



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0369-10

OSHPD Special Seismic Certification Preapproval (OSP)

Type:  New  Renewal

Manufacturer Information

Manufacturer: Filtrine Manufacturing Company

Manufacturer's Technical Representative: Peter Hansel

Mailing Address: 15 Kit Street, Keene, NH 03431

Telephone: (603) 352-5500 Email: phansel@filtrine.com

Product Information

Product Name: PCP Closed Loop Process Liquid Chillers

Product Type: Mechanical Equipment

Product Model Number: SEE ATTACHMENT

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

General Description: The certified units are weather-resistant, air-cooled models for outdoor installation and consist of compressors, condenser, evaporator, pump, fan motor and control transformer. Seismic enhancement 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 mount

Applicant Information

Applicant Company Name: DYNAMIC CERTIFICATION LABORATORIES

Contact Person: JOSEPH L. LA BRIE, S.E., MANAGING PARTNER

Mailing Address: 1315 GREG STREET, SUITE 109, SPARKS, NV 89431

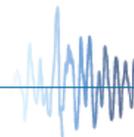
Telephone: (775) 358-5085 Email: LABRIE@MAKEITRIGHT.NET

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: 11/7/13

Title: MANAGING PARTNER Company Name: DYNAMIC CERTIFICATION LABORATORIES

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dvnamic Needs"



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**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

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

Company Name: DYNAMIC CERTIFICATION LABORATORIES

Name: DR. AHMAD ITANI, S.E. California License Number: SE-5220

Mailing Address: 1315 GREG STREET, SUITE 109, SPARKS, NV 89431

Telephone: (775) 358-5085 Email: ITANI@SHAKETEST.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: DYNAMIC CERTIFICATION LABORATORIES

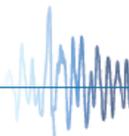
Contact Name: AUSTIN BROWN, P.E., LABORATORY MANAGER

Mailing Address: 1315 GREG STREET, SUITE 109, SPARKS, NV 89431

Telephone: (775) 358-5085 Email: AUSTIN@SHAKETEST.COM

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY  
OSH-FD-759 (REV 1/24/13)



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**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**Seismic Parameters**

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

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.15

$S_{DS}$  (Design spectral response acceleration at short period, g) = 1.6

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

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

$\Omega_0$  (System overstrength factor) = 2.5

$I_p$  (Importance factor) = 1.5

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

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) = \_\_\_\_\_

$\Omega_0$  (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: 11/13/13

Print Name: M. R. Karim Title: SHFR

Special Seismic Certification Valid Up to :  $S_{DS}$  (g) = 1.6  $z/h$  = 1.0

Condition of Approval (if applicable): \_\_\_\_\_



# Special Seismic Certification Tested Units



**Manufacturer:** Filtrine

**Product Line:** PCP Closed Loop Process Liquid Chillers

**Tested Product Construction:**

Cabinet constructed of anodized aluminum panels with stainless steel corner legs and top on a welded angle iron frame. Welded stainless steel cooling tank shell and immersion coil evaporator. Stainless steel centrifugal pump mounted on rubber pads over a stainless steel condensation tray.

**Tested Options:**

The unit was a weather-resistant, air-cooled model for outdoor installation and contained compressors, condenser, evaporator, pump, fan, motor and control transformer.

**Tested Mounting Description:**

Rigid base mounted.

Model Number	Serial Number	Dimensions			Operating Weight (lb)	Mount	Sds (g), z/h=1	Unit
		Length	Depth	Height				
PCP-200-33A-WP-OSP	9713/13	62	27	66	1,170	Rigid base mounted	2.0	UUT1
PCP-3000-330A-WP-OSP	9107-2/13	140	52	85	5,420	Rigid base mounted	1.6	UUT2

Nomenclature Key

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_  
 A    B            C    D            E    F            G    H

Variable	Definition	Allowable Value	Allowable Value Description
A	Equipment type	PC	Process chiller
B	Pump type	P	Circulating pump
C	Nominal compressor horsepower times 100	200 - 3000	2 to 30 nominal compressor horsepower
D	Compressor type	G	Scroll compressor
		S	Semi-hermetic compressor
		-	Combination of scroll and semi-hermetic compressors
E	Nominal MBTU/hr rating at 68°F discharge water temperature	33 - 330	33 to 330 nominal MBTU/hr rating at 68°F discharge water temperature
F	Condenser type	A	Air cooled condenser
G	Enclosure type	WP	Weather resistant for outdoor use
H	OSHPD unit	OSP	Designed specifically for OSHPD OSP certification

# Special Seismic Certification Certified Units



**Manufacturer:** Filtrine

**Product Line:** PCP Closed Loop Process Liquid Chillers

**Certified Product Construction:**

Cabinet constructed of anodized aluminum panels with stainless steel corner legs and top on a welded angle iron frame. Welded stainless steel cooling tank shell and immersion coil evaporator. Stainless steel centrifugal pump mounted on rubber pads over a stainless steel condensation tray.

**Certified Options:**

The unit was a weather-resistant, air-cooled model for outdoor installation and contained compressors, condenser, evaporator, pump, fan, motor and control transformer.

**Certified Mounting Description:**

Rigid base mount.

Model Number	Dimensions			Maximum Operating Weight (lb)	Mount	Sds (g), z/h=1	Unit
	Length	Depth	Height				
PCP-200-33A-WP-OSP	62	27	66	1,170	Rigid base mount	1.6	UUT1
PCP-300G-36A-WP-OSP	72	32	75	1,400			Interpolated
PCP-300S-38A-WP-OSP	72	32	75	1,400			Interpolated
PCP-300G-40A-WP-OSP	72	32	75	1,400			Interpolated
PCP-300G-44A-WP-OSP	72	32	75	1,400			Interpolated
PCP-500G-48A-WP-OSP	82	35	77	1,800			Interpolated
PCP-500G-60A-WP-OSP	82	35	77	1,800			Interpolated
PCP-500S-62A-WP-OSP	82	35	77	1,800			Interpolated
PCP-500G-70A-WP-OSP	82	35	77	1,800			Interpolated
PCP-750G-80A-WP-OSP	119	39	77	2,200			Interpolated
PCP-750G-96A-WP-OSP	119	39	77	2,200			Interpolated
PCP-750S-98A-WP-OSP	119	39	77	2,200			Interpolated
PCP-1000G-122A-WP-OSP	119	49	77	3,000			Interpolated
PCP-1000S-140A-WP-OSP	119	49	83	3,000			Interpolated
PCP-1500S-180A-WP-OSP	140	52	83	3,500			Interpolated
PCP-2000-230A-WP-OSP	140	52	85	4,000			Interpolated
PCP-2000S-230A-WP-OSP	140	52	85	4,600			Interpolated
PCP-2500-270A-WP-OSP	140	52	85	4,800			Interpolated
PCP-2500S-270A-WP-OSP	140	52	85	4,800			Interpolated
PCP-3000-330A-WP-OSP	140	52	85	5,420			UUT2

## Special Seismic Certification Certified Component List



**Manufacturer:** Filtrine

**Product Line:** PCP Closed Loop Process Liquid Chillers

**Components:** Scroll compressors and semi-hermetic compressors

### Compressor - Scroll

Manufacturer Model Number	Component Manufacturer	Description	Size	Test in UUT
ZB21KCE-TFJ	Copeland	230V	Smallest ↓ Largest	UUT1
ZB21KCE-TF(*)	Copeland	230V-460V		Interpolated
ZB26KCE-TF(*)	Copeland			Interpolated
ZB30KCE-TF(*)	Copeland			Interpolated
ZB38KCE-TF(*)	Copeland			Interpolated
ZB45KCE-TF(*)	Copeland			Interpolated
ZB50KCE-TF(*)	Copeland			Interpolated
ZB66KCE-TF(*)	Copeland			Interpolated
ZB76KCE-TF(*)	Copeland			Interpolated
ZB76KCE-TFD	Copeland			460V

\*insert voltage code J, V, D, S, for 220-240, 200, 380-420, and 200-220 motor voltage

### Compressor - Semi-Hermetic

Manufacturer Model Number	Component Manufacturer	Size	Size	Test in UUT
2C0278SH	Bitzer	208-230V/3Ph	Smallest ↓ Largest	UUT1
2C0484SH	Bitzer	208-230V/440-480V/3Ph		Interpolated
4C0770SH	Bitzer			Interpolated
4C1145SH	Bitzer			Interpolated
4C1761PH	Bitzer			Interpolated
4C2067PH	Bitzer			Interpolated
4C2397PH	Bitzer			Interpolated
4B2707PH	Bitzer			Interpolated
4B3139PH	Bitzer	208-230V/440-480V/3Ph		UUT2

## Special Seismic Certification Certified Component List



**Manufacturer:** Filtrine

**Product Line:** PCP Closed Loop Process Liquid Chillers

**Components:** Condensers, evaporators, pumps

### Condenser

Manufacturer Model Number	Component Manufacturer	Description	Size	Test in UUT
KCM009A-T3A-A11H	Keeprite	208/230V	Smallest	UUT1
KCM009A-T(*)A-A11H	Keeprite	208/230V to 460V	↓	Interpolated
KCM010A-T(*)A-A11H	Keeprite			Interpolated
KCM011A-T(*)A-A11H	Keeprite			Interpolated
KCM012A-T(*)A-A11H	Keeprite			Interpolated
KCM013A-T(*)A-A12H	Keeprite			Interpolated
KCM014A-T(*)A-A12H	Keeprite			Interpolated
KCM016A-T(*)A-A12H	Keeprite			Interpolated
KCM017A-T(*)A-A12H	Keeprite			Interpolated
KCM018A-T(*)A-A12H	Keeprite			Interpolated
KCM020A-T(*)A-A12H	Keeprite			Interpolated
KCM021A-T(*)A-A12H	Keeprite			Interpolated
KCM022A-T(*)A-A12H	Keeprite			Interpolated
KCM024A-T(*)A-A12H	Keeprite			Interpolated
KCM028A-T(*)A-A13H	Keeprite			Interpolated
KCM030A-T(*)A-A13H	Keeprite			Interpolated
KCM032A-T(*)A-A13H	Keeprite			Interpolated
KCM032A-T4A-A13H	Keeprite	460V	Largest	UUT2

\* insert voltage code 3 or 4, for 208/230V or 460V

### Evaporator

Manufacturer Model Number	Component Manufacturer	Description	Size	Test in UUT
80' x 1" S/S tubing	Filtrine	Stainless steel tubing	↓	UUT1
< 80' and > 135' of 3/4" S/S tubing	Filtrine			Interpolated
< 80' and > 600' of 1" S/S tubing	Filtrine			Interpolated
600' x 1" S/S tubing	Filtrine			UUT2
CH5	GEA Heat Exchangers	5"x20" brazed plate	Largest	UUT2

### Pump

Manufacturer Model Number	Component Manufacturer	Description	Size	Test in UUT
SSPC1, 1 hp	American Stainless Pump	6" stainless steel casing	↓	UUT1
SSPC1, 1.5 hp	American Stainless Pump	6" stainless steel casing		Interpolated
SSPC1, 2 hp	American Stainless Pump	6" stainless steel casing		Interpolated
7SP, 3 hp	American Stainless Pump	7" stainless steel casing		Interpolated
7SP, 5 hp	American Stainless Pump	7" stainless steel casing		Largest

## Special Seismic Certification Certified Component List



**Manufacturer:** Filtrine

**Product Line:** PCP Closed Loop Process Liquid Chillers

**Components:** Fan motors, control transformers

### Fan Motor

Manufacturer Model Number	Component Manufacturer	Description	Size	Test in UUT
3/4 hp 208-230/60/3 1075 rpm	Marathon	3/4 hp	N/A	UUT1
3/4 hp 460/60/3 1075 rpm	Marathon	3/4 hp	N/A	UUT2

### Control Transformer

Manufacturer Model Number	Component Manufacturer	Description	Size	Test in UUT
AE070150	Acme Transformer	208/230/460 Pri 120 sec	Smallest	UUT1
AE070250	Acme Transformer	208/230/460 Pri 120 sec	Largest	UUT2

UUT1

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

**Manufacturer:** Filtrine

**Product Line:** PCP Closed Loop Process Liquid Chillers

**Model Number:** PCP-200-33A-WP-OSP

**Product Construction Summary:**

Cabinet constructed of anodized aluminum panels with stainless steel corner legs and top on a welded angle iron frame. Welded stainless steel cooling tank shell and immersion coil evaporator. Stainless steel centrifugal pump mounted on rubber pads over a stainless steel condensation tray.

**Options / Component Summary:**

Rigid base mounted. The unit was a weather-resistant, air-cooled model for outdoor installation and contained compressors, condenser, evaporator, pump, fan, motor and control transformer.

**Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.**

**UUT Properties**

Operating Weight (lb)	Dimensions (inches)				Lowest Natural Frequency (Hz)		
		Length	Depth	Height	Front-Back	Side-Side	Vertical
1,170	UUT1	62	27	66	14.0	11.5	15.8

**Seismic Test Parameters**

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.0	1.0	1.5	3.20	2.40	1.33	0.53

**Unit Mounting Description:**



The unit was rigid-base mounted to the shake table interface plate with six (6) 3/8-inch diameter Grade 5 bolts. For each mounting bolt, a 1-inch diameter pipe was placed under the channel and the mounting bolt was passed through the pipe in order to prevent crushing of the base rail channel. The shake table interface frame was mounted to the shake table using M12 threaded rod.

# UUT2



## UNIT UNDER TEST (UUT) Summary Sheet

**Manufacturer:** Filtrine

**Product Line:** PCP Closed Loop Process Liquid Chillers

**Model Number:** PCP-3000-330A-WP-OSP

**Product Construction Summary:**

Cabinet constructed of anodized aluminum panels with stainless steel corner legs and top on a welded angle iron frame. Welded stainless steel cooling tank shell and immersion coil evaporator. Stainless steel centrifugal pump mounted on rubber pads over a stainless steel condensation tray.

**Options / Component Summary:**

Rigid base mounted. The unit was a weather-resistant, air-cooled model for outdoor installation and contained compressors, condenser, evaporator, pump, fan, motor and control transformer.

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

Operating Weight (lb)	Dimensions (inches)				Lowest Natural Frequency (Hz)		
		Length	Depth	Height	Front-Back	Side-Side	Vertical
5,420	UUT2	140	52	85	4.8	3.8	6.3

**Seismic Test Parameters**

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	1.6	1.0	1.5	2.56	1.92	1.07	0.43

**Unit Mounting Description:**



UUT2: The unit was rigid-base mounted to the shake table interface plate with ten (10) 1/2-inch diameter Grade 5 bolts. For each mounting bolt, a 1-inch diameter pipe was placed under the channel and the mounting bolt was passed through the pipe in order to prevent crushing of the base rail channel. The shake table interface frame was mounted to the shake table using M12 threaded rod.