



## APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.

OSP -0163-10

Check whether application is: NEW  RENEWAL 

1.0 VYCON Oliver Ulibas

*Manufacturer**Manufacturer's Technical Representative*

23695 Via Del Rio, Yorba Linda, CA 92887

*Mailing Address*

(714) 386-3800

*Telephone*

oulibas@vyconenergy.com

*E-mail Address*

2.0 VDC Flywheel Energy Storage System

*Product Name**Product Type*

VDC-XES

*Product model No (List all unique product identification numbers and/or serial numbers)*

*General Description:* Rigid Floor mounted DC energy storage system (with common mode filter kit) using VYCON's patented flywheel technology. Certified unit shall be identical to tested unit except for anchorage, which is not part of the pre-approval.

3.0 Tobolski Watkins Engineering, Inc. Matthew J. Tobolski, Ph.D., P.E.

*Applicant Company Name**Contact Person*

3710 Ruffin Road, San Diego, CA 92123

*Mailing Address*

858-381-5843

*Telephone*[mtobolski@tobolskiwatkins.com](mailto:mtobolski@tobolskiwatkins.com)*E-mail Address*

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.

  
*Signature of Applicant*

03/17/2011

*Date*

President and CEO

*Title*

Tobolski Watkins Engineering, Inc.

*Company Name*



Registered Design Professional Preparing the Report

4.0

Tobolski Watkins Engineering, Inc.

Company Name

Matthew J. Tobolski, Ph.D., P.E.

Contact Name

C 72806

California License Number

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California Licensed Structural Engineer Review and Acceptance of the Report

5.0

Tobolski Watkins Engineering, Inc.

Company Name

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Contact Name

S 5257

California License Number

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Anchorage Pre-Approval

6.0

- Anchorage is pre-approved under OPA- (Separate application for anchorage pre-approval is required)
Anchorage is not Pre-approved

Certification Method

7.0

- Testing in accordance with: ICC-ES AC-156
Other (Please Specify):
Analysis
Experience data
Combination of Testing, Analysis, and/or Experience Data (Please Specify):

Testing Laboratory (if applicable)

8.0

National Technical Systems (NTS)

Company Name

Rathish Rao

Contact Name

1536 East Valencia Drive, Fullerton California 92831

Mailing Address

(714) 879-6110

Telephone

rathish.rao@ntscorp.com

E-mail:





Approval Parameters

9.0

Design in accordance with ASCE 7-05 Chapter 13:  Yes  No

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.44g

$S_{DS}$  (Spectral response acceleration at short period) = 2.00g

$a_p$  (In-structure equipment or component amplification factor) = 1.0

$R_p$  (Equipment or component response modification factor) = 2.5

$I_p$  (Importance factor) = 1.5

$z/h$  (Height factor ratio) = 1.0

Equipment or Component fundamental period(s) = [See Attachment]

Building period limits (if any) = None

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

Equipment or Components @ grade designed in accordance with ASCE 7-05 Chapter 15:  Yes  No

Design Basis of Equipment or Components ( $VW$ ) =

$S_{DS}$  (Spectral response acceleration at short period) =

$S_1$  (Spectral response acceleration at 1 second period) =

$R$  (Response modification coefficient) = 1.0

$\Omega_0$  (System overstrength factor) = 1.0

$C_d$  (Deflection amplification factor) = 1.0

$I_p$  (Importance factor) = 1.5

Height to Center of Gravity above base =

Equipment or Component fundamental period(s) = Sec

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2007:  Yes  No

11.0 List of attachments supporting the special seismic certification of equipment or components:

- Test Report
- Drawings
- Manufacturer's Catalog
- Calculations
- Others (Please Specify): Attachment – UUT Info and Product List

11.0 OSHPD Approval (For Office Use Only)

3/17/2011

December 31, 2016

Signature & Date

Approval Expiration Date

Chris Tokas, SHFR

$S_{DS}$  (g) = 2.0

$z/h$  = 1.0

Name & Title

Special Seismic Certification Valid Up to

Condition of Approval (if any):



**UUT - 1**

**UNIT UNDER TEST (UUT)  
Summary Sheet**

TWEI Project No.: 2010-0103-CO-004

**Manufacturer:** VYCON

**Model Line:** VDC

**Model Number:** VDC-XES

**Product Construction Summary:**

Zinc plated base along with G90 galvanized steel frame and powder coated steel panels

**Options/Subcomponent Summary:**

The optional Common Mode Filter Kit is included in the UUT.

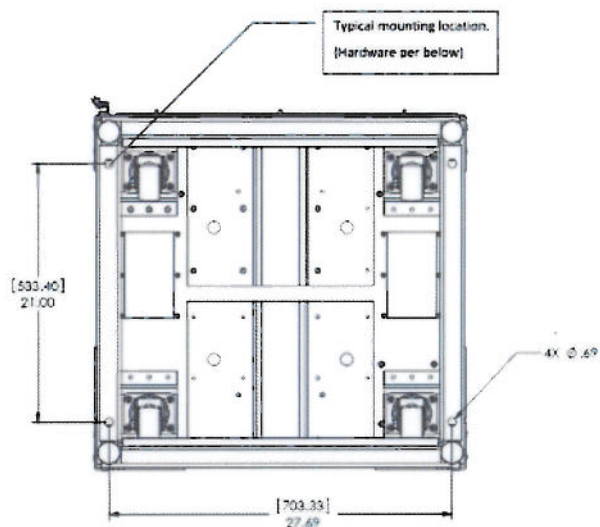
**UUT Properties**

Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1750	30.0	30.0	74.0	10.7 11.8	9.6 11.4	23.0 26

**UUT Highest Passed Seismic Run Information**

Building Code	Test Criteria	S <sub>Ds</sub>	z/h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
IBC 2009	ICC-ES AC 156	2.00g	1.0	1.5	3.20g	2.40g	1.33g	0.53g

**Test Mounting Details:**



Non-isolated floor mounting. Hard mounting using (4) Gr. 8 bolts of 5/8" dia. per manufacturer's instruction.



**Table 1**

**Special Seismic Certification  
Certified Product Matrix**

TWEI Project No.: 2010-0103-CO-004

**Manufacturer:** VYCON

**Model Line:** VDC

**Certified Product Construction Summary:**  
Zinc plated base along with G90 galvanized steel frame and powder coated steel panels

**Certified Options Summary:**  
Common Mode Filter Kit.

**Certified Mounting Summary:**  
Non-isolated floor mounting. Hard mounting per manufacturer's instruction.  
It is SEOR's responsibility to determine anchorages required to meet code requirements.

**Building Code:** IBC 2009/CBC 2010      **Seismic Certification Limits:**  $S_{DS} = 2.00g$        $z/h = 1.0$        $I_p = 1.5$

Model Line	Model	Dimension (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
VDC	VDC-XES	30.0	30.0	74.0	1,750	Including the optional component	01