

CERTIFIED

SEISMIC LINE



Inspection certificate

Certificate no: **MLN1790433/1**
Page 1 of 1

Project: Test of Anti-vibration mounts with anti-seismic structure for HVAC&R Equipment according to ANSI/ASHRAE Standard 171-2008

Client: Soleco engineering s.r.l.
Via Tommaso Masaccio 12
20096 Pogliano (MI) - Italy

Office: Milan

Client's Order Number: 58/2017

Date: 08 May 2017

Inspection Dates

First: 07 March 2017

Order Status: Complete

Final: 09 March 2017

This certificate is issued to SOLECO ENGINEERING s.r.l. to certify that the undersigned surveyor to Lloyd's Register EMEA did, at their request, attend to the test lab of Politecnico di Milano (Department of Mechanical Engineering) at Via La Masa 34, 20156 Milano, Italy, for the purpose of carrying out the inspection on the equipment listed below.

**Anti-vibration mounts with anti-seismic structure
Vibration Isolator and Seismic Restraint**

Quantity	Anti-vibration mount series	Tested type
6	Lalr1	Lalrv120
6	Lalr2	Lalrv1220
6	Lal1	LalV20
6	Lal2	LalV220
6	Lal4	LalV420

base and upper plates in UNI EN 10025-S235JR steel

The equipment has been inspected and tested according to Soleco engineering procedure IO008 Rev.02 and ANSI/ASHRAE Standard 171-2008.

The following scope of inspection has been carried out against order and specification requirements:

- Select and identify tests samples
- Witness mechanical tests
- Visual and dimensional examination
- Review test report 09716PC - Politecnico di Milano (Department of Mechanical Engineering)

On the basis of the above scope of inspection, the equipment has been found to comply with order and specification requirements.

Matteo Panzeri
Surveyor to Lloyd's Register EMEA
Member L1010
Lloyd's Register
a member of the Lloyd's Register group.



Soleco anti-seismic anti-vibration mounts have been tested according to ANSI/ASHRAE 171/2008 standard under the supervision of a Lloyd's Register surveyor.



SEISMIC CERTIFICATION FOR MACHINES

 FORELL/ELSESSER ENGINEERS, INC.
Structural Engineers

10 May, 2017

Mr. [REDACTED]
Export & Sales Department
SOLECO Engineering Srl
Via Masaccio, 12
20096 Pioltello (MI) Italy

Re: [REDACTED] UPS, Standard Configuration
Site-Specific Special Seismic Certification – UBC 1997 and IBC 2012/2015

Forell/Elmesser has reviewed shake table test report C0692-16rev2 prepared by SOLECO Engineering Srl and dated 6 December 2016, which summarizes testing for the certification of a [REDACTED] UPS unit installed in its standard configuration, i.e. without a seismic mounting kit. The testing was performed at CESI-LPS Laboratory in Seriate (BG), Italy in accordance with ICC-ES AC156. The testing was based on spectra enveloping the site-specific seismic design accelerations derived from UBC 1997 and IBC 2012/2015 for Istanbul, Turkey, at roof level.

In accordance with ASCE 7-10, which contains the seismic provisions of the International Building Code [IBC], 2012/2015 editions, AC156 is an acceptable test procedure for the seismic certification of equipment. ASCE 7-10, Section 13.2.1.2.b allows for testing alone to be used to satisfy all IBC 2012/2015 seismic certification requirements for electrical equipment. The Uniform Building Code [UBC], 1997 edition, does not have specific seismic certification requirements but the test spectra were calculated so as to satisfy UBC 1997 equivalent seismic requirements.

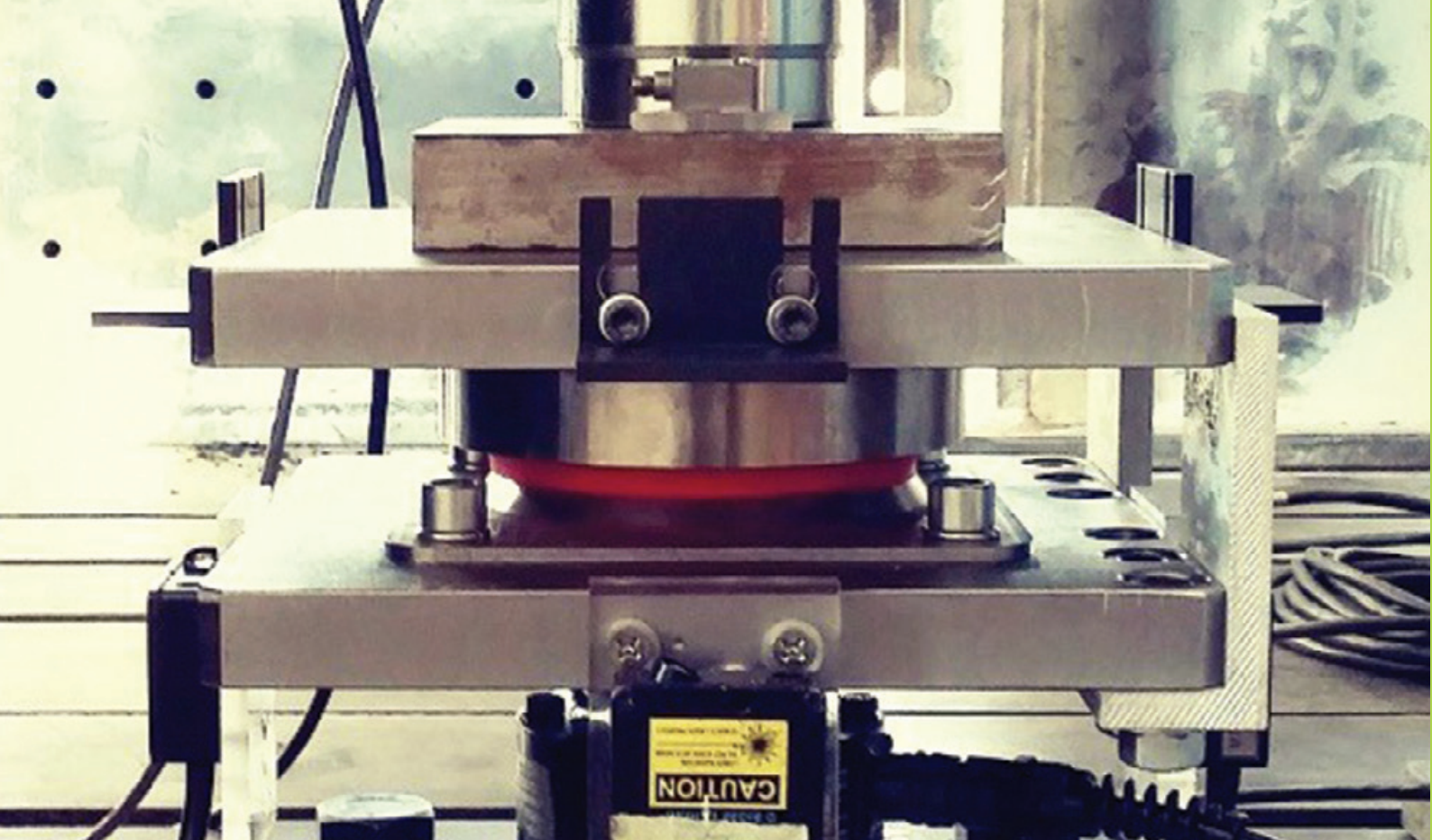
Using AC156 procedures, F/E has determined that the test results demonstrate the adequacy of the standard UPS unit up to the peak ground seismicity (S_{05} and C_a) as shown in the table below. Pre- and post-test functionality was verified by SOLECO Engineering; operability was maintained. Therefore, F/E concludes that the UPS unit is certified for installation in accordance with the seismic provisions of the IBC 2012/2015 in Istanbul, Turkey, at roof level or below, and is adequately designed for UBC 1997 equivalent accelerations.

Design Parameters – Istanbul, Turkey					
	S_s	Soil Profile Type	S_{05}	z/h	I_p
IBC 2012/2015	1.53	S_B	1.02	1	1.5
	Z	Site Class	C_a	H_u/H_r	I_o
UBC 1997	0.40	B	0.40	1	1.5

The following unit was tested and is included in the scope of certification:



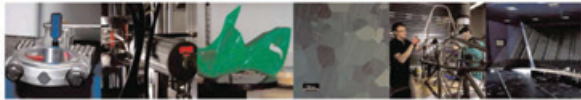
For our Clients we have obtained several certifications in the seismic field. All seismic tests are performed by accredited laboratories following the requirements of ICC-ES AC156 and ASCE 7-10 (which contains the seismic provisions of the International Building Code IBC). We design and produce special seismic bases to maintain the structural integrity of the units after the seismic event and/or the seismic test performed on triaxial shake table.



RESEARCH AND INNOVATION



DIPARTIMENTO DI MECCANICA



**097/16PC test on anti-vibration supports
according to ANSI/ASHRAE 171-2008
(Prove su supporti antivibranti
secondo ANSI/ASHRAE 171-2008)**

Committente: SOLECO Engineering Srl
Via Masaccio, 12
20096 - Pogliano (MI)

DATA 13 aprile 2017



DIPARTIMENTO DI MECCANICA ■ POLITECNICO DI MILANO
via G. La Masa, 1 ■ 20156 Milano ■ EMAIL (PEC): pecmecc@cert.polimi.it
<http://www.mecc.polimi.it>

DM/MOD. 12.055 agg.3

**Soleco BELL mounts have been
tested at Polytechnic of Milan and
have successfully met
all the requirements, ensuring the
highest standards of quality.**

**Soleco BELL mounts are protected
by PATENT in ITALY and ABROAD.**



CERTIFIED MANAGEMENT SYSTEM

ISO 9001: 2015



CERTIFICATO

Sistema di gestione in accordo a
ISO 9001 : 2015

In accordo con le procedure TÜV NORD CERT, si certifica che

SOLECO ENGINEERING S.r.l.
Via Masaccio, 12
20096 Pioletto (MI)
Italia

applica un sistema di gestione in accordo alla norma sopra citata per il seguente campo d'applicazione

Progettazione e produzione di supporti antivibranti a molla, giunti e dispositivi antisonici, supporti antivibranti con struttura antisisma; commercializzazione di antivibranti in gomma-metallo e tiranteria per sistemi antisisma.

N° di registrazione del certificato 44 100 101077
Rapporto di audit n° IT-14945/2018

Valido dal 15-07-2016
Valido fino al 14-07-2019
Prima certificazione 15-07-2010

Ente di Certificazione
del TÜV NORD CERT GmbH

Bologna, 17-09-2018

La presente certificazione è stata condotta in accordo alle procedure di certificazione e di auditing del TÜV NORD CERT ed è soggetta a regolari audits di sorveglianza.

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.com



The UNI EN ISO 9001: 2015 certification provides Soleco with a complete system that guarantees advanced quality management and focuses on the continuous performance improvement in order to reach maximum customer satisfaction.

The trust of our customers, is the proof of the quality and reliability of our products.