



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP-0120

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Kohler Power Systems

Manufacturer's Technical Representative: Brady Eifrid

Mailing Address: N 7650 Lakeshore Road, Sheboygan, WI 93083

Telephone: (920) 457-4441

Email: brady.eifrid@kohler.com

Product Information

Product Name: Switchgear/Switchboards

Product Type: Switchgear - Low Voltage

Product Model Number: PD/ED Switchgear

General Description: Switchgear cabinets with NEMA 1 and 3R rating enclosures. Contain breakers, transformers, meters, power supplies, relays, controllers, displays and accessories.

Mounting Description: Rigid, Floor/Wall Mounted

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: The VMC Group

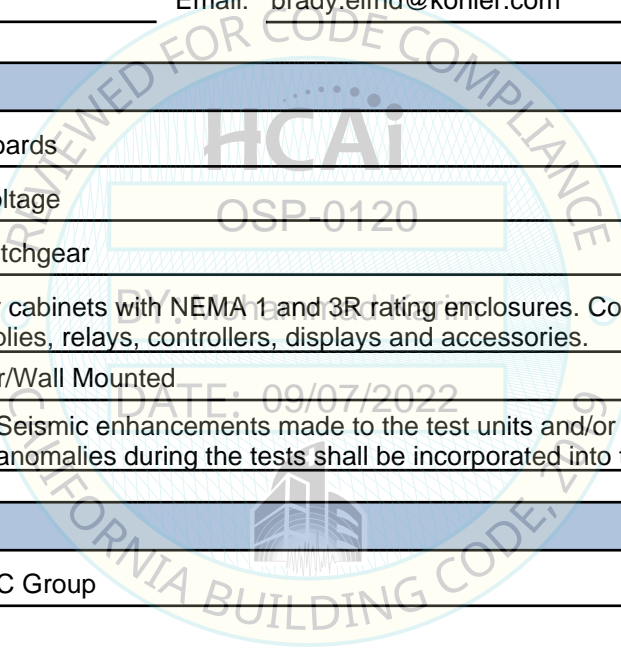
Contact Person: John Giuliano

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): _____

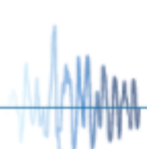
Testing Laboratory

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)
Contact Person: Kelly Laplace
Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431
Telephone: (775) 358-5085 Email: kelly@shaketest.com

Company Name: UNIVERSITY OF CALIFORNIA, BERKELEY (PEER)
Contact Person: Clement Barthes
Mailing Address: 1302 South 46th Street Building 420, Richmond CA 94084
Telephone: (510) 665-3409 Email: clementbarthes@berkeley.edu

Company Name: QUALTECH/CURTISS WRIGHT/TRENTEC
Contact Person: Timothy A. Geers
Mailing Address: 4600 East Tech Drive, Cincinnati OH 45245
Telephone: (513) 528-7900 Email: tgeers@curtisswright.com

Company Name: UNIVERSITY OF BUFFALO (SEESL)
Contact Person: Mark Pitman
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Telephone: (716) 645-3019 Email: mpitman@eng.buffalo.edu





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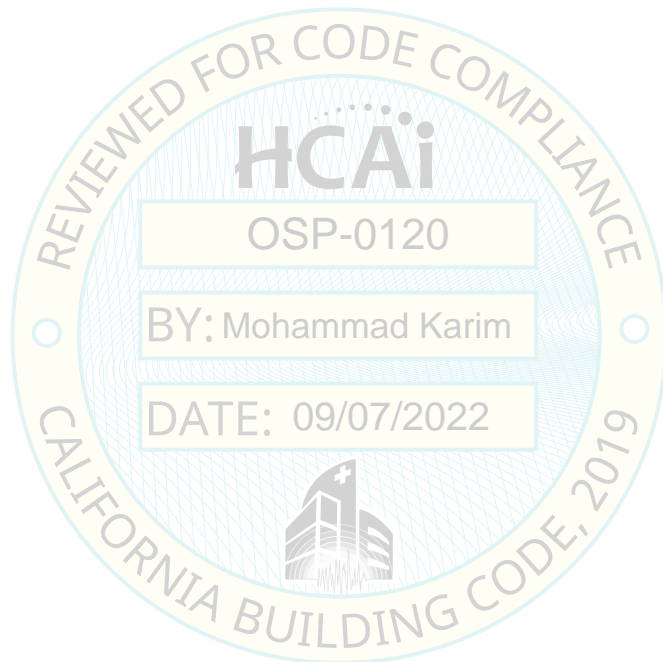
Company Name: WYLE LABORATORIES

Contact Person: Don Smith

Mailing Address: 7800 Highway 20 West, Huntsville AL 35806

Telephone: (256) 837-4411

Email: don.smith@wyle.com





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 0.94

SDS (Design spectral response acceleration at short period, g) = 1.25

a_p (Amplification factor) = 2.5

R_p (Response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 09/07/2028

Date: 9/7/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 1.25 z/h = 1

Condition of Approval (if applicable): DATE: 09/07/2022

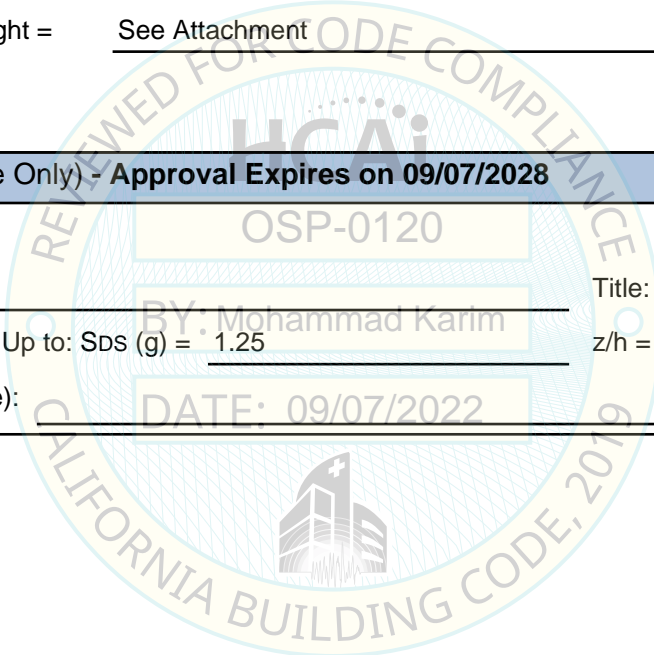


Table 1: Certified Ganged Switchgear Systems

Model Number ^{1,2}	Main Bus Rating [Amps]	Breaker Rating [Amps]	Enclosure				Max Weight [lbs]	Mounting Configuration	UUT	
			NEMA Rating	Max Height [in]	Max Width [in]	Max Depth [in]				
PD/ED - 200/2000, 0B/2C	N/A	N/A	Type 1, Type 3R	91.5	36.0	54.0	625	Base	Extrapolated	
PD/ED - 200/2000, 0B/2C	N/A	N/A	Type 3R	92.0	36.0	54.0	620		UUT-12	
PD/ED - 200/2000, 1B/0C	2000	2000	Type 1	91.5	36.0	24.0	895		Interpolated	
PD/ED - 200/2000, FH 2000A I-Line Interior, DR	1600-5000	15-3000	Type 1, Type 3R	91.5	48.0	54.0	1,000			
PD/ED - 200/2000, 1IMB/HH 2000A I-Line Interior, DR	1600-5000	15-2000	Type 1, Type 3R	91.5	48.0	54.0	1,300			
PD/ED - 200/2000, 1IMB/HH 2000A I-Line Interior, SR	1600-5000	15-3000	Type 1, Type 3R	91.5	36.0	54.0	1,176			
PD/ED - 200/2000, FH 2000-3000A I-Line Interior, SR	2000	2000	Type 1	91.5	42.0	24.0	1,176			
PD/ED - 200/2000, FH 2000-3000A I-Line Interior, SR	1600-5000	240-3000	Type 1, Type 3R	91.5	48.0	54.0	1,176			
PD/ED - 200/2000, FH 3000A I-Line Interior, DR	1600-5000	15-3000	Type 1, Type 3R	91.5	54.0	54.0	1,300			
PD/ED - 100/1000, 1B/1C	1600-5000	800-2000	Type 1, Type 3R	91.5	36.0	54.0	2,320			
PD/ED - 100/1000, 2B/1C	1600-5000	800-2000	Type 1, Type 3R	91.5	36.0	54.0	2,320			
PD/ED - 200/2000, 1B/1C	1600-5000	800-3000	Type 1, Type 3R	91.5	36.0	54.0	2,320			
PD/ED - 200/2000, 2B/0C	1600-5000	800-2000	Type 1, Type 3R	91.5	36.0	54.0	2,320			
PD/ED - 200/2000, 2B/0C	1600-5000	800-2000	Type 3R	92.0	36.0	54.0	2,320			UUT-12
PD/ED - 200/2000, 2B/0C	1600-5000	800-1200	Type 1, Type 3R	91.5	30.0	54.0	2,320			Interpolated
PD/ED - 200/2000, 2B/1C	1600-5000	800-1600	Type 1, Type 3R	91.5	48.0	54.0	2,320			
PD/ED - 200/2000, 4B/0C	1600-5000	800-1600	Type 1, Type 3R	91.5	36.0	54.0	2,320			
PD/ED - 200-2000, 1B/0C	2500-5000	2500-3000	Type 1, Type 3R	91.5	36.0	54.0	2,320			
PD/ED - 200-2000, 1B/0C	4000-5000	4000-5000	Type 1, Type 3R	91.5	54.0	54.0	2,320			
PD/ED - 200-2000, 1B/1C	4000-5000	4000	Type 1, Type 3R	91.5	42.0	54.0	2,320			
PD/ED - 200/2000, 1B/0C	5000	5000	Type 1, Type 3R	91.5	48.0	54.0	2,320			
PD/ED - 300/3000, 0B/4C	N/A	N/A	Type 1	91.5	36.0	80.0	1,000			
PD/ED - 300/3000, 0B/4C	N/A	N/A	Type 1	92.0	36.0	80.0	1,050		UUT-13	
PD/ED - 300/3000, 2B/0C	1600-5000	800-3200	Type 1	91.5	22.0	80.0	1,700		Interpolated	
PD/ED - 300/3000, 2B/1C	1600-5000	800-3200	Type 1	91.5	22.0	80.0	1,700		UUT-13	
PD/ED - 300/3000, 2B/1C	1600-5000	800-3200	Type 1	92.0	22.0	80.0	1,755		Interpolated	
PD/ED - 300/3000, 3B/0C	1600-5000	800-3200	Type 1	91.5	30.0	80.0	1,700			
PD/ED - 300/3000, 3B/1C	1600-5000	800-2000	Type 1	91.5	22.0	80.0	1,700			
PD/ED - 300/3000, 4B/0C	1600-5000	800-2000	Type 1	91.5	22.0	80.0	1,700			

¹ B - Breaker, C - Controls, FH - Full Height, HH - Half Height, SR - Left Side Mounting, DR - Right and Left Side Mounting, IMB - Individually Mounted Breaker

² Certified Components manufactured by Kohler

Table 1: Certified Ganged Switchgear Systems (Continued)

Model Number ^{1,2}	Main Bus Rating [Amps]	Breaker Rating [Amps]	Enclosure				Max Weight [lbs]	Mounting Configuration	UUT
			NEMA Rating	Max Height [in]	Max Width [in]	Max Depth [in]			
PD/ED - 300/3000, 0B/4C	1600-5000	N/A	Type 1	91.5	36.0	80.0	1,800	Base	Interpolated
PD/ED - 300/3000, 1B/2C	1600-5000	3200-5000	Type 1	91.5	36.0	80.0	1,800		
PD/ED - 300/3000, 2B/0C	1600-5000	3200-5000	Type 1	91.5	36.0	80.0	1,800		
PD/ED - 300/3000, 2B/1C	1600-5000	800-5000	Type 1	91.5	36.0	80.0	1,800		
PD/ED - 300/3000, 3B/0C	1600-5000	800-5000	Type 1	91.5	36.0	80.0	1,800		
PD/ED - 300/3000, 3B/1C	1600-5000	800-2000	Type 1	91.5	36.0	80.0	1,800		
PD/ED - 300/3000, 4B/0C	1600-5000	800-2000	Type 1	91.5	36.0	80.0	1,800		
PD/ED - 300/3000, 4B/0C	5000	800-2000	Type 1	91.5	30.0	72.0	2,889		
PD/ED - 300/3000, 4B/0C	5000	800-2000	Type 1	91.5	30.0	72.0	2,889		
PD/ED - 300/3000, 1B/2C	5000	5000	Type 1	91.5	48.0	72.0	4,371		
PD/ED - 300/3000, 1B/2C	5000	5000	Type 1	91.5	48.0	72.0	4,371		
PD/ED - 400/4000, 0CB/2C	N/A	N/A	Type 1	95.1	36.0	92.0	4,100		Interpolated
PD/ED - 400/4000, 1CB/1C	1200-3000	1200-3000	Type 1, Type 3R	109.0	48.0	109.0	4,628		UUT-7
PD/ED - 400/4000, 1CB/1C	1200-3000	1200-3000	Type 1	95.1	36.0	92.0	3,920		
PD/ED - 400/4000, 1CB/1C	1200-3000	1200-3000	Type 3R	109.0	36.0	109.0	3,072		
PD/ED - 400/4000, 1CB/1C	1200-3000	1200-3000	Type 3R	109.0	48.0	109.0	4,628		
PD/ED - 400/4000, 2CB/0C	1200-3000	1200-2000	Type 1	95.1	36.0	92.0	4,430	Interpolated	
PD/ED - 400/4000, 2CB/0C	1200-3000	1200-2000	Type 1	95.1	36.0	92.0	4,430	UUT-7	

¹B - Breaker, C - Controls

² Certified Components manufactured by Kohler

Table 2: Certified Single Switchgear Systems

Model Number ^{1,2}	Main Bus Rating [Amps]	Breaker Rating [Amps]	Enclosure				Max Weight [lbs]	Mounting Configuration	UUT
			NEMA Rating	Max Height [in]	Max Width [in]	Max Depth [in]			
MCP-3000 ³	N/A	N/A	Type 1	31.0	18.0	7.0	62	Wall	UUT-11
PD/ED - 200/2000, 0B/2C	N/A	N/A	Type 1, Type 3R	91.5	36.0	54.0	625	Base	Extrapolated
PD/ED - 200/2000, 1B/0C	2000	2000	Type 1	91.5	36.0	24.0	895		
PD/ED - 200/2000, FH 2000A I-Line Interior, DR	1600-5000	15-3000	Type 1, Type 3R	91.5	48.0	54.0	1,000		
SGP-1687 ³	N/A	N/A	Type 1	95.0	72.0	24.0	1,130		UUT-16
PD/ED - 200/2000, 1IMB/HH 2000A I-Line Interior, SR	1600-5000	15-3000	Type 1, Type 3R	91.5	36.0	54.0	1,176		Interpolated
PD/ED - 200/2000, FH 2000-3000A I-Line Interior, SR	1600-5000	240-3000	Type 1, Type 3R	91.5	48.0	54.0	1,176		
PD/ED - 200/2000, FH 2000-3000A I-Line Interior, SR	2000	2000	Type 1	91.5	42.0	24.0	1,176		
PD/ED - 200/2000, 1IMB/HH 2000A I-Line Interior, DR	1600-5000	15-2000	Type 1, Type 3R	91.5	48.0	54.0	1,300		
PD/ED - 200/2000, FH 3000A I-Line Interior, DR	1600-5000	15-3000	Type 1, Type 3R	91.5	54.0	54.0	1,300		
PD/ED - 100/1000, 1B/1C	1600-5000	800-2000	Type 1, Type 3R	91.5	36.0	54.0	2,320		
PD/ED - 100/1000, 2B/1C	1600-5000	800-2000	Type 1, Type 3R	91.5	36.0	54.0	2,320		
PD/ED - 200/2000, 1B/1C	1600-5000	800-3000	Type 1, Type 3R	91.5	36.0	54.0	2,320		
PD/ED - 200/2000, 2B/0C	1600-5000	800-2000	Type 1, Type 3R	91.5	36.0	54.0	2,320		
PD/ED - 200/2000, 2B/0C	1600-5000	800-1200	Type 1, Type 3R	91.5	30.0	54.0	2,320		
PD/ED - 200/2000, 2B/1C	1600-5000	800-1600	Type 1, Type 3R	91.5	48.0	54.0	2,320		
PD/ED - 200/2000, 4B/0C	1600-5000	800-1600	Type 1, Type 3R	91.5	36.0	54.0	2,320		
PD/ED - 200-2000, 1B/0C	2500-5000	2500-3000	Type 1, Type 3R	91.5	36.0	54.0	2,320		
PD/ED - 200-2000, 1B/0C	4000-5000	4000-5000	Type 1, Type 3R	91.5	54.0	54.0	2,320		
PD/ED - 200-2000, 1B/1C	4000-5000	4000	Type 1, Type 3R	91.5	42.0	54.0	2,320		
PD/ED - 200/2000, 1B/0C	5000	5000	Type 1, Type 3R	91.5	48.0	54.0	2,320		
PD/ED - 200/2000, 2B/0C ³	N/A	N/A	Type 1	95.0	36.0	24.0	1,200	UUT-10	
PD/ED - 200/2000, 0B/2C ³	N/A	N/A	Type 1	95.0	36.0	24.0	1,270	UUT-14	
PD/ED - 400/4000, 0CB/2C ³	N/A	N/A	Type 1	95.1	36.0	92.0	4,100	Interpolated	
PD/ED - 400/4000, 1CB/1C	1200-3000	1200-300	Type 1, Type 3R	109.0	36.0	109.0	4,240		
PD/ED - 400/4000, 1CB/1C	1200-3000	1200-3000	Type 3R	109.0	36.0	109.0	4,240	UUT-8	
PD/ED - 400/4000, 2CB/0C	1200-3000	1200-2000	Type 1	95.1	36.0	92.0	4,240	Extrapolated	
R0C00811	1200	1200	Type 1	95.1	36.0	91.0	9,164	UUT-15	

¹ B - Breaker, C - Controls, FH - Full Height, HH - Half Height, SR - Left Side Mounting, DR - Right and Left Side Mounting, IMB - Individually Mounted Breaker

² Certified Components manufactured by Kohler

³ Low Voltage Control Sections

Table 3A: Certified Enclosures: Base Mounted Switchgear Units

NEMA Rating	Material	Manufacturer	Max Dimensions [in]			Weight [lbs]	UUT
			Depth	Height	Width		
Type 1, Type 3R	Carbon Steel	Square D	24	91.5	36	895	Extrapolated
					42	1,176	
54			91.5	30	2,230	UUT-12	
				36	2,230		
				36	2,230	Interpolated	
				42	2,230		
				48	2,320		
				54	2,320		
Type 3R			72	91.5	30	2,889	UUT-5
Type 1, Type 3R					48	4,371	UUT-5
					22	1,755	UUT-13
Type 1					80	91.5	36
	36	4,430					UUT-7
Type 3R	109	109			36	4,240	UUT-8
	109	109	48	4,628	UUT-9		

Table 3B: Certified Enclosures: Base Mounted Control Section Units

NEMA Rating	Material	Manufacturer	Max Dimensions [in]			Weight [lbs]	UUT
			Depth	Height	Width		
Type 1	Carbon Steel	Kohler	24	95	36	1,270	UUT-14
Type 1	Carbon Steel	Square D	91	95.1	36	9164	UUT-15
Type 1	Carbon Steel	Kohler	72	95	24	1130	UUT-16

Table 3C: Certified Enclosures: Wall Mounted Control Section Units

NEMA Rating	Material	Manufacturer	Enclosure Dimensions [in]			Weight [lbs]	UUT
			Depth	Height	Width		
Type 1	Carbon Steel	Kohler	7.0	31.0	18.0	62	UUT-11

Table 4: Certified Subcomponents: Breakers

Model Number	Rating [Amps]	Weight [lbs]	Manufacturer	UUT
NW08N1	800	110	Square D	Extrapolated
NW08L1	800	110		
NW08H1	800	110		
NW08H2	800	110		
NW08H3	800	110		
NW16N1	1600	110		
NW16L1	1600	110		
NW16H1	1600	110		
NW16H2	1600	110		
NW16H3	1600	110		
NW20L1	2000	130		
NW20H1	2000	130		
NW20H2	2000	130		UUT-5
NW20H3	2000	130		Interpolated
NW32L1	3200	230		
NW32H1	3200	230		
NW32H2	3200	230		
NW32H3	3200	230		
NW40L1	4000	230		
NW40H2	4000	230		
NW40H3	4000	230		
NW50L1	5000	230		
NW50H2	5000	230	UUT-5	
VR-05025-12	1200	380	UUT-8	
VR-05025-20	2000	430	Interpolated	
VR-05025-30	3000	630		
VR-05035-12	1200	450		
VR-05035-20	2000	500		
VR-05035-30	3000	700		
VR-05050-12	1200	800		
VR-05050-20	2000	800		
VR-05050-30	3000	800		
VR-08050-12	1200	380		
VR-08050-20	2000	430		
VR-08050-30	3000	630		
VR-15050-12	1200	380		
VR-15050-20	2000	430	UUT-9	
VR-15050-30	3000	630	Interpolated	
VR-15075-12	1200	380		
VR-15075-20	2000	430		
VR-15075-30	3000	630		
VR-15100-12	1200	450		
VR-15100-20	2000	500		
VR-15100-30	3000	700		
VR-15150-12	1200	800		
VR-15150-20	2000	800		
VR-15150-30	3000	800	UUT-7	

Table 5: Certified Transformers

Model Number	Description	Weight [lbs]	Manufacturer	UUT
Model 460	Low Voltage, PT's, 150VA	7.75	GE/ITI	UUT-13
PTG3*, PTG4*, PTG5*, PTG6*	Medium Voltage, VT	85	GE/ITI	UUT-8, UUT-9
Model 785R	Current Transformer, MV	58	Square D	UUT-15
Model 780R	Current Transformer, MV	30	Square D	UUT-15
Model SMCT	Low Voltage, Cradle Metering CT's	20	Square D	UUT-5

Table 6: Certified Meters

Model Number	Description	Weight [lbs]	Manufacturer	UUT
PM5000	Power Meter	1	Schneider Electric	Extrapolated
PM8000	Power Meter	1.3	Schneider Electric	UUT-14
CM4000	Power Meter	4.2	Schneider Electric	UUT-14
ION7650	Power Meter	4.2	Schneider Electric	UUT-14

Table 7: Certified Power Supplies

Customer Part Number	Description	Weight [lbs]	Manufacturer	UUT
BAP236	Converter, 24VDC to 125VDC	2.6	Absopulse	UUT-14
XP1-1-2-6-2	Inverter, 24VDC to 120VAC	2	EXELTECH	UUT-14
QS10.241	24VDC Power Supply	1.98	PULS	UUT-10
UBC10.241	24VDC UPS	6.28	PULS	UUT-10
TEP 150-2415WI	Converter, 24VDC output, 9-36VDC input	0.66	Traco Power	UUT-13
TEP 150-4815WI	Converter, 24VDC output, 18-75VDC input	0.66	Traco Power	UUT-12

Table 8: Certified Relays / Controllers

Model Number	Description	Weight [lbs]	Manufacturer	UUT
BE3-25C	Sync-check Relay	1	Basler	UUT-10
BE1-11i	Intertie Protective Relay	6	Basler	Interpolated
BE1-11f	Feeder Protective Relay	6	Basler	Interpolated
BE1-11g	Generator Protective Relay	6	Basler	UUT-14
M3520, M3425A, M3410A	Utility Intertie Protective Relay	17	Beckwith	UUT-11
350	Feeder Protective Relay	11	GE	UUT-14
850	Intertie Protective Relay	20	GE	UUT-14
SEL 700G	Generator Protective Relay	4.4	Schweitzer	UUT-14
SEL 751A	Feeder Protective Relay	6	Schweitzer	Interpolated
SEL 751	Bus Tie Protective Relay	6	Schweitzer	UUT-14

Table 9: Certified Controller Components

Model Number	Description	Weight [lbs]	Manufacturer	UUT
BMX	Modicon M340 PAC	10	Schneider Electric	UUT-10

Table 10: Certified Switches

Model Number	Description	Weight [lbs]	Manufacturer	UUT
SLX	Managed Ethernet Switches	0.75	Sixnet	UUT-13
EIR	Copper to Fiber Converter	0.5	B&B Electronics	UUT-14
Eagle One	VPN Router	1	Hirschmann	UUT-12, UUT-13

Table 11: Certified Displays & Interface Monitors

Model Number	Description	Weight [lbs]	Manufacturer	UUT
iPC	15", 17", 19", 21.5" Industrial PC	20 to 28	Nematron	UUT-13
GTU	15" HMI	11.9	Schneider Electric	UUT-12
Panel PC 3100 Series	15", 19" Industrial PC	11 to 16	B&R Automation	UUT-16

Table 12: Other Certified Components

Model Number	Description	Weight [lbs]	Manufacturer	UUT
8440-1878	Digital Synchronizer and Load Control	4.2	Woodward	UUT-13
LS-511	Circuit Breaker Control and Protection	2		UUT-14
easYgen 3000	Paralleling Genset Controller	4 to 4.74		UUT-14



UNIT UNDER TEST (UUT) Summary Sheet

UUT-5

Test Report: 57725R10; UUT-12a,b

Model Line	Model Number	Manufacturer
Power-Zone 4	PD/ED-300/3000 (SN: 28371524-001)	Square D

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 1 rating

Options / Subcomponent Summary

Enclosure, Breaker, Transformer

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
7,260	72.0	78.0	91.5	8.0	5.9	23.0

UUT Highest Passed Seismic Run Information								
Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC156	1.25	1.0	1.5	2.00	1.50	-	-
		1.78	0.0	1.5	-	-	1.19	0.48

Test Mounting Details

UUT-5 was rigidly mounted to the shake table using (12) 1/2" diameter Grade 5 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-7

Test Report: 70081R12A; UUT-1a,b

Model Line	Model Number	Manufacturer
MasterClad Switchgear	PD/ED-400/4000 (SN: 28258835)	Square D

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 1 rating

Options / Subcomponent Summary

Enclosure, Breaker

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
8,350	91.0	72.0	95.0	9.9	7.7	24.0

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}	
CBC 2019	ICC-ES AC156	1.78	1.0	1.5	2.85	2.14	-	-	
		2.46	0.0	1.5	-	-	1.65	0.66	

Test Mounting Details

UUT-7 was rigidly mounted to the shake table using (12) 1/2" diameter Grade 5 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-8

Test Report: SEESL 2014-11R4; UUT-1

Model Line	Model Number	Manufacturer
MasterClad Switchgear	PD/ED-400/4000, 1B/1C (SN: 34089617-006)	Square D

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 3R rating

Options / Subcomponent Summary

Enclosure, Breaker, Transformer

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
4,240	109.0	36.0	109.0	7.5	13.8	24.1

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}	
CBC 2019	ICC-ES AC156	1.78	1.0	1.5	2.85	2.14	1.19	0.48	
		-	-	-	-	-	-	-	

Test Mounting Details

UUT-8 had (4) 3"x2"x3/4" plates welded onto the unit using 3/4" welds all around the plate. These plates were used to rigidly mount the unit to the shake table using (4) 1/2" diameter Grade 8 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-9

Test Report: PEER STI 2014-04R1; UUT-1

Model Line	Model Number	Manufacturer
MasterClad Switchgear / HVL Switchgear	PD/ED-400/4000, 1CB/1C (SN: 17-30209756-002)	Square D

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 3R rating

Options / Subcomponent Summary

Enclosure, Breaker, Transformer

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
7,700	109.0	84.0	109.0	5.1	7.0	17.8

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}	
CBC 2019	ICC-ES AC156	1.78	1.0	1.5	2.85	2.14	1.19	0.48	

Test Mounting Details

UUT-9 was rigidly mounted to the shake table using (6) tie-down welds; (3) in front and (3) in back, each 1/8" weld was 12" long



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-10

Test Report: Trentec Q0018.0; UUT-A

Model Line	Model Number	Manufacturer
PD/ED	PD/ED 200/2000, 2B/0C (SN: ES-90639)	Kohler

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 1 rating

Options / Subcomponent Summary

Enclosure, Power Supplies, Relays, Controllers

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,200	36.0	24.0	95.0	10.3	3.1	N/A

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54
		-	-	-	-	-	-	-

Test Mounting Details

UUT-10 was rigidly mounted to the shake table using (8) 1/2" diameter Grade 5 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-11

Test Report: Trentec Q0018.0; UUT-C

Model Line	Model Number	Manufacturer
MCP-3000	MCP-3000	Kohler

Product Construction Summary

Master control panel with touchscreen display; NEMA 1 rating

Options / Subcomponent Summary

Enclosure, Relays, Controllers

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
62	18.0	7.2	31.0	N/A	N/A	N/A

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}	
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54	
		-	-	-	-	-	-	-	

Test Mounting Details

UUT-11 was wall mounted to the test fixture using (4) 3/8" diameter Grade 2 bolts. The test fixture was clamped to the shake table interface plate.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-12

Test Report: VMA-45801-01E; UUT-7

Model Line	Model Number	Manufacturer
PD/ED	PD/ED 200/2000	Kohler

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 3R rating

Options / Subcomponent Summary

Enclosure, Relays, Controllers

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
2,940	54.0	72.0	92.0	10.3	6.3	18.3

UUT Highest Passed Seismic Run Information								
Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
		2.50	0.0	1.5	-	-	1.68	0.68

Test Mounting Details

UUT-12 was rigidly mounted to the shake table using (8) 1/2" diameter Grade 8 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-13

Test Report: VMA-45801-01E; UUT-8

Model Line	Model Number	Manufacturer
PD/ED	PD/ED 300/3000	Kohler

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 3R rating

Options / Subcomponent Summary

Enclosure, Transformer, Power Supplies, Switch, Display & HMI, Load Control

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
2,805	80.0	58.0	92.0	5.8	13.3	19.8

UUT Highest Passed Seismic Run Information								
Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
		2.50	0.0	1.5	-	-	1.68	0.68

Test Mounting Details

UUT-13 was rigidly mounted to the shake table using (16) 1/2" diameter Grade 8 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-14

Test Report: VMA-45801-01E; UUT-9

Model Line	Model Number	Manufacturer
PD/ED	PD/ED - 200/2000, 0B/2C (Control Section)	Kohler

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 3R rating

Options / Subcomponent Summary

Enclosure, Meters, Power Supplies, Relays, Controllers, Switches, Circuit Breaker

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,270	24.0	36.0	95.0	17.3	12.8	20.5

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
		2.50	0.0	1.5	-	-	1.68	0.68

Test Mounting Details

UUT-14 was rigidly mounted to the shake table using (16) 1/2" diameter Grade 8 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-15

Test Report: 70712R13; UUT-1

Model Line	Model Number	Manufacturer
MasterClad Arc Resistant	R0C00811	Square D

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 1 rating

Options / Subcomponent Summary

Current Transformers

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
9,164	91.0	36.0	95.1	9.9	7.0	26.0

UUT Highest Passed Seismic Run Information								
Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC156	1.78	1.0	1.5	2.85	2.14	-	-
		2.46	0.0	1.5	-	-	1.65	0.66

Test Mounting Details

UUT-15 was rigidly mounted to the shake table using (4) 1/2" diameter Grade 5 bolts and (2) 7/16 Grade 5 bolts.



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



UNIT UNDER TEST (UUT) Summary Sheet

UUT-16

Test Report: 31322-2001; UUT-1

Model Line	Model Number	Manufacturer
PD/ED	SGP-1687	Kohler

Product Construction Summary

Carbon steel enclosure with powder-coated finish: NEMA 1 rating

Options / Subcomponent Summary

Displays & HMI

UUT Properties						
Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
1,130	24.0	72.0	95.0	18.0	9.0	N/A

UUT Highest Passed Seismic Run Information								
Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	-	-
		2.28	0.0	1.5	-	-	1.53	0.62

Test Mounting Details

UUT-16 was rigidly mounted to the shake table using (8) 1/2" diameter Grade 5 bolts.



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