



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP – 0082 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Kohler Power Systems

Manufacturer's Technical Representative: Andy Miller

Mailing Address: 444 Highland Drive, Kohler, WI 53044

Telephone: (920) 457-4441 Email: andrew.miller@kohler.com

Product Information

Product Name: Kohler Power Generators

Product Type: Diesel Electrical Power Generator

Product Model Number: 20kW through 2000kW REOZ, KD800, and KD2500 Diesel Powered Electrical Generators
(List all unique product identification numbers and/or part numbers)

General Description: Rigid floor mounted diesel powered electrical generator above fuel tanks with or without enclosures and internal vibration isolators. Only 550-2000kW open generator without fuel tank is approved for installation on external vibration isolators. Seismic enhancements made to test units and modifications required to address the anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Rigid Floor Mount and Externally Isolated

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: John P. Giuliano, PE

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

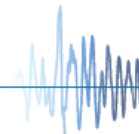
Telephone: (973) 838-1780 Email: john.giuliano@thvmcgroup.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant:  Date: 11/7/17

Title: President Company Name: The VMC Group

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

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

Company Name: The VMC Group

Name: Mr. Ken Tarlow California License Number: SE2851

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: ken.tarlow@thevmcgroup.com

Supports and Attachments Preapproval

- ☐ Supports and attachments are preapproved under OPM-
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- ☒ Supports and attachments are not preapproved

Certification Method

- ☒ Testing in accordance with: ☒ ICC-ES AC156
- ☐ Other (Please Specify): _____

Testing Laboratory

Company Name: Clark Dynamics

Contact Name: Suzanne Mazon

Mailing Address: 1801 Route 51, Jefferson Hills, PA 15025

Telephone: (412) 387-1001 Email: smazon@clarktesting.com

Testing Laboratory

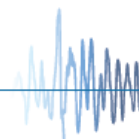
Company Name: Construction Engineering Research Laboratory

Contact Name: James Wilcoski

Mailing Address: 2902 Newmark Drive, Champaign, IL 61822

Telephone: (217) 352-6511 Email: james.wilcoski@usace.army.mil

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Testing Laboratory

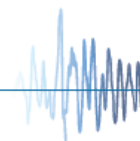
Company Name: PEER, UC Berkley
Contact Name: Clement Barthes
Mailing Address: 1302 South 46th Street Building 420, Richmond, CA 94084
Telephone: (510) 665-3409 Email: clementbarthes@berkley.edu

Testing Laboratory

Company Name: QualTech NP
Contact Name: Timothy A. Geers
Mailing Address: 4600 East Tech Drive, Cincinnati, OH 45245
Telephone: (513) 528-7900 Email: tgeers@curtisswright.com

Testing Laboratory

Company Name: CCEER, University of Nevada Reno
Contact Name: Gokhan Pekcan
Mailing Address: Dep't of civil and Env Eng., UNR, Reno, NV 89523; MS 258
Telephone: (775) 784-4512 Email: pekcan@unr.edu





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = See Attachment

S_{DS} (Design spectral response acceleration at short period, g) = See Attachment

a_p (In-structure equipment or component amplification factor) = 2.5 (Spring Isolated), 1.0 (Rigid)

R_p (Equipment or component response modification factor) = 2.0 (Spring Isolated), 2.5 (Rigid)

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = See Attachment

Equipment or Component Natural Frequencies (Hz) = See Attachment

Overall dimensions and weight (or range thereof) = See Attachment

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) = _____

S_{DS} (Design spectral response acceleration at short period, g) = _____

S_{D1} (Design spectral response acceleration at 1 second period, g) = _____

R (Response modification coefficient) = _____

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = _____

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = _____

Equipment or Component Natural Frequencies (Hz) = _____

Overall dimensions and weight (or range thereof) = _____

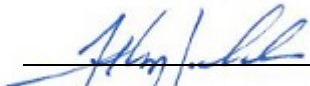
Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☐ Drawings ☐ Calculations ☐ Manufacturer's Catalog

☒ Other(s) (Please Specify): Expired OSP and Supporting Document

OSHDP Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature:  Date: February 26, 2018

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = See Above z/h = See Above

Condition of Approval (if applicable): _____

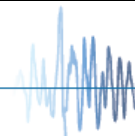


Table 1 - Product Line Matrix

Model	Configuration	EPA Rating	Max Rating [kW]	Max Package Dimensions [in]			Max Operating Weight [lbs]	S _{DS}		F _p /W _p ¹		Installation Method	Tested / Interpolated / Extrapolated
				Length	Width	Height		z/h = 0.0	z/h = 1.0	z/h=0.0	z/h=1.0		
20REOZJC	Open / Enclosed	TIER 3	20	114.0	41.0	66.0	3,645	1.93	1.47	0.87 / 1.45	1.06 / 3.31	Rigid / Isolated	[Extrapolated]
20REOZJC	Enclosed	TIER 3	20	114.0	41.0	66.0	3,670	1.93	1.47	0.87	1.06	Rigid	UUT-04
180REOZJG	Enclosed	N/A	180	162.0	53.0	81.0	4,810	1.93	1.93	0.87	1.39	Rigid	UUT-20
20REOZJC	Open / Enclosed	TIER 2	20	114.0	42.0	83.0	5,237	1.93	1.93	0.87 / 1.45	1.39 / 4.34	Rigid / Isolated	[Interpolated]
40REOZJC	Open / Enclosed	TIER 3	40	114.0	42.0	92.0	6,597	1.93	1.93	0.87 / 1.45	1.39 / 4.34	Rigid / Isolated	[Interpolated]
50REOZJD	Open / Enclosed	TIER 3	50	114.0	42.0	92.0	6,769	1.93	1.93	0.87 / 1.45	1.39 / 4.34	Rigid / Isolated	[Interpolated]
60REOZK	Enclosed	TIER 3	60	158.3	42.1	93.7	9,073	2.50	2.00	1.13	1.44	Rigid	UUT-19
550REOZV	Enclosed	TIER 2	550	282.0	86.0	120.0	23,198	1.93	1.21	0.87	0.87	Rigid	UUT-13
550REOZV	Open / Enclosed	TIER 1	550	282.0	86.0	120.0	23,482	1.93	1.21	0.87 / 1.45	0.87 / 2.72	Rigid / Isolated	[Interpolated]
500REOZJ	Enclosed	TIER 2	500	300.0	68.0	131.0	29,900	1.93	1.93	0.87	1.39	Rigid	UUT-10
2000REOZM	Open	N/A	2000	268.0	109.0	122.0	36,000	1.93	1.21	1.45	2.72	Isolated	UUT-14
500REOZJ	Open / Enclosed	TIER 3 , TIER 2, TIER 1	500	301.0	102.0	138.0	41,181	1.93	0.86	0.87 / 1.45	0.62 / 1.94	Rigid / Isolated	[Interpolated]
550REOZV	Open / Enclosed	TIER 1	550	328.0	93.0	133.0	46,565	1.93	0.86	0.87 / 1.45	0.62 / 1.94	Rigid / Isolated	[Interpolated]
550REOZV	Open / Enclosed	TIER 1	550	328.0	93.0	133.0	46,565	1.93	0.86	0.87 / 1.45	0.62 / 1.94	Rigid / Isolated	[Interpolated]
KD800	Enclosed	TIER 2	800	360.0	103.0	171.9	74,052	1.96	0.86	0.88	0.62	Rigid	UUT-17
KD2500	Enclosed	TIER 2	2500	535.5	137.0	207.0	119,997	1.96	0.96	1.47	2.16	Isolated	UUT-18

Notes:

1) Fp/Wp values are shown in the form of Rigid / Isolated

2) Rigid mounted generator sets shall be mounted on UL142 tanks. Vibration isolated generator sets are certified without sub-base fuel tank.

3) Rigid mounted generator sets are certified with and without enclosures. Vibration isolated generator sets are certified without enclosures.

Table 2 - Certified Enclosures

Model	Type	Material	Level	Part No	Manufacturer	Weight [LBS]	S _{DS}		F _p /W _p ¹		Tested / Interpolated / Extrapolated
							z/h = 0.0	z/h = 1.0	z/h=0.0	z/h=1.0	
20REOZ(JC)	WEATHER	Steel	N/A	GM65479-KA4	Kohler	575	1.93	1.47	0.87	1.06	UUT-04
40REOZ(JC)		Steel	N/A	GM65479-KA4	Kohler	575	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
50REOZ(JD)		Steel	N/A	GM65479-KA4	Kohler	575	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
20REOZ(JC)	SOUND	Steel	N/A	GM65479-KA3	Kohler	600	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
		Aluminum	N/A	GM65479-KA6	Kohler	375	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
40REOZ(JC)		Steel	N/A	GM65479-KA3	Kohler	600	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
		Aluminum	N/A	GM65479-KA6	Kohler	375	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
50REOZ(JD)		Steel	N/A	GM65479-KA3	Kohler	600	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
		Aluminum	N/A	GM65479-KA6	Kohler	375	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
180REOZJG	SOUND	Steel	N/A	GM87410-KA5	Kohler	1290	1.93	1.93	0.87	1.39	UUT-20
550REOZ(V)	WEATHER	Steel	N/A	GM70448-TA2	Kohler	2400	1.93	1.93	0.87 / 1.45	1.39 / 4.34	[Interpolated]
500REOZJ		Steel	N/A	GM83850-TA2	Kohler	2593	1.93	1.93	0.87 / 1.45	1.39 / 4.34	[Interpolated]
		Aluminum	N/A	GM83850-TA6	Kohler	1374	1.93	1.93	0.87 / 1.45	1.39 / 4.34	[Interpolated]
500REOZJ	WEATHER	Steel	SL1	GM83850-TA3	Kohler	2673	1.93	1.93	0.87 / 1.45	1.39 / 4.34	[Interpolated]
		Aluminum	SL1	GM83850-TA5	Kohler	1454	1.93	1.93	0.87 / 1.45	1.39 / 4.34	[Interpolated]
500REOZJ	SOUND	Steel	SL2	GM83850-TA1	Kohler	2923	1.93	1.93	0.87	1.39	UUT-10
		Aluminum	SL2	GM83850-TA4	Kohler	1694	1.93	1.21	0.87 / 1.45	0.87 / 2.72	[Interpolated]
550REOZ(V)	SOUND	Steel	SL2	GM70448-TA1	Kohler	3100	1.93	1.21	0.87	0.87	UUT-13
		Aluminum	SL2	GM70448-TA3	Kohler	2000	1.93	0.86	0.87 / 1.45	0.62 / 1.94	[Interpolated]
KD800	SOUND	Aluminum	SL2	114010035XX	Kohler	6900	1.96	0.86	0.88	0.62	UUT-17
KD2500	SOUND	Aluminum	SL1	114010263XX	Kohler	16240	1.96	0.96	1.47	2.16	UUT-18
60REOZK	SOUND	Aluminum	SL1	GM8762-KA6	Nelson Global Products	375	2.50	2.00	1.13	1.44	UUT-19

Notes:

1) F_p/W_p values are shown in the form of Rigid / Isolated

2) Rigid mounted generator sets shall be mounted on UL142 tanks. Vibration isolated generator sets are certified without sub-base fuel tank.

3) Rigid mounted generator sets are certified with and without enclosures. Vibration isolated generator sets are certified without enclosures.

Table 3 - Certified Subcomponents

Component (MFR)	kW Range	Part/Model Number	Notes	Max Weight	S _{DS}		F _p /W _p ¹		Tested / Interpolated / Extrapolated
					z/h = 0.0	z/h = 1.0	z/h=0.0	z/h=1.0	
Tank [KOHLER] Note: Weight is Empty Tank Note: Tank Material is Carbon Steel	20REOZJ(C),40,50	GM74926-1	116 Gallons	934 LBS	1.93	1.47	0.87	1.06	UUT-04
	40,50	GM74926-4	372 Gallons	1,162 LBS	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
	60	GM74926-2	147 Gallons	1,184 LBS	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
	20,40,50	GM74926-3	253 Gallons	1,328 LBS	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
	500	GM77323-2	468 Gallons	2,727 LBS	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
	500	GM77323-4	894 Gallons	3,257 LBS	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
	60 (ZK)	GM93355-5	535 Gallons	2,156 LBS	2.50	2.00	1.13	1.44	UUT-19
	550REOZV	GM74179-1	551 Gallons	3,916 LBS	1.93	1.21	0.87	0.87	UUT-13
	500	GM77323-7	1,523 Gallons	4,640 LBS	1.93	1.21	0.87 / 1.45	0.87 / 2.72	[Interpolated]
	500REOZJ	GM77323-8	1,763 Gallons	4,902 LBS	1.93	1.93	0.87	1.39	UUT-10
	500	GM77323-9	2,644 Gallons	7,713 LBS	1.93	0.86	0.87 / 1.45	0.62 / 1.94	[Interpolated]
	800-1000kW	10503000600-KA6	4,973 Gallons	15,497 LBS	1.96	0.86	0.88	0.62	UUT-17
	2000-2500kW	10503009000	4,143 Gallons	18,571 LBS	1.96	0.96	1.47	2.16	UUT-18
Engine [JOHN DEERE]	20	4024TF281	Dry Engine	553 LBS	1.93	1.47	0.87	1.06	UUT-04
	40	4024HF285	Dry Engine	553 LBS	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
	50	4024HF285	Dry Engine	553 LBS	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
	180	6068HFG82	Dry Engine	1,340 LBS	1.93	1.93	0.87	1.39	UUT-20
	500	6135HFG75	Dry Engine	2,941 LBS	1.93	1.93	0.87	1.39	UUT-10
Engine [VOLVO-PENTA]	550(V)	TWD 1643-GE	Dry-engine includes cooling system	3,680 LBS	1.93	1.21	0.87	0.87	UUT-13
Engine [KOHLER]	40-60kW	KDI3404TM	Dry Engine	900 LBS	2.50	2.00	1.13	1.44	UUT-19
	800, 900, 1000kW	KD27V12	Dry Engine	4,947 LBS	1.96	0.86	0.88	0.62	UUT-17
	2000, 2250, 2500kW	KD62V12	Dry Engine	20,502 LBS	1.96	0.96	1.47	2.16	UUT-18
Engine [MITSUBISHI]	2000REOZM(D)	S16R-Y2PTAW2-1	Dry Engine	13,671 LBS	1.93	1.21	0.87	2.72	UUT-14
Alternator [KOHLER]	20REOZJC, 40(JC)	4P	N/A	380 LBS	1.93	1.47	0.87	1.06	UUT-04
	50(JD)	4PX, 4QX	Heaviest 4P10X, 4Q19X	607 LBS	2.50	2.00	1.13	1.44	UUT-19
	40(JC)	4P, 4Q	Heaviest 4P10, 4Q10	660 LBS	1.93	1.93	0.87 / 1.45	1.39 / 4.34	[Interpolated]
	180	4SX	N/A	1,077 LBS	1.93	1.93	0.87	1.39	UUT-20
Alternator [MARATHON]	550(ZV)	5M	5M4028	3,050 LBS	1.93	1.21	0.87	0.87	UUT-13
	500(ZJ_VB) 600(VB)	5M	5M4276 (3620)	3,620 LBS	1.93	1.93	0.87	1.39	UUT-10
	2000REOZM(D)	7M	7M4058	9,048 LBS	1.93	1.21	0.87	2.72	UUT-14
Alternator [MeccAlte]	800kW	KH03450TO4D	ECO43-2S	2,090 LBS	1.96	0.86	0.88	0.62	UUT-17
Alternator [KATO]	2500kW	KH09270TO4D	4P6, 7-3400	17,015 LBS	1.96	0.96	1.47	2.16	UUT-18

Notes:

1) Fp/Wp values are shown in the form of Rigid / Isolated

2) Rigid mounted generator sets shall be mounted on UL142 tanks. Vibration isolated generator sets are certified without sub-base fuel tank.

3) Rigid mounted generator sets are certified with and without enclosures. Vibration isolated generator sets are certified without enclosures.

Table 3 - Certified Subcomponents (Continued)

Component (MFR)	kW Range	Part/Model Number	Notes	Max Weight	S _{DS}		F _p /W _p ¹		Tested / Interpolated / Extrapolated
					z/h = 0.0	z/h = 1.0	z/h=0.0	z/h=1.0	
Radiator [JB RADIATOR SPECIALTIES] Note: Coil Material is Aluminum Note: Frame Material is Carbon Steel	20(JC)	RS-6128	Dry	55 LBS	1.93	1.47	0.87	1.06	UUT-04
	40(JC)	RS-6026	Dry	89 LBS	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
	50(JD)	RS-6026	Dry	89 LBS	1.93	1.47	0.87 / 1.45	1.06 / 3.31	[Interpolated]
	60(ZK)	RS-7748	Dry	68 LBS	2.50	2.00	1.13	1.44	UUT-19
	500REOZJ	RS-6913	Dry	460 LBS	1.93	1.93	0.87	1.39	UUT-10
Radiator [VOLVO-PENTA] Note: Coil Material is Aluminum Note: Frame Material is Carbon Steel	550(ZV)	3889459	Dry	Part of Engine	1.93	1.21	0.87	0.87	UUT-13
Radiator [WABTEC] Note: Coil Material is Aluminum Note: Frame Material is Carbon Steel	800kW	50C	Dry	1,311 LBS	1.96	0.86	0.88	0.62	UUT-17
	2500kW	50C	Dry	7,275 LBS	1.96	0.96	1.47	2.16	UUT-18
Radiator [MITSUBISHI] Note: Coil Material is Aluminum Note: Frame Material is Carbon Steel	2000REOZM(D)	YT4277811	Dry	4,000 LBS	1.93	1.21	0.87	2.72	UUT-14
Controller [KOHLER]	20-600	DEC3	DEC3+	10 LBS	1.93	1.47	0.87	1.06	UUT-04
	20-600	DEC3000	DEC3000	5 LBS	2.50	2.00	1.13	1.44	UUT-19
	20-600	DEC550	DEC550	10 LBS	1.93	1.93	0.87	1.39	UUT-10, UUT-20
	2500kW	116010000945	APM802	132 LBS	1.96	0.86	0.88	0.62	UUT-17

Notes:

1) F_p/W_p values are shown in the form of Rigid / Isolated

2) Rigid mounted generator sets shall be mounted on UL142 tanks. Vibration isolated generator sets are certified without sub-base fuel tank.

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UNIT UNDER TEST (UUT) Summary Sheet

UUT-04

Q0026.0,UUT Q0023-01-01-01

Model Line	Model Number	Manufacturer
REOZJ	20REOZJC	Kohler

Product Construction Summary

Diesel powered electrical generator set 20 kW, Carbon Steel Enclosure and 116 gal Carbon Steel Fuel Tank

Options / Subcomponent Summary

Enclosure: Kohler, Fuel Tank: Kohler, Engine: John Deere, Alternator: Kohler, Radiator: JB Radiator Specialties, Controller: Kohler

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
3,670	114	41	66	3.5	2.8	2.8

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	1.47	1.00	1.50	2.35	1.76	1.29	0.52
		1.93	0.00					

Test Mounting Details

Sub-Base Fuel Tank is Mounted Directly to the Table Using (6) 5/8" Diameter ASTM A325 Bolts.

UUT-04



All units were filled with contents and maintained structural integrity and functionality after AC156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-10

PEER STI/2011-16, UUT 1

Model Line	Model Number	Manufacturer
REOZJ	500REOZJ	Kohler

Product Construction Summary

Diesel powered electrical generator set 500 kW, Carbon Steel Enclosure and 1,763 gal Carbon Steel Fuel Tank

Options / Subcomponent Summary

Enclosure: Kohler, Fuel Tank: Kohler, Engine: John Deere, Alternator: Marathon, Radiator: JB Radiator Specialties, Controller: Kohler

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
29,900	300	68	131	4.3	5.5	5.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	1.93	1.00	1.50	3.09	2.32	1.29	0.52

Test Mounting Details

Sub-Base Fuel Tank is Mounted Directly to the Fixture Using (14) 3/4" Diameter ASTM A490 Bolts.

UUT-10



All units were filled with contents and maintained structural integrity and functionality after AC156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-13

PEER - STI/2011-04, UUT 1

Model Line	Model Number	Manufacturer
REOZV	550REOZV	Kohler

Product Construction Summary

Diesel powered electrical generator set 550 kW, Carbon Steel Enclosure and 551 gal Carbon Steel Fuel Tank

Options / Subcomponent Summary

Enclosure: Kohler, Fuel Tank: Kohler, Engine: Volvo-Penta, Alternator: Marathon, Radiator: Volvo-Penta, Controller: Kohler

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
23,198	282	86	120	5.0	5.0	7.9

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	1.21	1.00	1.50	1.93	1.45	1.29	0.52
		1.93	0.00					

Test Mounting Details

Sub-Base Fuel Tank is Mounted Directly to the Fixture Using (18) 3/4" Diameter ASTM A490 Bolts.

UUT-13



All units were filled with contents and maintained structural integrity and functionality after AC156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-14

PEER-STI/2011-15, UUT 1

Model Line	Model Number	Manufacturer
REOZM	2000REOZMD	Kohler

Product Construction Summary

Diesel powered electrical generator set 2000 kW, No Enclosure and No Fuel Tank

Options / Subcomponent Summary

Enclosure: N/A, Fuel Tank: N/A, Engine: Mitsubishi, Alternator: Marathon, Radiator: Mitsubishi

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
36,000	268	109	122	3.0	3.4	4.4

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	1.21	1.00	1.50	1.93	1.45	1.29	0.52
		1.93	0.00					

Test Mounting Details

Skid is Mounted Atop (12) M2SSH-1E Seismic Spring Mounts Provided by The VMC Group. The Mounts are Attached to the Fixture Using (4) 3/4" Diameter ASTM A490 Bolts per Mount.

UUT-14



All units were filled with contents and maintained structural integrity and functionality after AC156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-17

VMA-50771-01E, UUT 1

Model Line	Model Number	Manufacturer
KD	KD800	Kohler

Product Construction Summary

Diesel powered electrical generator set 800 kW, Aluminum Enclosure and 4,973 gal Carbon Steel Tank

Options / Subcomponent Summary

Enclosure: Kohler, Fuel Tank: Kohler, Engine: Kohler, Alternator: MeccAlte, Radiator: Wabtec

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
74,052	360	103	172	4.0	3.8	9.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	0.86	1.00	1.50	2.00	1.03	1.33	0.53
		2.00	0.00					

Test Mounting Details

Sub-Base Fuel Tank is Mounted Directly to the Fixture Using (18) 7/8"x3" Grade A490 Bolts. Engine and alternator were internally isolated with mounts provided by the manufacturer.

UUT-17



All units were filled with contents and maintained structural integrity and functionality after AC156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-18

VMA-50771-01E, UUT 2

Model Line	Model Number	Manufacturer
KD	KD2500	Kohler

Product Construction Summary

Diesel powered electrical generator set 2500 kW, Aluminum Enclosure and 4,143 gal Carbon Steel Tank

Options / Subcomponent Summary

Enclosure: Kohler, Fuel Tank: Kohler, Engine: Kohler, Alternator: Kato, Radiator: Wabtec

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
119,997	535.5	137.0	207.0	7.3	2.8	5.3

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	0.96	1.00	1.50	2.00	1.50	1.33	0.53
		2.00	0.00					

Test Mounting Details

Sub-Base Fuel Tank is Mounted Directly to the Fixture Using (20) 7/8"x3" Grade A490 Bolts. Additionally , UUT Skid was Attached to the Fuel Tank with (12) VMC M2SSH-1E spring vibration isolators.

UUT-18



All units were filled with contents and maintained structural integrity and functionality after AC156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-19

VMA-50224-02E, UUT 2

Model Line	Model Number	Manufacturer
REOZK	60REOZK	Kohler

Product Construction Summary

Diesel powered electrical generator set 60 kW, Aluminum Enclosure and 535 gal Carbon Steel Tank

Options / Subcomponent Summary

Enclosure: Nelson Global Products, Fuel Tank: Kohler, Engine: Kohler, Alternator: Kohler, Radiator: JB Radiator Specialties

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
9,073	158.3	42.1	93.7	6.1	7	10.1

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	2.00	1.00	1.50	3.20	2.40	1.67	0.67
		2.50	0.00	1.50				

Test Mounting Details

Sub-Base Fuel Tank is Mounted Directly to the Table Using (8) 7/8" Diameter ASTM A325 Bolts.

UUT-19



All units were filled with contents and maintained structural integrity and functionality after AC156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-20

PEER STI 2013-05, UUT 1C

Model Line	Model Number	Manufacturer
REOZJG	180REOZJG	Kohler

Product Construction Summary

Diesel powered electrical generator set 180 kW, Steel Enclosure

Options / Subcomponent Summary

Enclosure: Kohler, Engine: John Deere, Alternator: Kohler

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,810	162	53	81	3.1	6.0	9.1

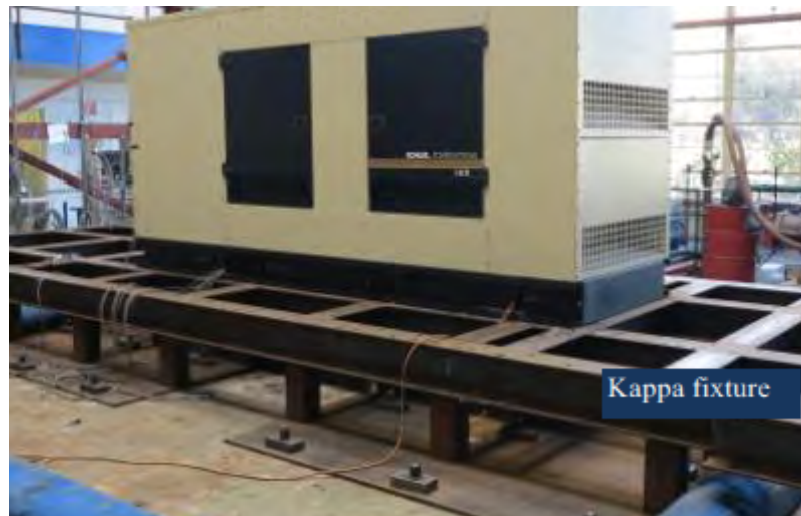
UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	1.93	1.00	1.50	3.09	2.32	1.29	0.52

Test Mounting Details

Skid is Mounted Directly to the Table Using (14) 3/4" Diameter ASTM A490 Bolts.

UUT-20



All units were filled with contents and maintained structural integrity and functionality after AC156 test.