

**SERIE ANTISISMA**

**CERTIFICATA**



## Inspection certificate

Certificate no: **MLN1790433/1**  
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**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	Lalrv120
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 097/16FC - 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  
Minor Office  
Lloyd's Register  
a member of the Lloyd's Register group

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**Gli antivibranti anti-sisma Soleco  
progettati per applicazioni HVAC  
sono stati testati secondo standard  
ANSI/ASHRAE 171/2008  
con la supervisione dall'ente  
certificatore Lloyd's Register.**



## CERTIFICAZIONE SISMICA PER MACCHINE

 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.

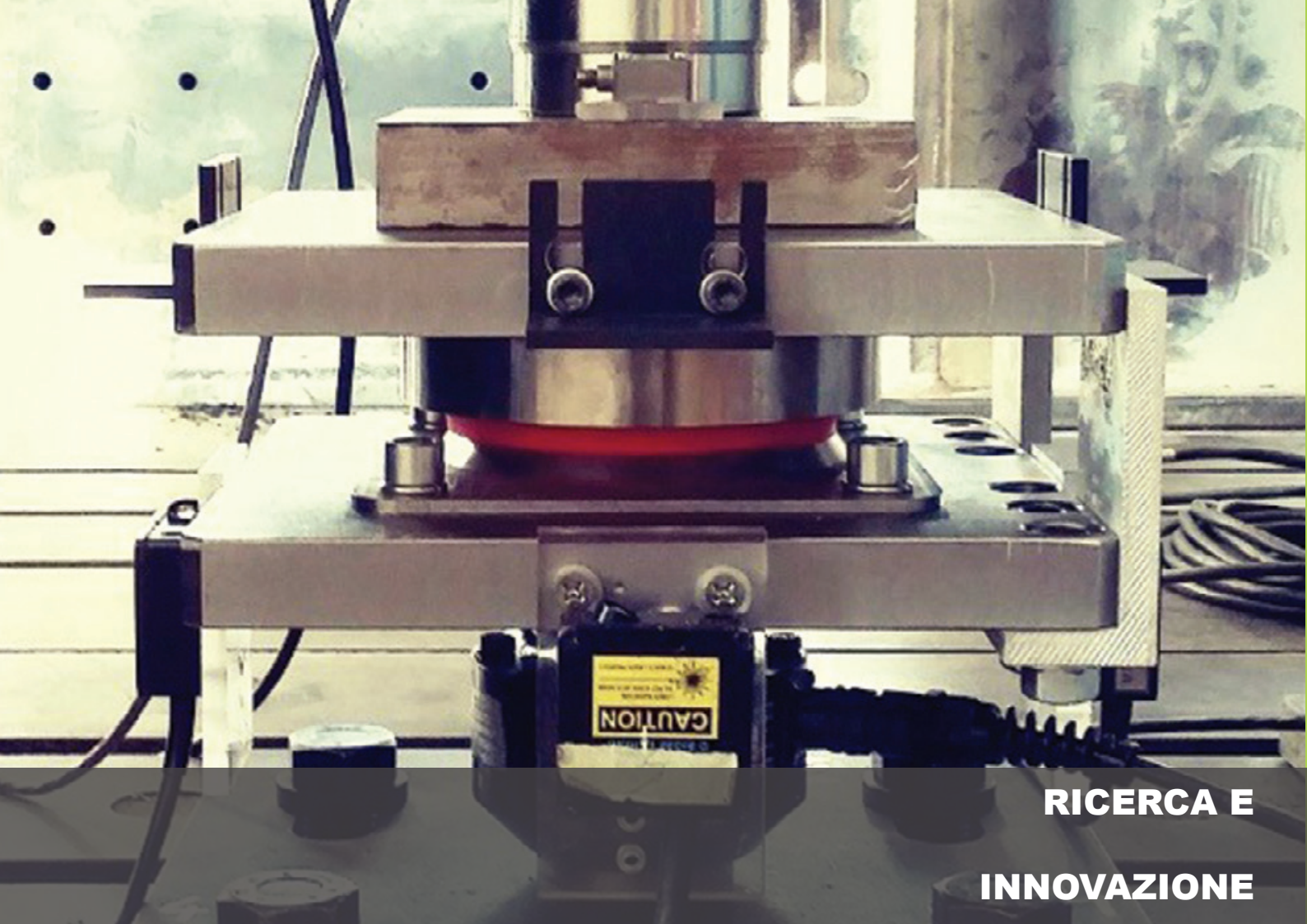
Design Parameters – Istanbul, Turkey					
IBC 2012/2015	$S_s$	Soil Profile Type	$S_{05}$	$z/h$	$I_p$
	1.53	$S_B$	1.02	1	1.5
UBC 1997	Z	Site Class	$C_a$	$H_u/H_r$	$I_a$
	0.40	B	0.40	1	1.5

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

**Soleco ha ottenuto diverse  
certificazioni in ambito sismico  
secondo standard ICC-ES AC156 e  
i requisiti di ASCE 7-10  
(contenenti le disposizioni previste  
da IBC2015 e 2016).**

**Per le unità dei nostri clienti  
realizziamo basamenti sismici  
in grado di garantire l'integrità  
strutturale e il superamento  
delle prove su tavola vibrante  
triassiale presso Istituti Certificati.**





## RICERCA E INNOVAZIONE



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 - Pioltello (MI)**

DATA 13 aprile 2017



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

001/MOD. 12.055 agg.3

**I supporti a CAMPANA Soleco sono  
stati testati presso il Politecnico di  
Milano e hanno soddisfatto in modo  
eccellente le aspettative  
assicurando il raggiungimento dei  
più alti standard qualitativi.**

**I supporti a CAMPANA Soleco sono  
protetti da BREVETTO in ITALIA e  
all'ESTERO.**



## SISTEMA DI GESTIONE CERTIFICATO 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-14945/2016

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](http://www.tuev-nord-cert.com)



**La certificazione UNI EN ISO 9001:  
2015 garantisce un sistema  
aziendale di gestione della qualità  
evoluto e mirato al continuo  
miglioramento delle prestazioni  
ed alla massima soddisfazione  
dei clienti.**

**La fiducia confermata dai nostri  
clienti è prova della qualità ed  
affidabilità dei nostri prodotti.**