

TEST REPORT

Test object: High-voltage metal-enclosed capacitor bank
Designation: 11 kV Capacitor bank
Manufacturer: Systems Power Limited
3 Prestwood Place, East Pimbo, Skelmersdale, Lancashire WN8 9QE,
United Kingdom
Tested for: Sytems Power Limited
Date of test: 8th March 2016
Tested by: VEIKI-VNL Ltd. – Budapest – HUNGARY
Project ID: NTL-06 / 2016
Order/Contract: SPO19006 / 2016, 21st December 2015
Test specification: IEC 62271-200:2011
Tests performed: The main circuit of the test object, constructed in accordance with the description, drawings and photographs incorporated in this report has been subjected to lightning impulse voltage and power-frequency voltage tests.
Test results: The tested main circuit of the high-voltage metal-enclosed switchgear and capacitor bank withstood the lightning impulse and power frequency voltages without any flashover.


This Test Report has been issued by VEIKI-VNL Electric Large Laboratories Ltd. Testing Laboratory. in accordance with above mentioned Specification.

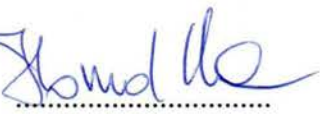
The Report applies only to the test object. The responsibility for conformity of any product having the same designations with that tested rests with the Manufacturer.


This Report comprises 44 sheets in total (8 numbered pages, 2 drawings and 180 oscillograms on 34 pages).



Budapest
30th March, 2016


.....
Szabolcs János
responsible for the test


.....
Csaba Homok
supervised by


.....
Dr. László Varga
managing director

VEIKI-VNL Electric Large Laboratories Ltd. Testing Laboratory is accredited by NAT (Hungarian Accreditation Board) under registration number NAT-1-1251/2015.

VEIKI-VNL Ltd. is an independent company, member of Short-circuit Testing Liaison (STL).

Copyright: Only integral reproduction of this Report is permitted without written permission of VEIKI-VNL Ltd. Electronic copies of this Report may be available and have status of "for information only". The sealed and bound version of the Report is the only valid version.

1158 Budapest, Vasgolyó u. 2-4., HUNGARY

E-mail: vnl@vnl.hu
www. vnl.hu

Phone: +36-1-417 3157
Fax: +36-1-417 3163

TEST CERTIFICATES OR REPORTS ISSUED BY VEIKI-VNL LTD.

Type Test Certificate of Complete Type Test

This certificate provides the verification of all the rated characteristics of the equipment as assigned by the manufacturer, by means of the performance of all type tests specified by the standards.

Type Test Certificate of Dielectric Performance

This certificate provides the verification of all dielectric ratings, by means of the performance of the appropriate type tests specified by the standards.

Type Test Certificate of Temperature-Rise Performance

This certificate provides the verification of temperature-rise limits together with measurement of the main circuit resistance, by means of the performance of the appropriate type tests specified by the standards.

Type Test Certificate of Short-Circuit / Making and Breaking Performance

This certificate provides the verification of rated characteristics with respect short-circuit and/or making and breaking performance, by means of the performance of the appropriate type tests specified by the standards.

Type Test Certificate of Switching Performance

This certificate provides the verification of the switching ratings (e.g. capacitive current), by means of the performance of the appropriate type tests specified by the standards.

Prototype Test Report

Prototype tests are required to verify the suitability of the materials and method of manufacture for composite insulators defined by relevant ANSI standards.

Design Test Report

According to IEC standard: The design tests are intended to verify the suitability of the design, materials and method of manufacture (technology) of composite insulators.

According to ANSI standard: The design tests are intended to verify the insulators electrical and mechanical characteristics that depend on its size and shape.

Type Test Report

This report provides the verification of the rated characteristics of the equipment as assigned by the manufacturer, by means of the performance of the appropriate type tests specified by the standards, for type tests not indicated above.

Development Test Report

This report is issued when the test is intended only to provide the Client with information about the performance of the equipment. The tests are performed in accordance with relevant standards, but are not intended to verify compliance of the equipment.

Control Test Report

This report is issued for tests performed on equipment in service, or removed from service. Tests are performed, and compliance is evaluated in accordance with relevant standards.

Test Report

Test report is issued in all cases not listed above.

Ratings/characteristics assigned by the manufacturer:

Designation:	High-voltage capacitor bank
Manufacturer:	Systems Power Limited
Type:	Capacitor Bank
Serial number:	16/8431/2
Year of manufacturing:	2016
Rated voltage (U_r):	11.5 kV
Rated lightning impulse withstand voltage (U_p):	75 kV
Rated power-frequency withstand voltage (U_d):	28 kV
Rated reactive power (Q_r):	1 MVAR
Rated frequency (f_r) / number of phases:	50 Hz / 3
Rated short-time withstand current (I_k):	25 kA
Rated peak withstand current (I_p):	62.5 kA
Rated duration of short-circuit (t_k):	3 s
Cross-section and materials of the main bars:	60x6mm Tinned Copper

Built-in device:**Disconnecter:**

Manufacturer:	IVEP, a.s.
Type:	QAK 12.630.25/3.L.R.2.-.250/3
Serial number/Year:	16-0047/2016
Rated normal current (I_r):	630 A
Rated voltage (U_r):	12 kV
Rated lightning impulse withstand voltage (U_p):	75/85 kV
Rated power-frequency withstand voltage (U_d):	28/32 kV
Rated short-time withstand current (I_k):	25 kA
Rated peak withstand current (I_p):	62.5 kA
Rated duration of short-circuit:	3 s
Kind of operating mechanism:	manual operated
Weight:	55 kg

The tests were carried out in accordance with the following standards:

IEC 62271-200: 2011	High-voltage switchgear and controlgear Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV
IEC 62271-1:2011	High-voltage switchgear and controlgear – Part 1: Common specifications

Requirements of manufacturer or purchaser:

Tests on the main circuit.

List of manufacturer's drawings for identification of the test object:

8431-GA-11kV	General Arrangement Drawing of 11 kV Type Test Capacitor Bank
N-000367	QAK 12.630.25/3.L.R.2.-.250/30

Present at the test in charge of manufacturer or purchaser:

Mr. Mark Smith	Systems Power Ltd.
Mr. James Qiunn	Systems Power Ltd.
Mr. Prashant Ayyappan	Systems Power Ltd.
Mr. Carl Blackwell	Systems Power Ltd.
Mr. Peter Pallett	Systems Power Ltd.