sample Quantity
Visual inspection	10 Pcs
Dimension check	10 Pcs
Dry lightning impulse voltage withstand test	1 Pcs
Dry power-frequency voltage withstand test	10 Pcs
Measurement of partial discharge quantity	10 Pcs
Wet power-frequency voltage withstand test	1 Pcs

WITNESSED	<input type="checkbox"/>
ACCEPTED	<input type="checkbox"/>
REVIEWED	<input type="checkbox"/>
Inspection & Test Service REENGRID POWER TECHNOLOGY CO., LTD.	



 Tested by: Ling xiaolong

 Approved by: Bo xuwei

 Witnessed by: Elvin

Date of report issue: December 29, 2020.



• **Equipment/Material inspected**

DESCRIPTION	TAG NUMBER	UNIT	QUANTITY
Epoxy resin composite bushing	24kV/250A 600 CD	Pcs	10

Total quantity of the batch: 10 units; in accordance IEC 60137

24kV epoxy resin composite bushing

1. Visual inspection

10 units were conducted the visual inspection. The results are shown in table 1.

Table 1 The results of visual inspection

Sample No.	The standard of visual inspection	Result of visual inspection	Conclusion
No.1~No.10	No surface defects shall be tolerated which could affect the satisfactory performance in service.	All samples meet the standards of visual inspection	Passed

2. Dimension check

The following dimensional verification tests were carried out on 10 samples. The results are shown in table 2.

Table 2 The results of dimensions

Dimension		Spacing height H mm	Insulator Distance L mm	Creepage distance S mm	length of immersed part mm	length of binding post mm	Shed diameter mm	Result
Specified value		482±0.5	259±5	≥600	85±1	30±1	160±1/122±1	
Tested value	No.1	481.7	258.1	735	85.2	30.4	159.3/121.8	Passed
	No.2	481.6	258.2	735	85.2	30.4	159.4/121.8	
	No.3	481.6	258.1	733	85.2	30.3	159.3/121.9	
	No.4	481.6	258.1	730	85.1	30.3	159.4/121.9	
	No.5	481.6	258.2	730	85.2	30.4	159.2/121.8	
	No.6	481.6	258.3	732	85.2	30.4	159.3/121.8	
	No.7	481.6	258.1	735	85.1	30.3	159.2/121.9	
	No.8	481.7	258.1	732	85.1	30.4	159.3/121.8	
	No.9	481.6	258.1	730	85.2	30.3	159.2/121.8	
	No.10	481.6	258.1	735	85.2	30.3	159.2/121.8	

3. Dry lightning impulse voltage withstand test

Experimental description:

The magnitude of the test voltage is 110kV. The bushing shall be subjected to 15 full lighting impulses of positive and 15 full lighting impulses of negative polarity of the standard lighting impulses 1.2/50 μ s.

The time intervals between consecutive applications of voltage. Voltage records shall be made for each impulse.

Table 3 Dry lightning impulse voltage withstand test

Atmosphere condition: $b = 103.8\text{kPa}$, $t_d = 11.5^\circ\text{C}$, $t_w = 7.5^\circ\text{C}$, $L = 0.305\text{m}$, $K_t = 0.999$					
Sample No.	Specified withstand value kV	Correction withstand value kV	Withstand voltage value kV	Flashover/Withstand times	Result
No.1	+110	+110	+108.96~+113.88	0/15	Passed
	-110	-110	-107.85~-119.74	0/15	

4. Power-frequency voltage withstand test and measurement of partial discharge quantity

Test procedure:

The test has been performed according to IEC 60137: 2018, clause 9.4 and clause 9.5. The applied the test voltage was 50 kV with a duration of 60 s for the power-frequency voltage withstand test.

Table 4 Power-frequency voltage withstand test

Atmosphere condition: $b = 103.8\text{kPa}$, $t_d = 11.5^\circ\text{C}$, $t_w = 7.5^\circ\text{C}$, $L = 0.305\text{m}$, $K_t = 0.998$										
Sample No.	No.1	No.2	No.3	No.4	No.5	No.6	No.7	No.8	No.9	No.10
Applied value	The voltage of 50kV is applied for 60s.									
Test requirement	No flashover and breakdown are allowed.									
Result	Passed									

5. Measurement of partial discharge quantity

10 sample was subjected to measurement partial discharge quantity . The result was shown in Table 5.

Table 5 Partial discharge test

Sample No.	Specified value	Test voltage kV	Result pC
No.1	Applied 20.8kV, partial discharge value less than 10Pc.	20.8kV	3.1
No.2		20.8kV	5.2
No.3		20.8kV	3.7
No.4		20.8kV	3.2
No.5		20.8kV	3.2
No.6		20.8kV	6.2

No.7		20.8kV	5.4
No.8		20.8kV	4.3
No.9		20.8kV	7.0
No.10		20.8kV	3.5

6. Wet power-frequency voltage withstand test

The magnitude of the test voltage is 45kV, the test duration shall be 60s. The results are shown in following:

Table 6 Wet power-frequency voltage withstand test

Atmosphere condition: $b = 103.8\text{kPa}$, $t_d=11.5^\circ\text{C}$, $t_w=7.5^\circ\text{C}$, $L=0.305\text{m}$, $K_t=1.005$ Artificial rain parameters for wet test : Water resistivity $98 \Omega \cdot \text{m}$ Horizontal component of the rain : 1.4 mm/min; Vertical component of the rain: 1.5 mm/min					
Sample No.	Specified value (kV)	Corrected value (kV)	Applied value (kV)	Withstand time (min)	Results
No.1	45	45	48	1	Passed

7. Conclusions

All test results of the 24kV composite material transformer, bushing manufactured by GREENGRID POWER TECHNOLOGY CO., LTD. are satisfactory with IEC 60137.