

CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS



Certification No.

VMA-54103-01C (Revision 1)

Expiration Date: 7/31/2026

Certification Parameters:

The nonstructural products (mechanical and/or electrical components) listed on this certificate are CERTIFIED¹ FOR SEISMIC APPLICATIONS in accordance with the following building code² releases.

IBC 2021, 2018

The following model designations, options, and accessories are included in this certification. Reference report number VMA-54103-01 as issued by VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

**Mitsubishi Heavy Industries Engine System Asia Pte. Ltd. (MHIES-A); Diesel Gensets
MGS-Series; 308kW-2000kW**

The above referenced equipment is APPROVED for seismic application when properly installed³, used as intended, and contains a Seismic Certification Label referencing this Certificate of Compliance⁴. As limited by the tabulated values, below grade, grade, and roof-level installations, installations in essential facilities, for life safety applications, and/or of equipment containing hazardous contents are permitted and included in this certification with an Equipment Importance Factor assigned as $I_p=1.5$. The equipment is qualified by successful seismic shake table testing at the nationally recognized Eucentre Pavia Italy under the witness of the ISO Accredited Product Certification Agency, the VMC Group.

Certified Seismic Design Levels			
Certified IBC	Importance $I_p \leq 1.5$ Soil Classes A-E Risk Categories I-IV Design Categories A-F	z/h ≤ 1.0	z/h = 0.0
		$S_{DS} \leq 0.560 g$	$S_{DS} \leq 0.900 g$

Certified Seismic Installation Methods	
Rigid Mounting From Unit Base To Rigid Structure	Elastomeric Pad Base Mounting From Unit Base To Rigid Structure

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Certified Product Table:

Model	Rating [kW]	Freq [Hz]	Max L [mm]	Max W [mm]	Max H [mm]	Wet Max Weight [kg]
MGS0450B/C, MGS0500B/C, MGS0600R,BC, MGS0700R, MGS0800R, MGS0900B/C	345-870	60	4151	2152	2159	7430
MGS1000B/C,B-DC,HV,MGS1100R, MGS1200B/C,B-DC,HV	830-1260		5650	2110	2920	14420
MGS1300R, MGS1400B/C,B-DC,HV, MGS1500B/C,B-DC,HV	900-1700		6300	2590	3105	17160
MGS1600R, MGS1900R, MGS2000B/C,B-DC,HV	1140-1920		6000	2250	3145	16410
MGS2200R, MGS2400R, MGS2500R,B/C,B-DC,HV	1240-2012		6080	2410	3555	17990
MGS0450B/C, MGS0500R,B/C, MGS0600R,B/C, MGS0650B/C, MGS0700R,B/C	308-704	50	4025	1855	1980	6720
MGS0800R, MGS0900R,B/C, MGS1000B/C,B-DC,HV	440-1000		5010	2020	2580	12350
MGS1200B/C,B-DC,HV, MGS1400B/C,B-DC,HV	904-1280		5800	2200	3105	14260
MGS1500R,B/C,B-DC,HV, MGS1700R	904-1600		6300	2590	3095	17360
MGS2000R,B/C,B-DC,HV, MGS2300R	1240-1800		6075	2240		17180
MGS2500R,B/C,B-DC,HV	1600-2000		6400	2410	3555	18290
MGS2700B/C,B-DC,HV	1520-2000		6415	2650	3485	19300

Type	S _{DS} (z/h=0)	S _{DS} (z/h=1)	A _{Flex-H}	A _{Rig-H}	A _{Flex-V}	A _{Rig-V}	F _p /W _p
AC156	0.90	0.56	0.90	0.36	0.60	0.24	0.54

This certification includes the Diesel Gensets and included factory supplied options. This certification only covers accessories and options directly mounted to the genset. The genset and applicable options shall be installed per the manufacturer supplied seismic installation instructions. For a list of certified configurations and options please directly contact the manufacturer. Neoprene pads are acceptable as a rigid mounting configuration. This certification excludes all non-factory supplied accessories and options, including but not limited to isolation/restraint devices, other electrical/mechanical components and all connections for electrical, fuel, heating or cooling fluid, or other pipe/conduit connections and configurations not detailed in the above charts. Flexibility in the connections must be maintained as to not transmit load into the equipment. Design specials are outside the scope of this certification.



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Notes & Comments:

1. All equipment listed herein successfully passed the seismic acceptance criteria for shake testing non-structural components and systems as set forth in the ICC AC-156. The Test Response Spectrum (TRS) enveloped the Required Response Spectrum (RRS) for all units tested. The tested units were representative sample(s) of a contingent of models and all remained captive and structurally sound after the seismic shake simulation. The units also remained functionally operational after the simulation testing as functional testing was completed by the equipment manufacturer before and after the seismic simulations. Although a seismic qualified unit inherently contains some wind resisting capacity, that capacity is undetermined and is excluded from this certification. Snow/Ice loads have been neglected and thus limit the unit to be installed both indoors (covered by an independent protective structure) and out of doors (exposed to accumulating snow/ice) for ground snow loads no greater than 30 psf for all applications.
2. The following building codes are addressed under this certification:
IBC 2021 referencing ASCE7-16 and ICC-ES AC-156
IBC 2018 referencing ASCE7-16 and ICC-ES AC-156
3. Refer to the manufacturer supplied installation drawings for anchor requirements and mounting considerations for seismic applications. Required anchor locations, size, style, and load capacities (tension and shear) may be specified on the installation drawings or specified by a 3rd party. Mounting requirement details such as anchor brand, type, embedment depth, edge spacing, anchor-to-anchor spacing, concrete strength, special inspection, wall design, and attachment to non-building structures must be outlined and approved by the Engineer of Record for the project or building. Structural walls, structural floors, and housekeeping pads must also be seismically designed and approved by the project or building Structural Engineer of Record to withstand the seismic anchor loads as defined on the installation drawings. The installing contractor is responsible for ensuring the proper installation of all anchors and mounting hardware.
4. For this certificate and certification to remain valid, this certificate must correspond to the "Seismic Certification Label" found affixed to the unit by the factory. The label ensures the manufacturer built the unit in conformance to the IBC seismic design criteria set forth by the Certified Seismic Qualification Agency, the VMC Group, and meets the seismic design levels claimed by this certificate.
5. Mechanical, Electrical, and Plumbing connections to the equipment must be flexibly attached as to not transfer load through the connection. The structural integrity of any conduit, cable trays, piping, ductwork and/or flexible connections is the responsibility of others. This certification makes no statements of compliance in regards to NEMA, IP, UL, CSA, or other relevant standards after a seismic event. For compliance to other relevant standards, please contact the manufacturer.
6. This certificate applies to units manufactured at:
Mitsubishi Heavy Industries Engine System Asia Pte. Ltd. (MHIES-A)
MHI Engine System Vietnam Co., Ltd. (MHIES-V)
Note: Both Factories are owned 100% by Mitsubishi Heavy Industries Engine & Turbocharger, Ltd. (MHIET) - Japan
7. This certification follows the VMC Group's ISO-17065 Scheme.



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