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IBC Inspection Report

AKSA Power Generation

Changzhou, China and Istanbul, Turkey

Product Line Inspected:

VMA # 49842-01C: APD Mitsubishi Engine Diesel Generator Sets

VMA # 49842-03C: APD John Deere Engine Diesel Generator Sets

VQ # 49842-121



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February 22, 2021

Mr. Anil Ustun
Akxa Jeneratör San. A.S.
Rüzgarlibahçe Mahallesi
Özalp Çikmazi No:10 34805 Kavacik Beykoz
Istanbul / Türkiye
austun@aksausa.com

Re: VMC IBC Inspection
Dated 1/20/21 & 2/5/21
VMA-49842-01C to VMA-49842-04C

Dear Mr. Ustun,

The VMC Inspection Team completed a remote inspection of for VMA-49842-01C and VMA-49842-03C on January 20, 2021 and VMA-48842-02C and VMA-49842-04C on February 5, 2021. Your Certificates of Compliance have been consolidated and renewed. Enclosed, please find a copy of the comprehensive report. The certificates will also be posted to our listing site. Please be sure to link to www.IBCApproval.com for greater visibility of your certifications.

If you have any questions, please feel free to contact me.

Sincerely,

Cheryl Matthews
Engineering Administrator

cc Anthony Mancuso - VP, Audit
Elizabeth O'Neill – Director, Special Projects
file

Enclosure

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Quality Assurance - IBC Special Seismic Certification Inspection Report

PURPOSE

To maintain business continuity while under travel restrictions imposed during the 2020 Covid19 pandemic, the recertification of AKSA Special Seismic Certifications, the VMA-49842-01C through VMA-49842-04C was conducted remotely via Microsoft Teams. The purpose of the inspection was to ensure the inspected product(s) complied with the certification issued by VMC Group as per Section 1703.5.2 of 2006 through 2012. The inspection encompassed review of the engineering processes, manufacturing processes and product documentation identified for APD 600-kilowatt to 2000-kilowatt diesel generator sets with John Deere or Mitsubishi engines.

SCOPE

The remote inspections included AKSA USA representatives, Stephen Dy, Electrical Engineer and Efe Parker, General Manager. Inspection of the China facility also included Samer Chen, Research & Development Manager and Dennis Ruan, Quality Control Assurance Manager. Inspection of the Turkey facility also included Omer Saner, Production Manager, Eminali Saral, Research & Development Manager, Gokhan Erkan, Quality Manager and Selim Kuris, Operations Planning and Costing Manager. The inspector led the meeting by providing an inspection overview, reviewing safety procedures, and discussing the inspection itinerary. Inspected labeled units were as follows: China model APD-ULJ-30-400, serial number CD4045L325557 and Turkey, model ULM800, serial number, 29962 and model ULJ275, serial number L140467.

During the inspection the following customer items were inspected:

- Quality Management System (including but not limited to ISO 9001:2015)
- Document Control Procedures
- Change Control Process
- Top Level Drawings
- Bills of Material
- Engineering Change Notices
- Manufacturing Process
- Design Changes

DOCUMENTATION UTILIZED BY VMC DURING THE INSPECTION

- 2006-2012, IBC, Section 1703.5.2
- VMA-49842 Rev 00, dated 09/14/2017 (Seismic Certification Report)
- VMA-49842-01C & 03C Rev 00 (Certificate of Compliance, China)
- VMA-49842-02C & 04C Rev 00 (Certificate of Compliance, Turkey)
- VMC IBC Certification Inspection Checklist
- Certificate of Registration to ISO 9001:2015
- UL Certificate AU5210
- Customer Sales Order for Model
- Customer Top-Level and Sub-Assembly Drawings
- Supplier Process Audits
- Calibration Process
- Anchorage Reports
- IBC Label Design



Quality Assurance - IBC Special Seismic Certification Inspection Report

DOCUMENTATION PROVIDED FOR REVIEW

- Certificate of Registration to ISO 9001:2015, Turkey Cert # 12010996
- China, ISO Cert #115910
- UL Certificate-AU5210
- Customer Sales Order for Model
- Customer Top-Level and Sub-Assembly Drawings
- Supplier Process Audits
- Calibration Process
- Anchorage Reports
- IBC Label Design

At the close of the meeting, the inspector expressed gratitude to the hosts and explained the next steps in the inspection procedure: a comprehensive evaluation of the inspection results, a final determination of compliance status and the communication of this decision.

OBSERVATIONS & RECOMMENDATIONS

Auditor: China-VMA49842-01 & 03, no findings or observations noted.
Turkey-VMA49842-02 & 04, no findings or observations noted.

Engineer: No non-conformances. Recertification is granted.

CONCLUSION

VMA-49842-01C, 02C, 3C & -04C are recertified and will be consolidated into two VMAs, VMA-49842-01C and VMA-49842-03C, as outlined in the proposal. The expiration will be set to November 30, 2023. Revised Certificates of Compliance will be updated and linked to www.ibcapproval.com.

Inspection Dates: 1/20/2021, 2/05/2021

Conducted by: Anthony Mancuso, VP Audit

Report Prepared: 02/08/2021

Distribution: John Wilson,
John Giuliano, Elizabeth O'Neill,
VMC Group Sales Manager,
VMC Group Engineering Manager,
Customer



Quality Assurance - IBC Special Seismic Certification Inspection Report

AUTHORIZATION

NAME	SIGNATURE	DATE
John P. Giuliano, PE		2/2021

REVISION HISTORY

REV.	DESCRIPTION	DATE	BY
0	Initial VMC Release	2/2021	JG

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CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS



Certification No.

VMA-49842-01C (Revision 02)

Expiration Date: 11/30/2023

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 2006, 2009, 2012; TEC 2007

The following model designations, options, and accessories are included in this certification. Reference report number **VMA-49842-01** as issued by VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

AKSA Power Generation; Diesel Gensets APD Mitsubishi Engine Models; 660kW – 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 University of California San Diego Charles Lee Powell Structural Research Laboratories under the of the ISO Accredited Product Certification Agency, 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	$z/h = 1.0$		$z/h \leq 0.0$	
		$S_{DS} \leq 0.750 \text{ g}$		$S_{DS} \leq 0.750 \text{ g}$	
		Horizontal Design ⁵	$\frac{F_p}{W_p} = 0.4 S_{DS} I_p \frac{a_p}{R_p} \left(1 + 2 \frac{z}{h}\right) \leq$	1.688 g	
Certified TEC	Importance $I \leq 1.5$ Soil Groups A-D Zone 1 - Zone 4	$H_i/H_N = 1.0$		$H_i/H_N = 0.0$	
		$A_0 \leq 0.600$		$A_0 \leq 0.600$	
		Horizontal Design ⁶	$\frac{F_e}{W_e} = 0.5 A_0 I \left(1 + 2 \frac{H_i}{H_N}\right) \leq$	0.900 g	

Certified Seismic Installation Methods

Rigid Mounting From Unit Base To Rigid Structure	External Isolation Mounting From Unit Base To Rigid Structure
External Isolation Mounting From Unit Base To Fuel Tank	

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CERTIFICATE OF COMPLIANCE

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Certified Product Table:

Table 1 - Certified Mitsubishi Engine Gensets

Model	Max Rating [kW]	EPA Rating	Max Dimensions [in]			Max Weight (lbs)	Mount Configuration	Tank	Enclosure ¹
			Length	Width	Height				
APD-ULM*	800-2000	Tier 2	480.0	96.0	114.0	92,349	External Isolation Mounting From Unit Base To Fuel Tank; Rigid Mounting From Unit Base To Rigid Structure	On Tank	Open/Enclosed
APD-EPAM*	800-2000	Tier 2	480.0	96.0	114.0	92,349			Open/Enclosed
APD*M	660-2000	N/A	480.0	96.0	141.3	52,911	External Isolation Mounting From Unit Base To Rigid Structure; Rigid Mounting From Unit Base To Rigid Structure	Off Tank; With Remote Tank	Open/Enclosed
APD*M-6	1004-2000	N/A	480.0	96.0	114.0	52,911			Open/Enclosed

Note: 1. See Certification Report for Enclosure options and materials

Type	A _{FLEX-H}	A _{RIG-H}	A _{FLEX-V}	A _{RIG-V}	F _p /W _p	ZPA _H	ZPA _V
AC156	1.200 g	0.900 g	0.500 g	0.200 g	1.688 g	0.810 g	0.180 g

This certification **includes** the open and enclosed generator sets and when installed with or without sub-base or remote fuel 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. This certification **excludes** all non-factory supplied accessories, including but not limited to mufflers, isolation/restraint devices, remote control panels, remote radiators, pumps and other electrical/mechanical components.



VMA-49842-01C (Revision 02)
Issue Date: October 30, 2017
Revision Date: February 9, 2021
Expiration Date: November 30, 2023

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CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Notes and 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 units cited in this certification 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 2012 – referencing ASCE7-10 and ICC AC-156
 - IBC 2009 – referencing ASCE7-05 and ICC AC-156
 - IBC 2006 – referencing ASCE7-05 and ICC AC-156
 - TEC 2007 – full reference Turkish Earthquake Code 2007 - EN
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 observing the installation detailed in the seismic installation drawings and 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, 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:
 - No. 19 Tongjiang North Road, Changzhou New District, Changzhou, China,
 - Rüzgarlıbahçe Mah. Selvi Çıkmazı No:10 Kavacık – Beykoz 34805 İstanbul – Türkiye
7. This project follows VMC Group's ISO-17065 Scheme for Product Certification of Nonstructural Components.

John P. Giuliano, PE
President, VMC Group



VMA-49842-01C (Revision 02)
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CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS



Certification No.

VMA-49842-03C (Revision 02)

Expiration Date: 11/30/2023

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 2006, 2009, 2012; TEC 2007

The following model designations, options, and accessories are included in this certification. Reference report number **VMA-49842-01** as issued by VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

AKSA Power Generation; Diesel Gensets **APD John Deere Models; 30kW – 500KW**

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 University of California San Diego Charles Lee Powell Structural Research Laboratories under the of the ISO Accredited Product Certification Agency, 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	$z/h = 1.0$	$z/h \leq 0.0$
		$S_{DS} \leq 0.800 \text{ g}$	$S_{DS} \leq 0.800 \text{ g}$
		Horizontal Design⁵ $\frac{F_p}{W_p} = 0.4 S_{DS} I_p \frac{a_p}{R_p} \left(1 + 2 \frac{z}{h}\right) \leq$	0.576 g
Certified TEC	Importance $I \leq 1.5$ Soil Groups A-D Zone 1 - Zone 4	$H_i/H_N = 1.0$	$H_i/H_N = 0.0$
		$A_0 \leq 0.640$	$A_0 \leq 0.640$
		Horizontal Design⁶ $\frac{F_e}{W_e} = 0.5 A_0 I \left(1 + 2 \frac{H_i}{H_N}\right) \leq$	1.440 g

Certified Seismic Installation Methods

Rigid Mounting From Unit Base To Rigid Structure

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Certified Product Table:

Table 1 - Certified John Deere Engine Gensets

Model	Max Rating [kW]	EPA Rating	Max Dimensions [in]			Max Weight (lbs)	Mount Configuration	Tank	Enclosure ¹
			Length	Width	Height				
APD-ULJ*	30-400	Tier 3	205.7	77.3	112.1	27,310	Rigid Mounting From Unit Base To Rigid Structure	On Tank	Open/Enclosed
APD-ULJ500	500	Tier 2	314.0	77.3	148.1	38,190			Open/Enclosed
APD-ULJ*	30-400	N/A	205.7	77.3	112.1	13,240	Rigid Mounting From Unit Base To Rigid Structure	Off Tank; With Remote Tank	Open/Enclosed
APD-ULJ500	500	N/A	205.7	77.3	112.1	13,760			Open/Enclosed

Note: 1. See Certification Report for Enclosure options and materials

Type	A _{FLEX-H}	A _{RIG-H}	A _{FLEX-V}	A _{RIG-V}	F _p /W _p	ZPA _H	ZPA _V
AC156	1.280 g	0.960 g	0.533 g	0.213 g	0.576 g	0.864 g	0.192 g

This certification **includes** the open and enclosed generator sets and when installed with or without sub-base or remote fuel 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. This certification **excludes** all non-factory supplied accessories, including but not limited to mufflers, isolation/restraint devices, remote control panels, remote radiators, pumps and other electrical/mechanical components.



VMA-49842-03C (Revision 02)
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Revision Date: February 12, 2021
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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, VMC Group, and meets the seismic design levels claimed by this certificate.
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7. This project follows VMC Group’s ISO-17065 Scheme for Product Certification of Nonstructural Components.

John P. Giuliano, PE
President, VMC Group



VMA-49842-03C (Revision 01)
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Revision Date: February 12, 2021
Expiration Date: November 30, 2023

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