

RAPPORTO DI PROVA

Test Report

Prove Richieste da : LEGRAND SCANDINAVIA A/S AVEDOREHOLMEN 48 - DK-2650 HVIDOVRE
Applicant

Costruttore : BTICINO SPA - ZUCCHINI BRAND - via XXV Aprile, 10
Manufacturer 25080 Castrezzone di Muscoline (Bs)

1. OGGETTO IN PROVA : FIRE RESISTANT BUSBAR
Equipment under test

Sigla di designazione : SCP-XCP Alluminio *Aluminum* - In: 2000 A - Ui: 1000V (Sample - 0)
Code designation

2. SCOPO DELLE PROVE Verifica della conformità alle prescrizioni contenute nei documenti di riferimento
Scope of the tests (IEC 60331-1)
Compliance to the prescriptions specified in the reference documents (IEC 60331-1)

3. DOCUMENTI DI RIFERIMENTO Vedi pagina 2 del presente rapporto
Reference Documents See page 2 of this report

4. DATA RICEVIMENTO CAMPIONI / BEM 2020/12/18
Date of sample receiving BEM 102221
/BEM

5. DATA DELLE PROVE 2021/01/07
Date of the tests

Il presente Rapporto di prova è composto da:
This test report is composed by

7 pagine di cui (*pages including*) :
7 pagine di rapporto di prove (*pages of tests report*)
-- pagine di grafici e allegati (*graphic annex pages*)

Provato da <i>Tested by</i>	F. Facchetti [Tecnico di Laboratorio] <i>[Laboratory technician]</i>	
Approvato da <i>Approved by</i>	A. Primicerio [Responsabile di Laboratorio] <i>[Laboratory manager]</i>	

Revisione

Revision Sheet

Edizione Nr. <i>Release No.</i>	Data <i>Date</i>	Descrizione della Revisione <i>Revision Description</i>
Rev. 0	2021/01/14	Prima emissione / <i>First edition</i>
Rev. 1	2021/01/18	Seconda emissione / <i>Second edition</i> Revisione sigla di designazione - <i>Review of code designation</i>

I risultati di prova riportati nel presente Rapporto si riferiscono al solo campione sottoposto a prove.
The results referred in this report are only relevant to the samples tested and described in this report.

Soltanto le riproduzioni integrali di questo Rapporto sono permesse senza l'autorizzazione scritta dell'IMQ.

Only complete reproduction of this test report is permitted without written authorization of IMQ.

L'autenticità del presente Rapporto e del suo contenuto possono essere verificate contattando IMQ S.p.A., responsabile dell'emissione di questo Rapporto. *The authenticity of this Test Report and its contents can be verified by contacting IMQ S.p.A., responsible of this Test Report.*

1. Documenti di riferimento/Reference documents

Norma standard	Descrizione documento Document Description
IEC 60331-1 : 2018 Edition 2.0 for as applicable (*)	Tests for electric cables under fire conditions - Circuit integrity - Part 1: Test method for fire with shock at a temperature of at least 830 °C for cables of rated voltage up to and including 0,6/1,0 kV and with an overall diameter exceeding 20 mm

*DEVIATION FROM THE STANDARDS :

- Sample tested Busbar instead of cable

Note Generali

General remarks

Se non diversamente specificato le incertezze per le prove e le misure sono valutate in base alle istruzioni operative IO-LAB001, IO-LAB-004, IO-01-G02. La valutazione delle incertezze è stata effettuata in conformità con IEC Guide 115 "Applicazione di incertezza di misura di valutazione della conformità di attività nel settore elettrotecnico" e IECCE OD-5014.

Procedura interna PG-037 assicura i requisiti per la tracciabilità delle calibrazioni, di tutte le attrezzature di prova che richiedono taratura , e che gli intervalli di calibrazione siano soddisfatte.

Unless otherwise stated the uncertainties for the tests and measurements are evaluated in according to IMQ Operational Instruction IO-LAB-001, IO-LAB-004 and IO-01-G02. The uncertainties evaluation has been carried out in accordance with IEC Guide 115 "Application of Uncertainty of measurement's to Conformity Assessment Activity in the Electrotechnical Sector" and IECCE OD-5014

Internal Procedure PG-037 ensures that the requirements for traceability of calibrations, of all test equipment requiring calibration, and calibration intervals are met.

I campioni oggetto delle prove sono stato campionati e spediti dal cliente.

The samples under test are sampled and sent by the applicant.

Dati generali / General data

LUOGO DI PROVA / Testing location	
Laboratorio di Prova <i>Testing Laboratory</i>	IMQ S.p.A. - Via Quintiliano, 43 - 20138 Milano
Luogo di Prova <i>Testing site</i>	IMQ S.p.A. - Via Quintiliano, 43 - 20138 Milano

Condizioni ambientali <i>Environmental conditions</i>	
<i>Parametro</i> <i>Parameter</i>	<i>Misurato</i> <i>Measured</i>
Temperatura Ambiente Camera di prova <i>Ambient Temperature of Chamber</i>	10 ÷ 40 °C

POSSIBILI VERDETTI / Possible test case verdicts	
L'oggetto in prova supera il requisito <i>Test object does meet the requirement</i>	Positivo / <i>Positive</i>
L'oggetto in prova non supera il requisito <i>Test object does not meet the requirement</i>	Negativo / <i>Negative</i>

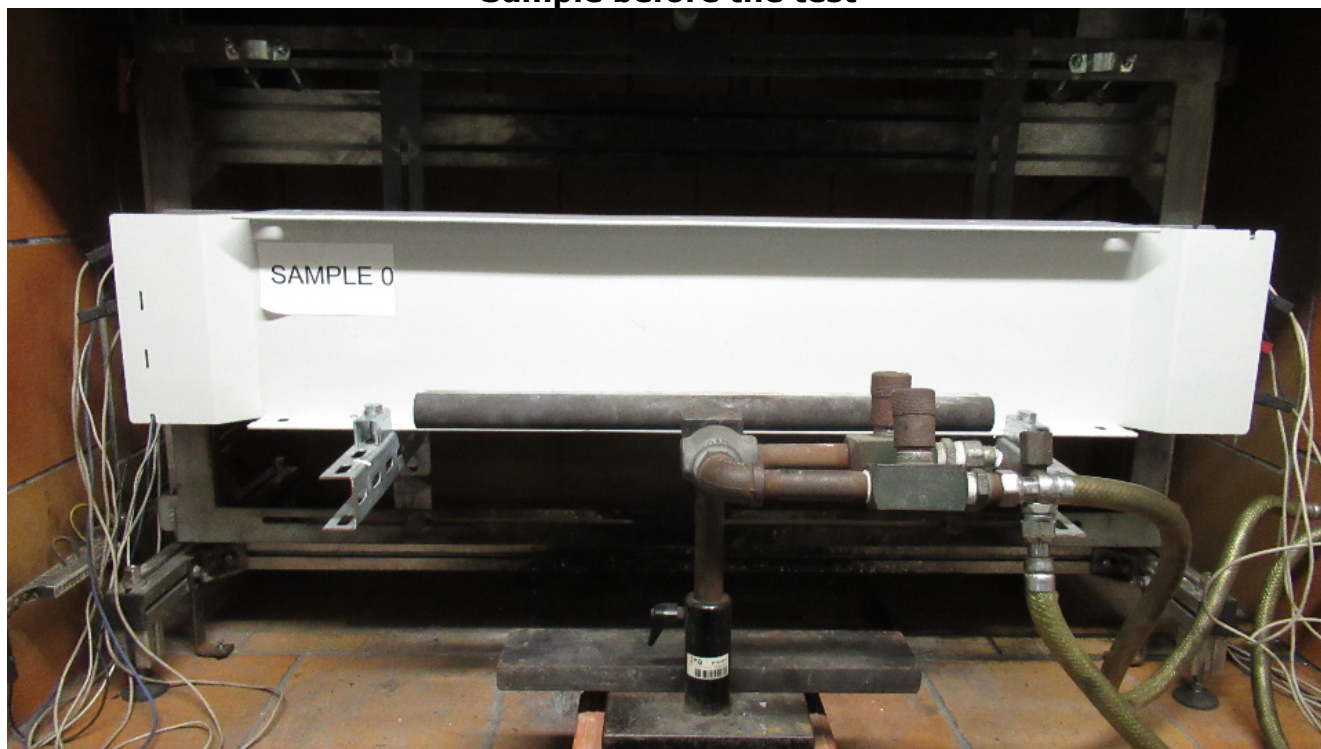
INDICE
Index

FIRE RESISTING TEST.....4

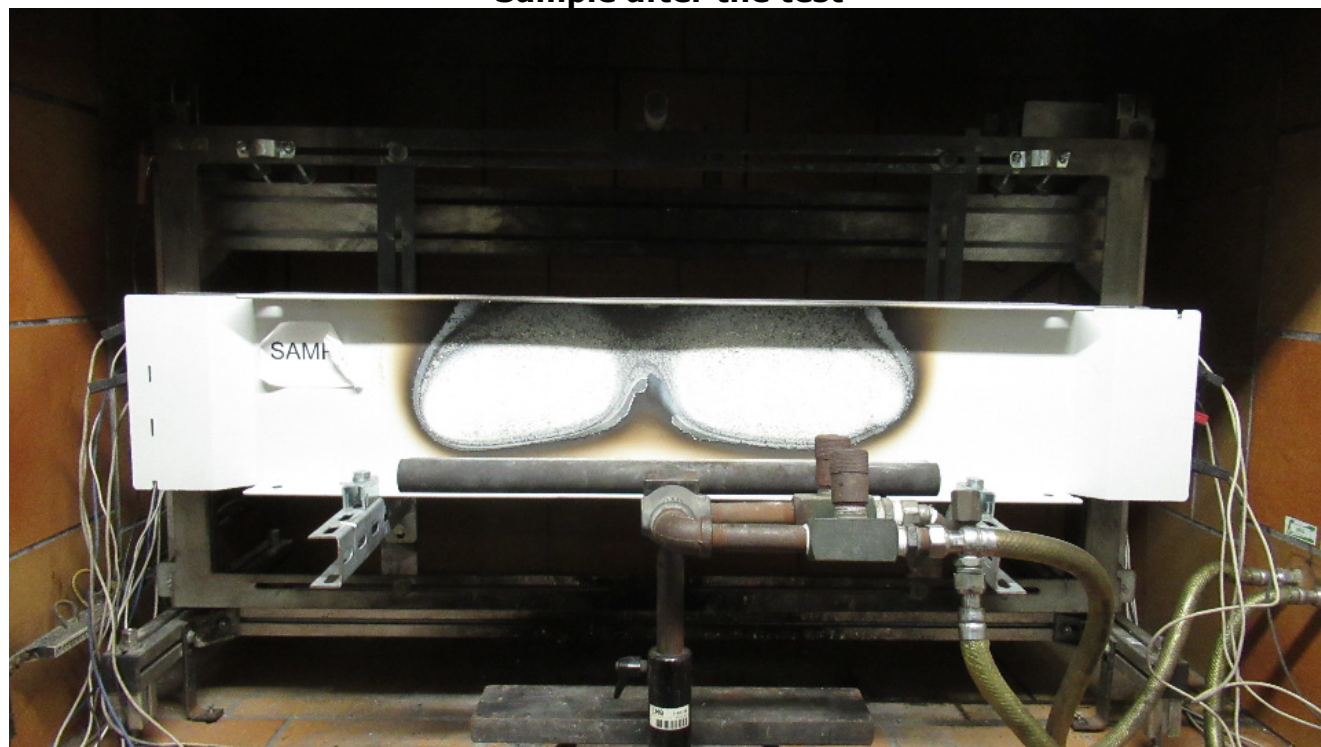
Test N.1	FIRE RESISTING TEST
Test according to standard	IEC 60331-1
Test equipment	<ul style="list-style-type: none"> ➤ A test ladder, it consists of a steel framework. Total mass of the test ladder 18 ± 1 Kg. ➤ A continuity checking arrangement is made as follow: A current of 0,25 A at the test voltage, pass through each conductor and it is provided by a three phase star transformer; at the other end of the sample, a suitable load and indicating device lamps is placed. ➤ Source of heat : ribbon type propane gas burner face length of 500 mm with Venturi mixer having an accurate means of controlling the fuel and air input flow rates. ➤ Shock producing device : a mild steel round bar $25 \pm 0,1$ mm in diameter and 600 ± 5 mm long.
Identification of samples	Sample "0"
	Piece of completed busbar SCP-XCP Al - In: 2000 A - Ui: 1000V Tested "horizontal flat"
Sampling	Length of the sample : 1000 mm
Verification procedure for source of heat	<ul style="list-style-type: none"> ➤ Flame temperature measuring: two 1,5 mm mineral insulated thermocouples Type K ➤ Positioning of the burner : 110 ± 10 mm horizontally from the wall 50 ± 10 mm vertically below the centre line of thermocouple ➤ Temperature : $830^{+40, -0}$ °C
Test conditions	<ul style="list-style-type: none"> ➤ Flow rates (at reference conditions of 1 bar and 20 °C) <ul style="list-style-type: none"> - Propane : $10 \pm 0,4$ litres/minute - Air : 160 ± 8 litres/minute ➤ Voltage applied between conductors : 1000 V ➤ Test temperature : $830^{+40, -0}$ °C ➤ Test duration : 30 minutes

Test procedure	<ul style="list-style-type: none"> ➤ Verification procedure for source of heat and removed of the thermocouples from the wall. ➤ The busbar is mounted on the wall with metallic parts earthed. ➤ At the transformer output with a 2A fuse, each conductor has been connected to a separate phases. ➤ The burner has been positioned. ➤ Ignited the burner and adjusted the propane and air flow rates to those obtained during verification procedure. ➤ After ignited the burner, switched on the electricity supply. ➤ The shock producing device impact the wall after 5 min. ± 10 s from activation and subsequently at 5 min. ± 10 s intervals.
Test valuation	<ul style="list-style-type: none"> ➤ Duration of survival : the duration of survival, measured in minutes, to the point of failure shall be recorded up to a maximum survival time of 30 min. ➤ The criteria for determining the point of failure shall be as follows : <ul style="list-style-type: none"> - the voltage is not maintained during the test duration, as indicated by fuse failure; - a conductor rupture during the test duration, as indicated by the lamp extinguishing.
Test results sample "A"	<ul style="list-style-type: none"> ➤ During the test , no failure of any the 2 A fuses , insert on each phases occurs ➤ During the test , no extinguishing of lamps <p>Time of duration survival : 30 min.</p>
Test result :	Positive

Sample before the test



Sample after the test



Scadenza certificati di taratura dell'apparecchiatura usata (IMQ)

Calibration certificate deadline

Misure/test <i>Measurement/testing</i>	ID strumento <i>Testing/measuring equipment/material used, (Equipment ID)</i>	Ultima taratura <i>Last Calibration date</i>	Prossima taratura <i>Calibration due date</i>
Cronometro <i>Chronometer</i>	S03031	03/2020	03/2021
Termocoppia tipo K <i>Thermocouple type K</i>	S05554	05/2020	05/2021
Termocoppia tipo K <i>Thermocouple type K</i>	S03211	05/2020	05/2021
Termometro digitale <i>Digital thermometer</i>	S04944	05-2020	05-2021
Flussimetro aria <i>Air flow meter</i>	S-08180	10-2020	10-2021
Flussimetro Propano <i>Propane flow meter</i>	S-08181	09-2020	09-2021
Multimetro digitale <i>Digital multimeter</i>	S-03423	11-2020	11-2021

END OF THE TEST REPORT