



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

APPLICATION FOR HCAI SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0813

HCAI Special Seismic Certification Preapproval (OSP)

Type:  New  Renewal

Manufacturer Information

Manufacturer: Cummins Power Generation

Manufacturer's Technical Representative: Abishek Patil

Mailing Address: 1400 73rd Ave NE, Fridley, MN 55432

Telephone: (763) 571-5000

Email: abhishek.patil@cummins.com

Product Information

Product Name: Dragonfly QSK78

Product Model Number(s): C3000D6EB, C2750D6E

Product Category: Emergency and Standby Power Systems

Product Sub-Category: Generators

General Description: Diesel Generator sets without enclosures and without fuel tanks.

Mounting Description: Base Mounted Spring Vibration Isolated -

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: VMC Group

Contact Person: John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780

Email: john.giuliano@thvmcgroup.com

Title: President





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**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

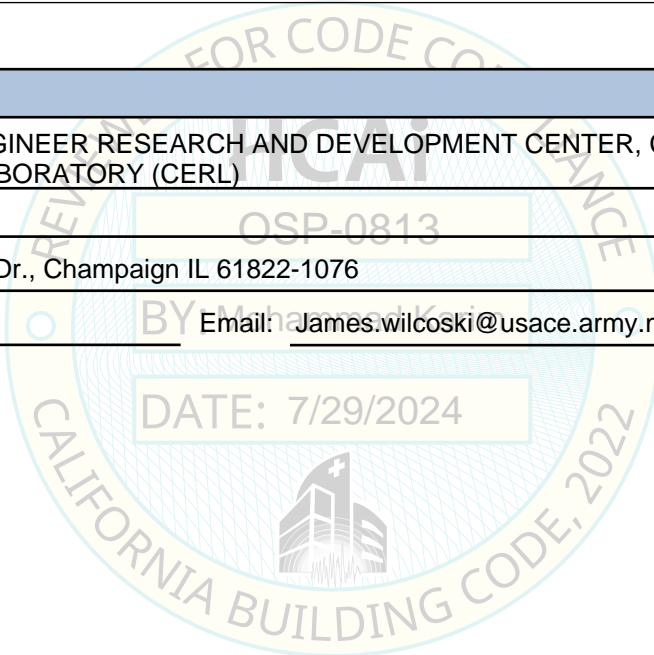
Company Name: THE VMC GROUP  
Name: Kenneth Tarlow California License Number: S2851  
Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814  
Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

**Certification Method**

GR-63-Core       ICC-ES AC156       IEEE 344       IEEE 693       NEBS 3  
 Other (Please Specify): \_\_\_\_\_

**Testing Laboratory**

Company Name: U.S. ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER, CONSTRUCTION ENGINEERING RESEARCH LABORATORY (CERL)  
Contact Person: James Wilcoski  
Mailing Address: 2902 Newmark Dr., Champaign IL 61822-1076  
Telephone: (217) 373-6763 Email: James.wilcoski@usace.army.mil





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**Seismic Parameters**

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 4.28 (Sds = 1.9, z/h=1), 1.65 (Sds = 2.2, z/h = 0)

SDS (Design spectral response acceleration at short period, g) = 1.9 (z/h=1), 2.2 (z/h=0)

$a_p$  (Amplification factor) = 2.5

$R_p$  (Response modification factor) = 2.0

$\Omega_0$  (System overstrength factor) = 2.0

$I_p$  (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

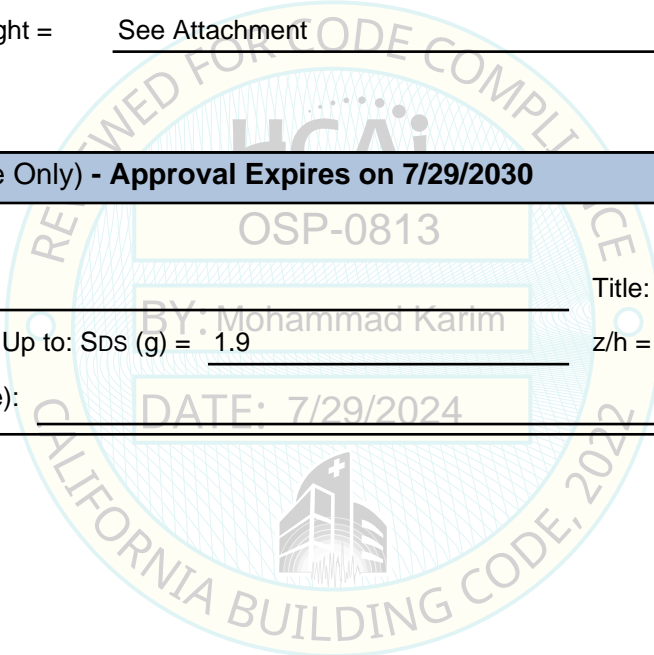
**HCAI Approval (For Office Use Only) - Approval Expires on 7/29/2030**

Date: 7/29/2024

Name: Mohammad Karim Title: Supervisor, Health Facilities

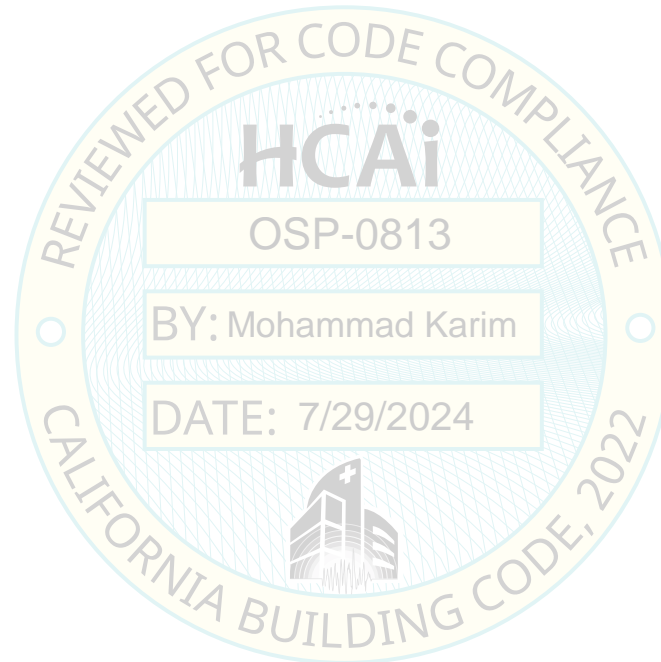
Special Seismic Certification Valid Up to: SDS (g) = 1.9 z/h = 1

Condition of Approval (if applicable): DATE: 7/29/2024



**Table 1 - Certified Components: Open Generators**

Model	Frequency [Hz]	Max Rating [kW]	Manufacturer	Configuration	Max Dimensions [ in ]			Max Weight [ lbs ]	Installation Method	UUT
					Length	Width	Height			
C3000D6EB	60	3000	Cummins	Open	284	121	143	51,300	Isolated	UUT-1
C2750D6E	60	2750			284	121	143	55,600	Isolated	UUT-2



**Table 2 - Certified Engines**

Type	kW Range	Manufacturer	Model Number	Weight [ lbs ]	Material	UUT
QSK78	2750-3000	Cummins	A067C324	22,453	Cast Iron	UUT-1, UUT-2

**Table 3 - Certified Block Heaters**

Type	kW Range	Manufacturer	Model Number	Weight [ lbs ]	Material	UUT
Forced	2750-3000	HotStart	A067Z832	205	Carbon Steel	UUT-1,UUT-2

**Table 4 - Certified Air Filter/Cleaner Assemblies**

Type	kW	Manufacturer	Model Number	Weight [ lbs ]	Material	UUT
ND	2750-3000	Cummins	A074A573/4	622.38	Carbon Steel	UUT-1,UUT-2

**Table 5 - Certified Alternators**

Type	kW Range	Manufacturer	Model Number	Weight [ lbs ]	Material	UUT
HV	2750-3000	CGT	S9H1D-E4	13,970	Steel Lamination & Copper Windings	Extrapolated
			S9H1D-F4	15,070		Extrapolated
			S9H1D-G4	16,500		Extrapolated
			S9H1D-H4	17,490		Extrapolated
MV			S9M1D-D4	12,456		UUT-1
			S9M1D-E4	13,970		Interpolated
			S9M1D-F4	15,070		Interpolated
			S9M1D-G4	16,500		Interpolated
LV			S9M1D-H4	17,490		Interpolated
			S9L1D-D4	13,420		Interpolated
			S9L1D-E4	15,950		Interpolated
			S9L1D-F4	16,390		Interpolated
	S9L1D-G4	18,480	UUT-2			

**Table 6 - Certified Radiators**

Type	kW Range	Manufacturer	Model Number	Weight [ lbs ]	Material	UUT
40C-50C	2750-3000	AKG	A072A402	9266	Carbon Steel & Aluminum	UUT-1,UUT-2

**Table 7 - Certified Skids / Chassis**

Type	kW Range	Manufacturer	Model Number	Weight [ lbs ]	Material	UUT
60Hz	2750-3000	BTD	A067Z301	3599	Carbon Steel	UUT-1,UUT-2

**Table 8 - Certified Controllers**

Type	kW Range	Manufacturer	Model Number	Weight [ lbs ]	Material	UUT
PCC 3300 - GLOW	2750-3000	Cummins	A068L192	238	Carbon Steel	UUT-1,UUT-2

**Table 9 - Certified Miscellaneous Components**

Type	kW Range	Manufacturer	Model Number	Weight [ lbs ]	Material	UUT
CCV	2750-3000	Cummins	A068B041	41	Carbon Steel	UUT-1,UUT-2
LV EB	2750-3000	Cummins	A068E002	550	Carbon Steel	UUT-2
MV/HV EB	2750-3000	Cummins	A065F713	616	Carbon Steel	UUT-1



# UNIT UNDER TEST (UUT) Summary Sheet

UUT-1

Test Report: 24045-2401

Model Line	Model Number	Manufacturer
QSK78	C3000D6EB	Cummins

### Product Construction Summary

Carbon Steel Skid

### Options / Subcomponent Summary

Engine: Cummins; Block Heater: Hotstart; Air Filter/ Cleaner Assemblies: Cummins; Alternators: CGT; Radiator: AKG; Controllers: Cummins; CCV: Cummins; MV/HV Entrance Box: Cummins

### UUT Properties

Weight [ lbs ]	Dimensions [ in ]			Lowest Nat. Freq. [ Hz ]		
	Length	Width	Height	F-B	S-S	V
51,300	284	121	143	4.5	3.0	9.0

### UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
CBC 2022	ICC-ES AC156	1.90	1.0	1.5	3.04	2.28	-	-
		2.20	0.0	1.5	-	-	1.47	0.59

### Test Mounting Details

UUT-1 was mounted to the shake table fixture using (18) VMC M2SSHX-1E spring isolators. The isolators were connected to the equipment using (1) 3/4 Grade 8 bolt each, (6) Isolators were welded to the fixture and (12) isolators were attached to the fixture using (4) 7/8" Grade 8 bolts per isolator.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



# UNIT UNDER TEST (UUT) Summary Sheet

**UUT-2**

Test Report: 24045-2401

Model Line	Model Number	Manufacturer
QSK78	C2750D6E	Cummins

**Product Construction Summary**

Carbon Steel Skid

**Options / Subcomponent Summary**

Engine: Cummins; Block Heater: Hotstart; Air Filter/ Cleaner Assemblies: Cummins; Alternators: CGT; Radiator: AKG; Controllers: Cummins; CCV: Cummins; LV Entrance Box: Cummins

UUT Properties						
Weight [ lbs ]	Dimensions [ in ]			Lowest Nat. Freq. [ Hz ]		
	Length	Width	Height	F-B	S-S	V
55,600	284	121	143	4.5	3.5	8.0

UUT Highest Passed Seismic Run Information								
Building Code	Test Criteria	S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
CBC 2022	ICC-ES AC156	1.90	1.0	1.5	3.04	2.28	-	-
		2.20	0.0	1.5	-	-	1.47	0.59

**Test Mounting Details**

UUT-2 was mounted to the shake table fixture using (18) VMC M2SSHX-1E spring isolators. The isolators were connected to the equipment using (1) 3/4 Grade 8 bolt each, (6) Isolators were welded to the fixture and (12) isolators were attached to the fixture using (4) 7/8" Grade 8 bolts per isolator.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.