APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0480 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: Siemens Industry Inc.

Manufacturer's Technical Representative: Fernando Orpano

Mailing Address: 1000 Deerfield Parkway, Buffalo Grove, IL 60089

Telephone: (847) 941-6176 Email: fernando.orpano@siemens.com

Product Information

Product Name: VFD FS8 and FS9 Bypass Panels

Product Type: Variable Frequency Drive Bypass Panel

Product Model Number: See Certified Product Table attached
(List all unique product identification numbers and/or part numbers)

General Description: Bypass panel containing VFD and electrical components for control of electrical motors in commercial applications. Seismic enhancements made to the test units and modifications required to address anomalies observed during the tests shall be incorporated into the product units.

Mounting Description: Rigid floor mounted FS9 units and rigid wall mounted FS8 units.

Applicant Information

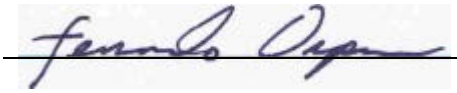
Applicant Company Name: Siemens Industry Inc.

Contact Person: Fernando Orpano

Mailing Address: 1000 Deerfield Parkway, Buffalo Grove, IL 60089

Telephone: (847) 941-6176 Email: fernando.orpano@siemens.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: 9/20/2016

Title: Regulatory Engineer Company Name: Siemens Industry Inc.

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

Company Name: Forell/Elsesser Engineers, Inc.

Name: Marco Scanu, SE California License Number: S4454

Mailing Address: 160 Pine St., 6th Flr., San Francisco, CA 94111

Telephone: (415) 837-0700 Email: m.scanu@forell.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: NTS Huntsville Operations

Contact Name: Blake Rees

Mailing Address: 7800 Highway 20 West, Huntsville, AL 35806-2049

Telephone: (256) 837-4411 Email: Blake.Rees@nts.com

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 2.05 g

S_{DS} (Design spectral response acceleration at short period, g) = 2.73 g

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) = 1.0

Equipment or Component Natural Frequencies (Hz) = See attachment, UUT Summary Sheets

Overall dimensions and weight (or range thereof) = See attachment, Certified Products Table

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) =

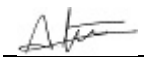
Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

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

☒ Other(s) (Please Specify): Certified Products Table, Certified Subcomponents Table, UUT Summary Sheets

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

Signature:  Date: February 8, 2017

Print Name: Ali Sumer Title: DSE

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.73 z/h = 1.0

Condition of Approval (if applicable):

Cygnet Controls, Inc. - VFD Bypass Panels
I. Certified Product Table

Unit	Width	Depth	Height	Weight	Construction Material[1]	Model Number	Notes	Test Status
VFD Bypass Panel								
FS8 VFD Bypass Panel	36"	16.8"	48"	376 lbs	14 ga CFS	BTE-050X2-F012	2,3	UUT1
	36"	16.8"	48"	376 lbs. - 380 lbs.	14 ga CFS	BTC-050X2-F012, BTC-050X2-F013, BTC-050X2-B012, BTC-050X2-B013, BTE-050X2-B012, BTC-060X2-F012, BTC-060X2-F013, BTC-060X2-B012, BTC-060X2-B013, BTE-060X2-F012, BTE-060X2-B012, BTC-075X2-F012, BTC-075X2-F013, BTC-075X2-B012, BTC-075X2-B013, BTE-075X2-F012, BTE-075X2-B012, BTC-100X4-F012, BTC-100X4-F013, BTC-100X4-B012, BTC-100X4-B013, BTE-100X4-F012, BTE-100X4-B012, BTC-125X4-F012, BTC-125X4-F013, BTC-125X4-B012, BTC-125X4-B013, BTE-125X4-F012, BTE-125X4-B012, BTC-150X4-F012, BTC-150X4-F013, BTC-150X4-B012, BTE-150X4-F012, BTE-150X4-B012	2,3	Interpolated
	36"	16.8"	48"	380 lbs	14 ga CFS	BTC-150X4-B013	2,3	UUT2
FS9 VFD Bypass Panel	48.1"	25.2"	72.1"	870 lbs	12 ga CFS	BTC-100X2-F013	2,4	UUT3
	48.1"	25.2"	72.1"	870 lbs. - 874 lbs.	12 ga CFS	BTC-100X2-F012, BTC-100X2-B012, BTC-100X2-B013, BTE-100X2-F012, BTE-100X2-B012, BTC-125X2-F012, BTC-125X2-F013, BTC-125X2-B012, BTC-125X2-B013, BTE-125X2-F012, BTE-125X2-B012, BTC-200X4-F012, BTC-200X4-F013, BTC-200X4-B012, BTC-200X4-B013, BTE-200X4-F012, BTE-200X4-B012, BTC-250X4-F012, BTC-250X4-F013, BTC-250X4-B012, BTC-250X4-B013, BTE-250X4-F012	2,4	Interpolated
	48.1"	25.2"	72.1"	874 lbs	12 ga CFS	BTE-250X4-B012	2,4	UUT4

Notes

1. CFS = cold-formed carbon steel
2. Panels are NEMA 1 rated
3. Wall Mounted
4. Floor mounted

Model Number Summary:

BTC-: BT300 VFD w/ Conventional Bypass – Contactors controlled by relay logic
BTE-: BT300 VFD w/ Electronic Bypass – Contactors controlled by VFD
050, 060, 075, 100, 125, 150, 200, 250: VFD Horsepower
X2-: 208/230V Input (offered in 050-125 HP)
X4-: 460V Input (offered in 100-250 HP)
B: Circuit Breaker Input
F: Fused Disconnect Input
01: Indoor Enclosure (NEMA/UL Environmental Type 1)
2: VFD Input contactor controlled by service switch inside enclosure
3: VFD Input contactor controlled by selector switch on front door of enclosure

Model Number Example: BTC-250X4-B012
Conventional Bypass, 250HP, 460V, Circuit Breaker, Type 1 Enclosure, Service Switch

Test Report PR047193-01 – UUT 1
FS8-230VAC
14 ga. Cold Formed Carbon Steel
36”W 16.79”D x 48”H, 376 lbs
Wall mounted using: (4) 3/8-16 Hex Head Cap Screw, SAE Gr 8, Torque to 45 lb-ft

Building Code	Test Criteria	S_{DS} (g)	z/h	I_p	Horizontal		Vertical	
					A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2016	ICC-ES AC 156	2.77	1.0	1.5	4.43	3.32	1.86	0.74

Natural Frequencies (Hz)			Test Results
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. UUT full of contents during testing.
n/a	n/a	n/a	

Test Report PR047193-01 – UUT 2
FS8-460VAC
14 ga. Cold Formed Carbon Steel
36”W 16.79”D x 48”H, 380 lbs
Wall mounted using: (4) 3/8-16 Hex Head Cap Screw, SAE Gr 8, Torque to 45 lb-ft

Building Code	Test Criteria	S_{DS} (g)	z/h	I_p	Horizontal		Vertical	
					A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2016	ICC-ES AC 156	2.77	1.0	1.5	4.43	3.32	1.86	0.74

Natural Frequencies (Hz)			Test Results
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. UUT full of contents during testing.
n/a	n/a	n/a	

Test Report PR047193-01 – UUT 3
FS9-230VAC
12 ga. Cold Formed Carbon Steel
48.06”W 25.21”D x 72.06”H, 870 lbs
Floor mounted using: (4) ½-13 Hex Head Cap Screw, SAE Gr 8, Torque to 110 lb-ft
Two steel angles were installed into the inside of the bottom of the cabinet on the right and left sides, running from front to back.

Building Code	Test Criteria	S_{DS} (g)	z/h	I_p	Horizontal		Vertical	
					A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2016	ICC-ES AC 156	2.73	1.0	1.5	4.37	3.28	1.83	0.73

Natural Frequencies (Hz)			Test Results
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. UUT full of contents during testing.
5.4	7.7	n/a	

Test Report PR047193-01 – UUT 4
FS9-460VAC
12 ga. Cold Formed Carbon Steel
48.06”W 25.21”D x 72.06”H, 874 lbs
Floor mounted using: (4) ½-13 Hex Head Cap Screw, SAE Gr 8, Torque to 110 lb-ft
Two steel angles were installed into the inside of the bottom of the cabinet on the right and left sides, running from front to back.

Building Code	Test Criteria	S_{DS} (g)	z/h	I_p	Horizontal		Vertical	
					A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
CBC 2016	ICC-ES AC 156	2.73	1.0	1.5	4.37	3.28	1.83	0.73

Natural Frequencies (Hz)			Test Results
F-B	S-S	V	The UUT maintained structural integrity and functionality after the AC156 test. UUT full of contents during testing.
5.4	7.7	n/a	