

OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

OFFICE USE ONLY APPLICATION FOR OSHPD SPECIAL SEISMIC **CERTIFICATION PREAPPROVAL (OSP) APPLICATION #: OSP-0440 OSHPD Special Seismic Certification Preapproval (OSP)** Renewal Type: New **Manufacturer Information** Manufacturer: Vycon, Inc. Manufacturer's Technical Representative: Lance Wooley Mailing Address: 16323 Shoemaker Avenue, Cerritos, CA 90703 Telephone: (562) 282-5507 Email: lwooley@calnetix.com **Product Information** Product Name: UPS and Batteries Product Type: Flywheel Energy Storage Systems Product Model Number: VDC-XES, VDC-XXES, VDC-XXT General Description: Flywheel DC energy storage system. mad Aliaari Mounting Description: Rigid, Floor Mounted None Tested Seismic Enhancements: **Applicant Information** Applicant Company Name: Structural Integrity Associates, Inc. Contact Person: Galen Reid Mailing Address: 233 SW Wilson Suite 101, Bend, OR 92201

Email: greid@structint.com





Telephone: (844) 878-0200

Title: Manager



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California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)
Company Name: STRUCTURAL INTEGRITY ASSOCIATES, INC.
Iame: Andrew Coughlin California License Number: S6082
Mailing Address: 5215 Hellyer Ave, Suite 101, San Jose, CA 951381025
elephone: (415) 635-8461 Email: acoughlin@structint.com
Certification Method
GR-63-Core X ICC-ES AC156 IEEE 344 IEEE 693 NEBS 3
Other (Please Specify):
EOR CODE CO.
esting Laboratory
Company Name: NATIONAL TECHNICAL SYSTEMS (NTS)
Contact Person: Ratish Rao
Mailing Address: 1536 East Valencia Drive, Fullerton CA 92831
elephone: (800) 677-2687 Email: Ratish.rao@nts.com
DATE: 10/06/2020

PANIA BUILDING CODE:





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Seismic Parameters	
Design Basis of Equipment or Components	(Fp/Wp) = 1.44
SDS (Design spectral response accele	eration at short period, g) = 2.0g @ z/h=1; 3.2g @ z/h=0
a _P (Amplification factor) =	1.0
Rp (Response modification factor) =	2.5
Ω0 (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 CODE

OSHPD	Approval (For Office Use Only) - A	Approval Expires on 12/31/2025		
Date:	10/6/2020	OSP-0440	in	
Name:	Mohammad Aliaari		itle:	Senior Structural Engineer
Special S	Seismic Certification Valid Up to: SDS (g) = See Above z	/h =	See Above
Conditio	n of Approval (if applicable):	DATE: 10/06/2020		





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SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX



1701583-CR-001 R0

Manufacturer:	Vycon Inc.	TABLE 1
Model Line:	VDC Flywheel	IADLE I

Certified Product Construction Summary:

Painted carbon steel enclosure. Galvanized carbon steel frame and base.

Certified Options Summary:

Single configuration. VDC-XES and VDC-XXES are identical other than software.

Mounting Configuration:

Base mounted - rigid

Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

Building Code: CBC 2019	Seismic Certification Limits:	$S_{DS} = 2.0 g z/h = 1.0$	/ _P = 1.5
Building Code. CBC 2019	Seisinic Certification Limits.	$S_{DS} = 3.2 g z/h = 0.0$	7 p- 1.3

I	(24)	5.1				3.2 g 2/11-0.0	
Model Line	Model		-		Weight	Notes	UUT
- 7		Depth	Width	Height	(lb)		
	VDC- <mark>XES</mark>	B\30 \(\(\)	ha ³ hm	ad M iaa	1,887	Identical to VDC-XXES	Interp.
VDC	VDC-XXES	30	30	74	1,887	0	1,2
	VDC-XXT	30 DATE:	10/06	2020	2,048		3
	\ \	DATE:	10/06/	2020			
	C.		1111/1-		15		
					1	/	
					06.		
		TVIA		C	0		
		1/4	BUIL	DING			

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SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX



1701583-CR-001 R0

Manufacturer:Vycon Inc.Table Description:Active SubcomponentsTABLE 2Model Line:VDC Flywheel

Building Code: CBC 2019 Seismic Certification Limits: $S_{DS} = 2.0 \text{ g} \quad \text{z/h} = 1.0$ $S_{DS} = 2.0 \text{ g} \quad \text{z/h} = 0.0$

	·		$S_{DS} = 3.2 g z/h = 0.0$	-,	
Component Type	Manufacturer	Model	OR CODE Description	Notes	UUT
Frame	Fabcon	2200413-00	Seismic frame	Frame, inner door, flywheel brace, c-channels & cross members	1,2,3
		1200232-10	HVDC XXE, 240-290 VDC	Similar to 1200232-20	Extrap.
Flywheel	Calnetix	1200232-20	VDC XXE/VDC XE, 400-600 VDC		1,2
rtywneet	Cathetix	1200232-40	HVDC2 XXE, 360-400 VDC	Identical to 1200232-20	Interp.
		1200251-20 By. \	VDC-XXT, 500-600 VDC		3
Electronic Assembly	Calnetix	<mark>22004</mark> 72-00	Bi-directional converter, IDBT	(3) installed	1,2,3
Electronic Assembly	Calnetix	2200581-20	1400A Stackassy, IPM-6, 1400A IGBT		3
Electronic Assembly	Calnetix	206-25645	MBC3600	Magnetic bearing controller	1,2,3
	Calnetix	220 <mark>0611-0</mark> 0	HV Panel		1,2
Electronic Assembly	Cathetix	2200654-10	HV Panel		3
Electronic Assembly	Calnetix	2200609-00	LV Panel		1,2,3
Panel PC	Premio	CPS0104E001	10.4" Display	Touch screen computer	1,2,3
Vacuum Dumn	Pfeiffer	PKD62707	Duo 10		1,2
Vacuum Pump	Edwards	A652-0-906			3
Inductor	Pacific Transformer	25170 MOD4	310 μΗ	(6) installed	1,2,3
Transformer	Pacific Transformer —	9310009-00	2 KVA		1,2,3
Transformer	Pacific fransformer —	9310014-00	1700 VA, 300/250V		1,2,3



1701583-CR-001 R0

Manufacture Model Line:	r: Vycon Inc. VDC Flywheel					
UUT	Unit Description	Report Number	Testing Laboratory	S _{DS}	z/h	I _P
1	VDC-XXES Flywheel	PR035926	NTS-Fullerton	2.0	1.0	1.5
2	VDC-XXES Flywheel	PR035926	NTS-Fullerton	2.0	1.0	1.5
3	VDC-XXT Flywheel	PR113889	NTS-Fullerton	3.2 2.0	0.0 1.0	1.5
		FOR CODE C		3.2	0.0	2.0
	, i	OSHPD	OMPLY			
	RE	OSP-0440	CE			
		BY: Mohammad Al	aari			
		DATE: 10/06/2020				
	CA	DATE: 10/00/2020	/2/			
		Op	OFI			
		OPNIA BUILDING	Co			
Notes:						

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UUT 1

1701583-CR-001 R0

Manufacturer: Vycon Inc.

Model Line: VDC Flywheel

Serial Number: U2000906

Model Number: US6CHCTWJ733000 (VDC-XXES)

Product Construction Summary:

Painted carbon steel enclosure. Galvanized carbon steel frame and base.

Options/Subcomponent Summary:

Model number uniquely identifies subcomponents.

Frame: 2200413-00; Flywheel: 1200232-20; Electronic Assembly: 2200472-00, 206-25645, 2200611-00, 2200609-00; Panel PC:

CPS0104E001; Vacuum Pump: PKD62707; Inductor: 25170 MOD4; Transformer: 9310009-00, 9310014-00.

		(4)	IIIT	Properties		7				
Weight	est Natural Frequency (Hz)									
(lb) Depth		Width	OSHeight 40		Front-Back		Side-Side		Vertical	
1,887	30.0	30.0		74.0		7.8		.8	>33	
		UUT Highes	st Passed	Seismic Rur	Inform	ation				
Buildi	ng 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)
CPC	CRC 2010		ICC ECNOTEC 10/0		1.0	1.5	3.2	2.4	2.13	0.85
CBC 2019		ICC-ES/AC156 1 0/0		3.2	0.0	1.5				

Test Mounting Details:





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Rigid base mounted with (4) 5/8" grade 8 bolts

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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1701583-CR-001 R0

Manufacturer: Vycon Inc.

Model Line: VDC Flywheel

UUT 2

Model Number: US6CHCTWJ733000 (VDC-XXES) Serial Number: U2000907

Product Construction Summary:

Painted carbon steel enclosure. Galvanized carbon steel frame and base.

Options/Subcomponent Summary:

Model number uniquely identifies subcomponents.

Frame: 2200413-00; Flywheel: 1200232-20; Electronic Assembly: 2200472-00, 206-25645, 2200611-00, 2200609-00; Panel PC:

CPS0104E001; Vacuum Pump: PKD62707; Inductor: 25170 MOD4; Transformer: 9310009-00, 9310014-00.

			UUT	Properties		7				
Weight		Dimension (in)		Lowest Natural Frequency (Hz)					
(lb)	(lb) Depth Width		OS	SHeight 40 Front-Back		t-Back	Side-Side		Vertical	
1,886	30.0	30.0	30.0 74.0		7.4		6.9		>33	
		UUT Highe:	st Passed	Seismic Rui	n Informa	ation				
Buildi	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)	
CDC	CBC 2019		ICC-ES/AC156 1 0/0		1.0	1.5	3.2	2.4	2 12	0.85
CBC					0.0	1.5	3.2	2.4	2.13	0.85

Test Mounting Details:





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Rigid base mounted with (4) 5/8" grade 8 bolts

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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UUT3

1701583-CR-001 R0

Manufacturer: Vycon Inc.

Model Line: VDC Flywheel

Product Construction Summary:

Serial Number: U201010021

Model Number: US7CHTTBJ737108 (VDC-XXT)

Painted carbon steel enclosure. Galvanized carbon steel frame and base.

Options/Subcomponent Summary:

Model number uniquely identifies subcomponents.

Frame: 2200413-00; Flywheel: 1200251-20; Electronic Assembly: 2200661-00, 206-25645, 2200654-00, 2200655-10; Panel PC:

CPS0104E001; Vacuum Pump: VRD-4; Inductor: 25170 MOD4; Transformer: 9310009-00, 9310014-00.

			UUT	Properties		7				
Weight		Dimension (in)		Lowest Natural Frequency (Hz)					
(lb) Depth		Width	OSi	OSHeight 40		Front-Back		-Side	Vertical	
2,048	30.0	30.0	11111111111111	74.0	8.0		6.8		12.6	
		UUT Highe:	st Passed	Seismic Run	Inform	ation				
Buildi	ng Code	Test Crit	teria	S _{DS} (g)	z/h	I _P	$I_P = A_{FLX-H}(g) A_{RIG-H}(g) A_{FLX-V}(g)$		A _{RIG-V} (g)	
CBC 2019		ICC ESMI	ICC-ES/AC156 1 0/(1.0	1.5	3.2	2.4	2.13	0.05
CBC	, 2019	ICC-ES A	CŦ30 I O	3.2	0.0	1.5	3.2	.2 2.4 2.15	2.13	0.85

Test Mounting Details:



Rigid base mounted with (4) 5/8" grade 5 bolts, torqued to 120 ft-lbs.

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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