



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP – 0264 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Alpha Industrial Power

Manufacturer's Technical Representative: Philip Knighton

Mailing Address: 1075 Satellite Blvd., Suite 400, Suwanee, GA 30024

Telephone: (800) 996-6104 Email: pknighton@alpha.com

Product Information

Product Name: AlphaRac

Product Type: Battery Racks

Product Model Number: See attached list for included models

(List all unique product identification numbers and/or part numbers)

General Description: Battery racks to support KM 250 P Ni-Cd batteries. Modular painted carbon steel construction using tubes, bent plate clips, plates, angles, bent rods, bolts and nuts. 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 Floor Mounted

Applicant Information

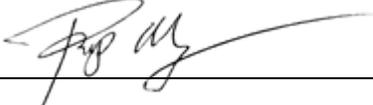
Applicant Company Name: ZFA Structural Engineers

Contact Person: David R. Cooper, SE

Mailing Address: 1212 Fourth Street, Suite Z, Santa Rosa, CA 95404

Telephone: (707) 526-0992 Email: davidc@zfa.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant:  Date: 1-8-2013

Title: Senior Applications Engineer Company Name: Alpha Industrial Power, Inc.





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

Company Name: ZFA Structural Engineers

Name: David R. Cooper, SE California License Number: S 2768

Mailing Address: 1212 Fourth Street, Suite Z, Santa Rosa, CA 95404

Telephone: (707) 526-0992 Email: davidc@zfa.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): _____

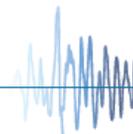
Testing Laboratory

Company Name: Anco Engineers, Inc.

Contact Name: Conor Byrne

Mailing Address: 1965A 33rd Street, Boulder, CO 80301

Telephone: (303) 443-7580 Email: conor@ancoengineers.com





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Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 0.6

S_{DS} (Design spectral response acceleration at short period, g) = 2.5

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

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 0

Equipment or Component Natural Frequencies (Hz) = See Attachments

Overall dimensions and weight (or range thereof) = 2P350- 13.75" w x 217" l x 35" t- 2816#
2G470- 18.5" w x 47.25" l x 29.2" t -573#

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, 2010: Yes No

List of Attachments Supporting Special Seismic Certification

Test Report(s) Drawings Calculations Manufacturer's Catalog

Other(s) (Please Specify): _____

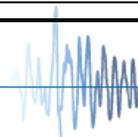
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2019

Signature:  Date: March 26, 2013

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.5 z/h = 0.0

Condition of Approval (if applicable): _____





1965A 33rd Street
Boulder, CO 80301
(303)443-7580

UUT #1

Unit Under Test (UUT) Summary Sheet

ANCO Project Number: 3325.01

Manufacturer:	Alpha Industrial Power Inc
Model Line:	AlphaRac Battery Racks and Cabinets
Model Number:	2P350/5500SEK
Product Construction Summary:	Painted carbon steel battery rack with Ni-Cd batteries
Options/Subcomponent Summary:	125V configuration 1 battery deep and 2 tiers high. 92 KM 250 P batteries connected in series (46 per tier). (14"Wx216.5"L, 2T, Z4)

UUT Properties

Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2816	13.75	217	35	9.1	6.55	5.7

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 2010	ICC-ES AC-156	2.5	0	1.5	2.5	1.0	1.68	0.68

Test Mounting Details:



Originally, fourteen grade 8 1/4"-20 bolts were used to hold the rack to the fixture, but because of the foot design, this allowed the feet to spin. As such, ANCO modified the feet to represent a new design in which the feet were attached to the frame at the center of the foot, but have two through holes for anchor bolts. With this modification the rack passed.



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UUT #2

Unit Under Test (UUT) Summary Sheet

ANCO Project Number: 3325.01

Manufacturer:	Alpha Industrial Power Inc
Model Line:	AlphaRac Battery Racks and Cabinets
Model Number:	2G470/1200SEK2
Product Construction Summary:	Painted carbon steel battery rack with Ni-Cd batteries
Options/Subcomponent Summary:	24V configuration 2 batteries deep and 1 tier high. 20 KM 250 P batteries connected in series (10 per tier). (18.5"Wx47"L, 2S, Z4)

UUT Properties

Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
573	18.5	47.25	13.3	11	12.5	24.9

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 2010	ICC-ES AC-156	2.5	0	1.5	2.5	1.0	1.68	0.68

Test Mounting Details:



The unit was mounted to steel plates using six grade 8 1/4"-20 bolts with standard washers (one in each foot).

Racks included in this report:

Unit designation	Description	tested	In test envelope	Dimensions	weight
2P350/5500SEK	125V, 1 row, 2 tiers high with (92)KM 250 P Ni-Cd batteries in series, 7 frames	yes (UUT1)	no	14" x 217" x 52"	2816#
2P350/1200SEK	24V, 1 row, 2 tiers high with (20)KM 250 P Ni-Cd batteries in series, 2 frames	no	yes	14" x 47" x 52"	587#
2G470/5500SEK	125V, 2 rows, 1 tier high with (92)KM 250 P Ni-Cd batteries in series, 7 frames	no	yes	18.5" x 217" x 29"	2615#
2G470/1200SEK 2	24V, 2 rows, 1 tier high with (20)KM 250 P Ni-Cd batteries in series, 2 frames	yes (UUT2)	no	18.5" x 47" x 29"	573#
2G470/1200SEK	24V, 2 rows, 1 tier high with (19)KM 250 P Ni-Cd batteries in series, 2 frames	no	yes	18.5" x 47" x 29"	546#

The SEK designator signifies seismic (SE) and the battery "family" (batteries with the same physical dimensions). "K" in this instance signifies Ni-Cd batteries that have dimensions of 108mm L x 164mm W x 364mm H. The "2" designator in the instance of the 2G470/1200SEK2 rack was a method of differentiating the quantity of batteries on the rack. The 2G470/1200SEK rack holds a quantity of (19) KM 250P batteries; the 2G470/1200SEK2 batteries holds a quantity of (20) KM 250P batteries. The only difference between these two racks is the length of the hold-down bars for the row of 9 batteries; the hold-downs are 1032mm in length for 9 batteries, 1180 mm in length for 10 batteries.

Certified Components:

Battery Manufacturer: GAZ Geräte

Battery Part Number: KM 250 P

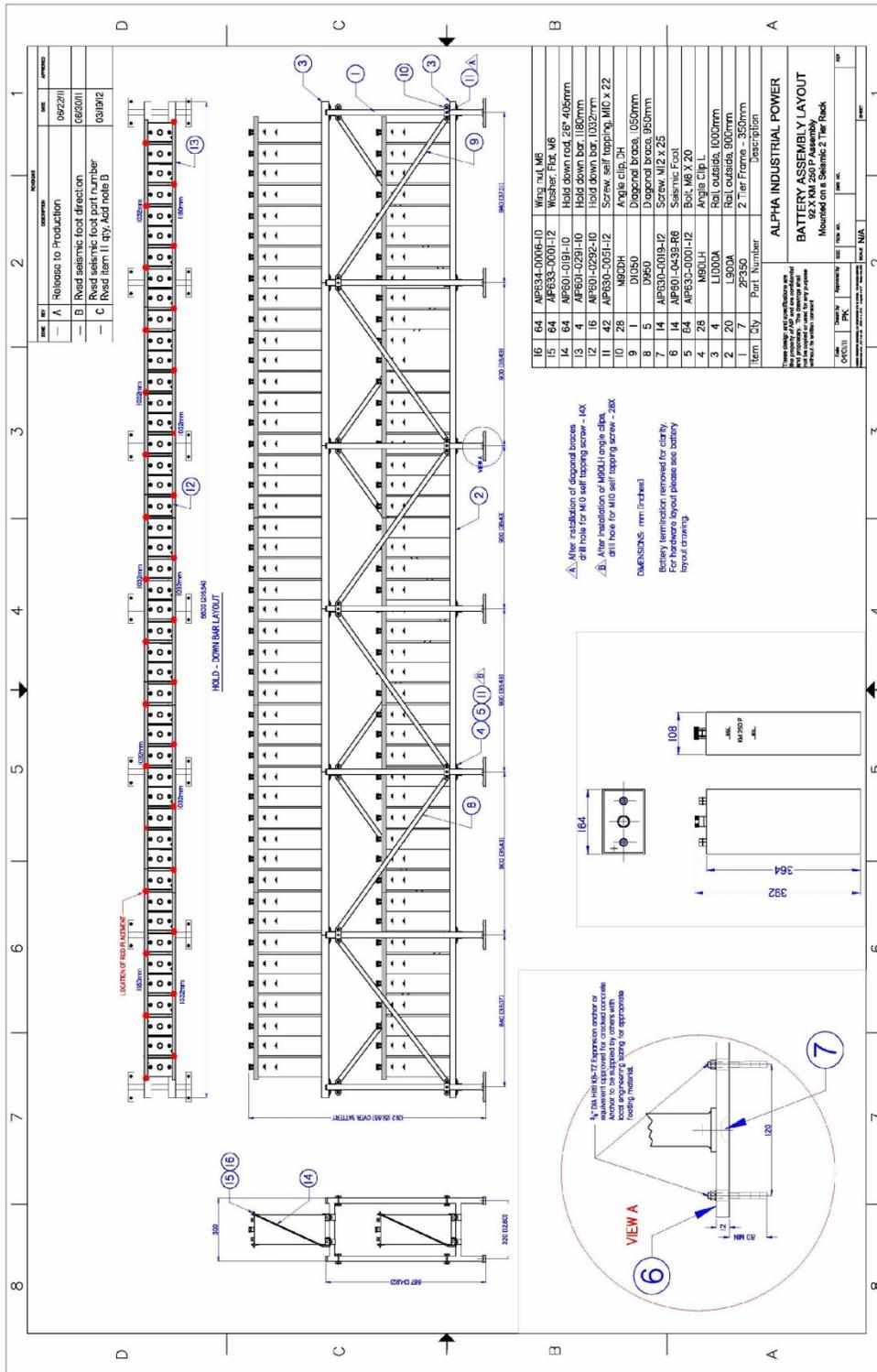


Figure 1. 2P350 rack with 92 batteries – UUT1

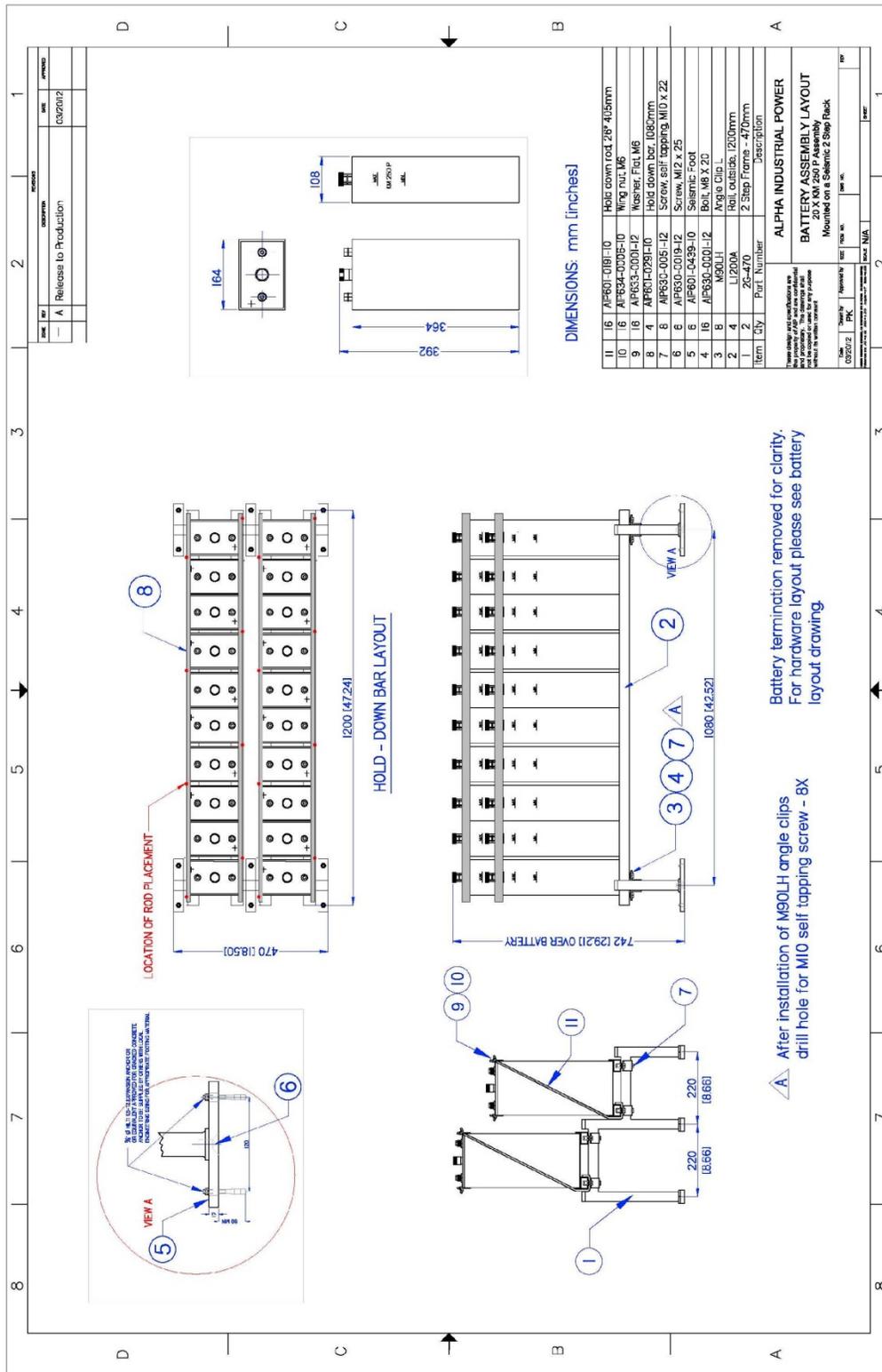


Figure 2. Rack 2G470 with 20 batteries- UUT2

