

VDE Prüf- und Zertifizierungsinstitut GmbH • Merianstraße 28 • D-63069 Offenbach

LIFASA International Capacitors, S.A.  
C/Vallés, 32 Pol.Ind.Can Bernades  
08130 Santa Perpetua de Mogoda  
Barcelona (Spain)

Offenbach, 2010-07-22

Your ref.  
Mr. Bronislav  
Jirásek

Your letter  
2009-11-06

Our ref. - please indicate  
820600-4690-0001/126593  
FG32/bt-wah

Contact  
Mr. Bretz  
Tel (+49) (69) 83 06-322  
Fax (+49) (69) 83 06-636  
andreas.bretz@vde.com

Dear Sirs,

*Translation: In any case the German version shall prevail*

## **Prüfbericht** zur Information des Auftraggebers *Test Report for the Information of the applicant*

### **Produkt / Product Shunt power capacitor - three-phase unit in delta connection** **Typ / Type POLB44010SK and POLB44400SK**

Dieser Prüfbericht enthält das Ergebnis einer einmaligen Untersuchung an dem zur Prüfung vorgelegten Erzeugnis. Ein Muster dieses Erzeugnisses wurde geprüft, um die Übereinstimmung mit den nachfolgend aufgeführten Normen bzw. Abschnitten von Normen festzustellen. Die Prüfung wurde durchgeführt von 2009-11-27 bis 2010-07-15.

*This test report contains the result of a singular investigation carried out on the product submitted. A sample of this product was tested to found the accordance with the thereafter listed standards or clauses of standards resp.  
The testing was carried out from 2009-11-27 to 2010-07-15.*

Der Prüfbericht berechtigt Sie nicht zur Benutzung eines Zertifizierungszeichens des VDE und berücksichtigt ausschließlich die Anforderungen der unten genannten Regelwerke.

*The test report does not entitle for the use of a VDE Certification Mark and considers solely the requirements of the specifications mentioned below.*



Wenn gegenüber Dritten auf diesen Prüfbericht Bezug genommen wird, muss dieser Prüfbericht in voller Länge an gleicher Stelle verfügbar gemacht werden.

*Whenever reference is made to this test report towards third party, this test report shall be made available on the very spot in full length.*

Applicant: LIFASA International Capacitors, S.A.  
C/Vallés, 32 Pol.Ind.Can Bernades  
08130 Santa Perpetua de Mogoda  
Barcelona (Spain)

Manufacturer: LIFASA International Capacitors, S.A.  
C/Vallés, 32 Pol.Ind.Can Bernades  
08130 Santa Perpetua de Mogoda  
Barcelona (Spain)

Test object: Shunt power capacitor  
Three-phase unit in delta connection

Type: a) POLB44010SK  
b) POLB44400SK

Rated capacitance: a)  $\Delta$  3 x 5,5  $\mu$ F  
b)  $\Delta$  3 x 219,2  $\mu$ F

Rated output: a) 1,0 kvar  
b) 40,0 kvar

Rated voltage: AC 440 V

Rated frequency: 50 Hz

Temperature category: D (Maximum ambient temperature 55 °C)

#### Applicable Specification

DIN EN 60831-1 (VDE 0560 Teil 46):2003-08  
EN 60831-1:1996+A1:2003  
IEC 60831-1:1996+A1:2002  
DIN EN 60831-2 (VDE 0560 Teil 47):1997-09  
EN 60831-2:1996  
IEC 60831-2:1995

Shunt power capacitors of the self-healing type for a.c. systems having a rated voltage up to and including 1 kV



## Test procedure

Sample no. 1 (1 kvar)  
Sample no. 1 (40 kvar)

Thermal stability test  
( $t = 48$  h;  $T = 55^{\circ}\text{C}$ ;  $U = 1,2 \times U_N = 528$  V AC)  
Measurement of the tangent of the loss angle  
at elevated temperature

Sample no. 2 to no. 6 (1 kvar)  
Sample no. 2 to no. 4 (40 kvar)

Voltage test between terminals ( $U = 2,15 \times U_N = 946$  V AC)  
Voltage test between terminals and container ( $U = 3,0$  kV AC)  
Lightning impulse voltage test between terminals and container ( $U_{\text{peak}} = 8$  kV))

Sample no. 7 to no. 9 (1 kvar)  
Sample no. 5 to no. 7 (40 kvar)

Discharge test

Sample no. 10 to no. 12 (1 kvar)  
Sample no. 8 to no. 9 (40 kvar)

Ageing test  
Part a):  $t = 750$  h  
 $T = 46^{\circ}\text{C}$  (1 kvar)  
 $T = 51^{\circ}\text{C}$  (40 kvar)  
 $U = 1,25 \times U_N = 550$  V AC  
Part b): 1000 discharge cycles  
Part c):  $t = 750$  h  
 $T = 46^{\circ}\text{C}$  (1 kvar)  
 $T = 51^{\circ}\text{C}$  (40 kvar)  
 $U = 1,25 \times U_N = 550$  V AC

Sample no. 13 to no. 15 (1 kvar)  
Sample no. 10 to no. 12 (40 kvar)

Self-healing test

Sample no. 16 to no. 18 (1 kvar)  
Sample no. 13 to no. 14 (40 kvar)

Destruction test

Place of testing

The tests have been carried out at the VDE Testing and Certification Institute in Offenbach

Measuring and testing equipment:

The measuring and testing equipment used in the testing laboratory is calibrated before being put into service and thereafter according to an established programme



## Test result

The 1 kvar-samples and the 40 kvar-samples did pass all of the above listed tests. This means that all requirements of DIN EN 60831-1 (VDE 0560 Teil 46):2003-08; EN 60831-1:1996+A1:2003; IEC 60831-1:1996+A1:2002 and DIN EN 60831-2 (VDE 0560 Teil 47):1997-09; EN 60831-2:1996; IEC 60831-2:1995 are fulfilled.

VDE Testing and Certification Institute  
Section FG32

*Brnk*



A COMPANY OF THE **VDE** ASSOCIATION FOR ELECTRICAL, ELECTRONIC & INFORMATION TECHNOLOGIES

Managing Director  
Dipl.-Ing./Dipl.-Kfm. Wilfried Jäger  
Merianstrasse 28  
D-63069 Offenbach  
Phone: +49 (0) 69 83 06-0  
Fax: +49 (0) 69 83 06-555  
E-mail: vde-institut@vde.com  
<http://www.vde.com>

Venue:  
Offenbach/Main  
HRB 43618  
VAT-ID No.: DE261922990  
Tax No.: 04425092566

Make Payments to  
Dresdner Bank Frankfurt  
BLZ 500 800 00  
Account-No.: 198 027 000  
S.W.I.F.T.-Code:  
DRES DE FF  
IBAN  
DE 9150080000198027000

Notified Body according to the Equipment and Product Safety Act (GPSG) for technical work equipment and consumer products. Notified body according to the EMC Directive 2004/108/EG for Electromagnetic Compatibility (EMC). Accredited by DAR accreditation bodies according to DIN EN ISO/IEC 17020, 17021, 17025 and DIN EN 45011. Accredited by: IEC – International Electrotechnical Commission – IEC/IEC/CB, IECQ and CENELEC – European committee for Electrotechnical Standardization – CCA, HAR, ENEC.