



VMC GROUP
THE POWER OF TOGETHER™



CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS



Certification No.

VMA-50468-01C (Revision 7)

Expiration Date: 7/31/2025

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 2018, 2015, 2012, 2009; EC8 2004

The following model designations, options, and accessories are included in this certification. Reference report number VMA-50468-01 as issued by The VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

**Cummins Power Generation, Inc.; Diesel Gensets
C2750 D5B; 2750 kVA**

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 comparative analysis to similar units, DQKAF and DQLF, which were certified by successful seismic shake table testing at the nationally recognized University of California Berkeley Pacific Earthquake Engineering Research Center under the review 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 | $z/h \leq 1.0$ | $z/h = 0.0$ |
| | | $S_{DS} \leq 1.940 \text{ g}$ | $S_{DS} \leq 1.940 \text{ g}$ |
| Certified EC8 ⁸ | Importance $Y_a \leq 1.5$ Soil Classes A-E, Type I-II | $a_g \leq 0.119 \text{ g}$ | $a_g \leq 0.261 \text{ g}$ |

| Certified Seismic Installation Methods |
|---|
| External Isolation Mounting From Unit Base To Rigid Structure |

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Certified Product Table:

| Model | Max Rating (kVA) | Length (in) | Width (in) | Height (in) | Weight (lbs) |
|-----------|------------------|-------------|------------|-------------|--------------|
| C2750 D5B | 2750 | 278 | 107 | 125 | 48,656 |

| Group | Type | SDS (z/h=0) | SDS (z/h=1) | AFlex-H | ARig-H | AFlex-V | ARig-V | Fp/Wp |
|---------|-------|-------------|-------------|---------|--------|---------|--------|-------|
| Seismic | AC156 | 1.94 | 1.94 | 3.2 | 2.33 | 1.3 | 0.52 | 4.365 |

This certification includes the open generator set installed without the sub-base tank. The generator set and included options shall be a catalogue design and factory supplied. The generator set and applicable options shall be installed and attached to the building structure per the manufacturer supplied seismic installation instructions. For a list of certified configurations and options please directly contact the manufacturer. This certification excludes all non-factory supplied accessories, including but not limited to mufflers, isolation/restraint devices, remote control panels, pumps and other electrical/mechanical components.



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Cross-Code Compliance:

| EC8 Approved Equivalent a_g | | | | | | | |
|-------------------------------|----------------|-----------|-------|-------|-------|-------|-------|
| Earthquake Type | Install Height | f_1/f_a | | | | | |
| | | 0.01 | 0.10 | 0.50 | 1.0 | 2.0 | 100.0 |
| Type 2 Only | z/h = 0.0 | 0.701 | 0.614 | 0.374 | 0.284 | 0.711 | 0.711 |
| Type 1 Only | | 0.493 | 0.493 | 0.481 | 0.366 | 0.493 | 0.493 |
| Type 1 and Type 2 | | 0.374 | 0.284 | 0.493 | 0.493 | | |
| Type 2 Only | z/h = 1.0 | 0.281 | 0.253 | 0.165 | 0.129 | 0.284 | 0.711 |
| Type 1 Only | | 0.361 | 0.325 | 0.213 | 0.166 | 0.366 | 0.493 |
| Type 1 and Type 2 | | 0.281 | 0.253 | 0.165 | 0.129 | 0.284 | |

- * The type of earthquake to use per country/region is listed in the national annex
- * The f_1/f_a is fundamental frequency of the building divided by that of the component
- * The column for f_1/f_a can be used as the most conservative approved ground motion



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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 2018 referencing ASCE7-16 and ICC-ES AC-156
 - IBC 2015 referencing ASCE7-10 and ICC-ES AC-156
 - IBC 2012 referencing ASCE7-10 and ICC-ES AC-156
 - IBC 2009 referencing ASCE7-05 and ICC-ES AC-156
 - EC8 2004 full reference Eurocode EN-1998 2004
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 does not guarantee the equipment will remain compliant to NEMA, IP, UL, or CSA standards after a seismic event.
6. This certificate applies to units manufactured at:
 - Cummins Power Generation Inc., 1400 73rd Avenue NE, Minneapolis, MN 55432, USA
 - Royal Oak Way South, Daventry, NN11 8NU, United Kingdom
7. This certification follows the VMC Group's ISO-17065 Scheme.
8. The Eurocode 8 maximum ground motion for equipment installed at grade or roof listed assumes that the fundamental frequency of the component is exactly twice that of the building (approximately 5 times more stiff compared to the building). If the frequency of the building or equipment is not known for a particular project, the cross-code table for EC8 may be used after the certified product table for the value of f_1/f_a as it represents the worst case amplification (and thus approves the lowest most conservative maximum ground motion).

John P. Giuliano, PE
President, VMC Group



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