APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0430 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: **MTE Corporation / TEAL Electronics Corporation**

Manufacturer's Technical Representative: Roderick Harvey

Mailing Address: 4350 Executive Dr., Suite 315, San Diego, CA 92121

Telephone: 858.366.7540 Email: roderick.harvey@mtecorp.com

Product Information

Product Name: Siemens PDU Falcon

Product Type: Power Distribution Unit - PDU

Product Model Number: PDU-PDCC – 45kVA
(List all unique product identification numbers and/or part numbers)

General Description: 45kVA Power Distribution Unit. *Seismic enhancements made to the test units and modifications required to address the anomalies observed during the tests shall be incorporated into the production units.*

Mounting Description: Rigid Base Mounted

Applicant Information

Applicant Company Name: **SEEStudio, Inc.**

Contact Person: Dan Junker, SE

Mailing Address: 2655 Camino del Rio N. Suite 100, San Diego, CA 92108

Telephone: 619.606.5058 Email: djunker@seestudioinc.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: 12.12.18

Title: Principal Engineer Company Name: SEEStudio, Inc.

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

Company Name: **SEEStudio, Inc.**

Name: Dan Junker, SE California License Number: S6178

Mailing Address: 2655 Camino del Rio N. Suite 100, San Diego, CA 92108

Telephone: 619.606.5058 Email: djunker@seestudioinc.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: Environmental Testing Laboratory, Inc.

Contact Name: Brady Richard, President

Mailing Address: 11034 Indian Trail, Dallas, TX 75229

Telephone: 972-247-9657 Email: info@etldallas.com

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 1.69

S_{DS} (Design spectral response acceleration at short period, g) = 2.25

a_p (In-structure equipment or component amplification factor) = 2.5

R_p (Equipment or component response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1

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): SEES Certified Component Summary

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

Signature: Date: February 20, 2019

Print Name: Ali Sumer Title: DSE

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.25 z/h = 1.0

Condition of Approval (if applicable):

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SPECIAL SEISMIC CERTIFICATION

CERTIFIED COMPONENTS

TABLE **1**

MANUFACTURER: MTE Corporation / TEAL Electronics Corporation

MODEL LINE: PDU

TABLE DESCRIPTION: Power Distribution Unit Enclosure

CONSTRUCTION SUMMARY:

Painted 14GA galvanized cold-rolled carbon steel enclosure. Certified unit construction shall be identical to cabinet construction of UUT's.

OPTIONS SUMMARY:

N/A – Single Configuration

CERTIFICATION PARAMETERS:

Building Code: CBC 2016

Component Importance Factor: $I_p = 1.5$

S_{DS} at z/h = 1.0: $S_{DS} = 2.25g$

MOUNTING SUMMARY:

Rigid floor mounted. Unit anchorage shall be designed on a project specific basis by SEOR. Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

NOTES:

Model Line	Model	Max Dimensions (in)			Weight (lb)	Description	UUT
		Depth	Width	Height			
PDU	PDCC – 45kVA	36.0	44.0	57.5	1215	Test Prototype 1	1
					1225	Test Prototype 2	2

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SPECIAL SEISMIC CERTIFICATION

CERTIFIED SUB-COMPONENTS

TABLE **2**

MANUFACTURER: MTE Corporation / TEAL Electronics Corporation

MODEL LINE: PDU

TABLE DESCRIPTION: All Subcomponents

CONSTRUCTION SUMMARY:

OPTIONS SUMMARY:

Enclosure types per Tables 1 & 2 are available as custom units with internal component options available as presented herein.

CERTIFICATION PARAMETERS:

Building Code: CBC 2016

Component Importance Factor: I_p = 1.5

S_{DS} at z/h = 1.0: S_{DS} = 2.25g

MOUNTING SUMMARY:

Mounted in component. Certified mounting shall be identical to mounting of sub-component in UUT's.

NOTES:

Sub-Component	Manufacturer	Model	Description	Notes	UUT
Transformer	Teal Electronics	TK0010	3P Delta-Wye		1,2
Thermal Cutout	Pepi	C-100456	170 degree		1,2
Power Supply	CUI Inc	VOF-30-24	24VDC, 1.3A		1,2
Terminal Block	Siemens	8WH2000-0AK00	65A, 600V 12MM		1,2
		8WH2000-0AF00	20A, 600V 5.2MM		1,2
		8WH2000-0AH00	50A, 600V 8.2MM		1,2
		8WH2000-0AM00	115A, 600V 16MM		1,2
	Marathon	1432559	2 Gang, 600V, 310A		1,2
Relay	ABB	1SVR405611R1000	12A, 24VDC, 2 SPDT, 250VAC		1,2
MOV Module	Phoenix	VAL-MS 500 ST	600V, 10kA	3 tested	1,2
Circuit Breaker	Eaton	EGE3090FFG	3P, 90A, 415/480VAC		1,2
		EGE3070FFG	3P, 70A, 414/480 VAC		1,2
		EGE3030FFG	3P, 30A, 414/480 VAC		1,2
		EGE3060FFG	3P, 60A 415/480 VAC		2
		FAZ-D20/2-NA	2P, 20.0A, 277/480VAC		1,2
Switch	Eaton	M22-YED0055	24V		1,2
UPS	Eaton	9PX5000	5000VA/4500W	2 tested	1,2
Tower Computer	Siemens	IRS-FHU	110-240VAC, 5 - 2 A, 50-60 Hz		1,2
Power Strip	Eaton	EFLXI3000R-PDU1UIEC	110-240VAC, 50-60 Hz, 16 A		1,2
Workstation	Hewlett Packard	Z820	11A / 100-127 VAC, 5.5A / 200-240VAC		1
		Z8G4	11A / 100-127 VAC, 5.5A / 200-240 VAC		2
KVM Module	Digital Multitools	DKX1004	100-240VAC, 50/60 Hz, 0.4A		1,2
Ethernet Switch	NETGEAR	JGS516	16 Port 10/100/1000		1,2
EtherPet Switch	Siemens	10749750	10GbE EtherPET Assembly		2

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SPECIAL SEISMIC CERTIFICATION

UNIT UNDER TEST (UUT) DESCRIPTION

UUT **1**

MANUFACTURER: MTE Corporation / TEAL Electronics Corporation

MODEL LINE: PDU

MODEL NUMBER: **PDCC – 45kVA**

CONSTRUCTION SUMMARY:

Painted galvanized cold-rolled carbon steel enclosure.

OPTIONS SUMMARY:

Transformer: (1) Teal Electronics TK0010 with (1) Pepi C-100456 thermal cutout. **Power Supply:** (1) CUI VOF-30-24. **Terminal Blocks:** (2) Siemens 8WH2000-0AK00, (3) Siemens 8WH2000-0AF00, (1) Siemens 8WH2000-0AH00, (1) Siemens 8WH2000-0AM00. **Relay:** (2) ABB 1SVR405611R1000. **Circuit Breakers:** (2) Eaton FAZ-D20/2-NA, (1) Eaton EGE3030FFG, (1) Eaton EGE3070FFG, (1) Eaton EGE3090FFG. **MOV Module:** (3) Phoenix VAL-MS 500 ST. **Switch:** (1) Eaton M22-YED0055. **UPS:** (2) Eaton 9PX5000. **Tower Computer:** (1) Siemens IRS-FHU. **Power Strip:** (1) Eaton EFLXI3000R-PDU1UIEC. **Workstation:** (1) Hewlett Packard Z820. **KVM Module:** (1) Digital Multitools DKX1004. **Ethernet Switch:** (1) NETGEAR JGS516.

MOUNTING SUMMARY:

Rigid floor mounted. Unit mounted to shake table with a total of four (4) 3/8”-11 Gr. 5 bolts.

TEST PARAMETERS:

Building Code: CBC 2016

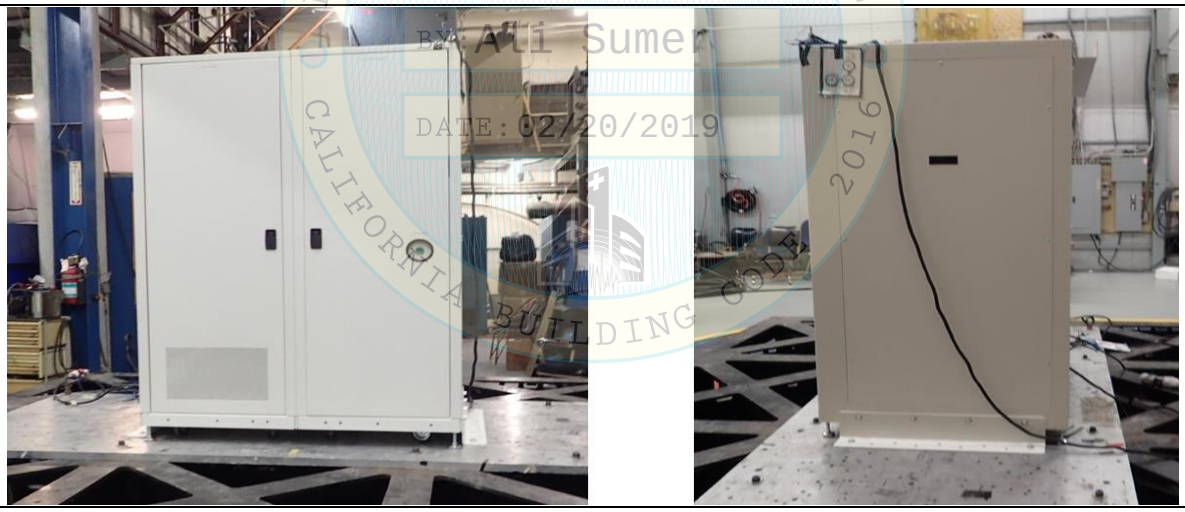
Component Importance Factor: $I_p = 1.5$

Test Criteria: AC-156

NOTES:

Contents were included in testing per operating conditions.

UUT IMAGE



UUT PROPERTIES

Dimensions (in)			Weight (lb)	First Natural Frequency (Hz)		
Depth	Width	Height		F-B	S-S	Vert
36.0	44.0	57.5	1,215	13.2	17.3	7.3

UNIT MAINTAINED STRUCTURAL INTEGRITY AND REMAINED OPERATIONAL

PER MANUFACTURER REQUIREMENT WHEN SUBJECTED TO THE FOLLOWING TEST PARAMETERS

S_{DS} (g)	z/h	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.25	1.0	3.60	2.70	1.50	0.60

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SPECIAL SEISMIC CERTIFICATION

UNIT UNDER TEST (UUT) DESCRIPTION

UUT **2**

MANUFACTURER: MTE Corporation / TEAL Electronics Corporation

MODEL LINE: PDU

MODEL NUMBER: **PDCC – 45kVA**

CONSTRUCTION SUMMARY:

Painted galvanized cold-rolled carbon steel enclosure. Positive bolted attachment required at door latches, each side.

OPTIONS SUMMARY:

Transformer: (1) Teal Electronics TK0010 with (1) Pepi C-100456 thermal cutout. **Power Supply:** (1) CUI VOF-30-24. **Terminal Blocks:** (2) Siemens 8WH2000-0AK00, (3) Siemens 8WH2000-0AF00, (1) Siemens 8WH2000-0AH00, (1) Siemens 8WH2000-0AM00. **Relay:** (2) ABB 1SVR405611R1000. **Circuit Breakers:** (2) Eaton FAZ-D20/2-NA, (1) Eaton EGE3030FFG, (1) Eaton EGE3070FFG, (1) Eaton EGE3090FFG, (1) Eaton EGE3060FFG. **MOV Module:** (3) Phoenix VAL-MS 500 ST. **Switch:** (1) Eaton M22-YED0055. **UPS:** (2) Eaton 9PX5000. **Tower Computer:** (1) Siemens IRS-FHU. **Power Strip:** (1) Eaton EFLXI3000R-PDU1UIEC. **Workstation:** (1) Hewlett Packard Z8G4. **KVM Module:** (1) Digital Multitools DKX1004. **Ethernet Switch:** (1) NETGEAR JGS516, (1) Siemens 10749750.

TEST PARAMETERS:

Building Code: CBC 2016

Component Importance Factor: $I_p = 1.5$

Test Criteria: AC-156

MOUNTING SUMMARY:

Rigid floor mounted. Unit mounted to shake table with a total of six (6) 3/8”-11 Gr. 5 bolts.

NOTES:

Contents were included in testing per operating conditions.

UUT IMAGE

UUT PROPERTIES

Dimensions (in)			Weight (lb)	First Natural Frequency (Hz)		
Depth	Width	Height		F-B	S-S	Vert
36.0	44.0	57.5	1,225	13.69	4.46	>33.33

UNIT MAINTAINED STRUCTURAL INTEGRITY AND REMAINED OPERATIONAL

PER MANUFACTURER REQUIREMENT WHEN SUBJECTED TO THE FOLLOWING TEST PARAMETERS

S_{DS} (g)	z/h	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.5	1.0	4.0	3.0	1.67	0.67