



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY
APPLICATION #: OSP - 0369

OSHPD Special Seismic Certification Preapproval (OSP)

Type: [] New [X] 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 attached

(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 cooling transformer. Seismic enhancements made to the test units and modifications required to address the anomalies observed during testing shall be incorporated into the productions units.

Mounting Description: Units are rigid base mounted

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: John Giuliano

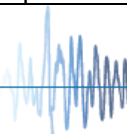
Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: john.giuliano@thevmcgroup.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: [Signature] Date: 6/3/19
Title: President Company Name: The VMC Group

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





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

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

Company Name: The VMC Group

Name: Kenneth Tarlow California License Number: SE-2851

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: ken.tarlow@thevmcgroup.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): _____

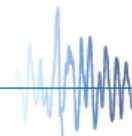
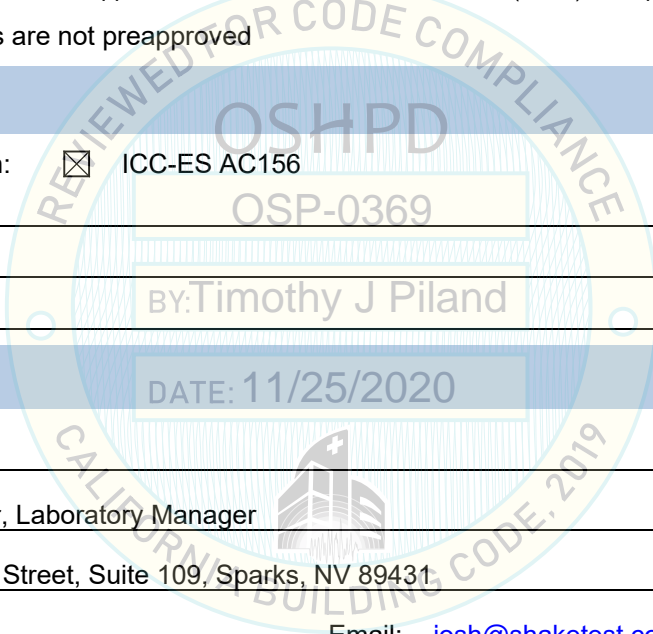
Testing Laboratory

Company Name: DCL Labs

Contact Name: Josh Sailer, Laboratory Manager

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 89431

Telephone: (775) 358-5085 Email: josh@shaketest.com





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Seismic Parameters

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

Design Basis of Equipment or Components (Fp/Wp) = 1.15

Sds (Design spectral response acceleration at short period, g) = 1.60

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

Rp (Equipment or component response modification factor) = 2.5

Omega_0 (System overstrength factor) = 2

Ip (Importance factor) = 1.5

z/h (Height factor ratio) = 1

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 [X] No

Design Basis of Equipment or Components (V/W) =

Sds (Design spectral response acceleration at short period, g) =

Sd1 (Design spectral response acceleration at 1 second period, g) =

R (Response modification coefficient) =

Omega_0 (System overstrength factor) =

Cd (Deflection amplification factor) =

Ip (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 [X] No

List of Attachments Supporting Special Seismic Certification

[X] Test Report(s) [X] Drawings [] Calculations [X] Manufacturer's Catalog

[] Other(s) (Please Specify):

OSHPD Approval (For Office Use Only) - Approval Expires on December 31, 2025

Signature: [Signature] Date: November 25, 2020

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to: Sds (g) = 1.60 z/h = 1

Condition of Approval (if applicable):

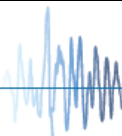


Table 1 - Certified Units



Manufacturer: Filtrine

Product Line: PCP Closed Loop Process Liquid Chillers

Certification Level: $S_{DS} = 1.60g$, $z/h=1.0$

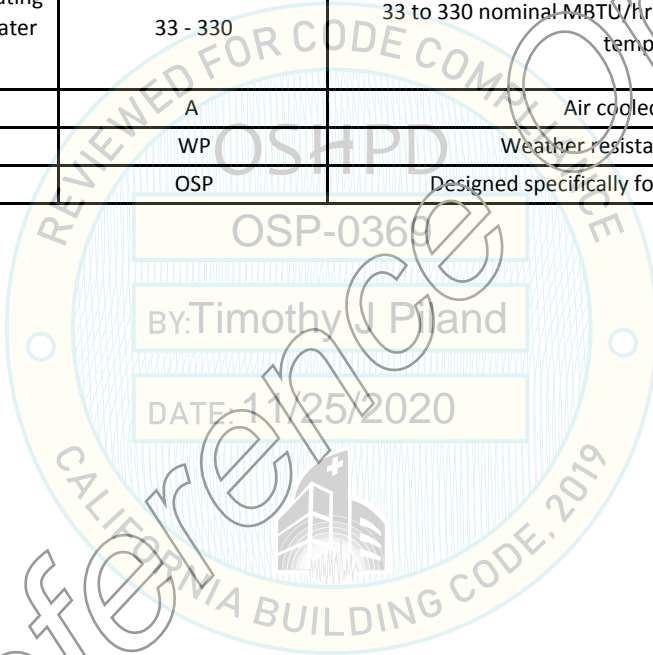
Model Number	Dimensions (in)			Maximum Operating Weight (lb)	Mount	Unit
	Length	Depth	Height			
PCP-200-33A-WP-OSP	62	27	66	1,170	Rigid base mount	UUT1
PCP-300G-36A-WP-OSP	72	32	75	1,400		Interpolated
PCP-300S-38A-WP-OSP	72	32	75	1,400		Interpolated
PCP-300G-40A-WP-OSP	72	32	75	1,400		Interpolated
PCP-300G-44A-WP-OSP	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

Table 2 - Nomenclature Chart



— — — — —
 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



Refer to

Table 3 - Certified Subcomponents



Manufacturer: Filtrine

Product Line: PCP Closed Loop Process Liquid Chillers

Components: Scroll compressors and semi-hermetic compressors

Certification Level: S_{DS} = 1.60g , z/h=1.0

Compressor - Scroll			
Model Number	Manufacturer	Description	Unit
ZB21KCE-TFJ	Copeland	230V	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, 5, for 220-240, 200, 380-420, and 200-220 motor voltage

Compressor - Semi-Hermetic					
Old Model Number	New Model Number	Manufacturer	Description	Unit	
2C0278SH	2HES-2	Bitzer	208-230V/3Ph	UUT1	
N/A	2EES-2	Bitzer	208-230V/440-480V/3Ph	Interpolated	
N/A	2HES-3	Bitzer		Interpolated	
2C0484SH	2EES-3	Bitzer		Interpolated	
4C0770SH	4FES-5	Bitzer		Interpolated	
4C1145SH	4DES-7	Bitzer		Interpolated	
N/A	4PE-12	Bitzer		Interpolated	
4C1761PH	4TE-12	Bitzer		Interpolated	
4C2067PH	4PE-15	Bitzer		Interpolated	
N/A	4JE-15	Bitzer		Interpolated	
N/A	4HE-18	Bitzer		Interpolated	
4C2397PH	4NE-20	Bitzer		Interpolated	
4B2707PH	4JE-22	Bitzer		Interpolated	
4B3139PH	4HE-25	Bitzer		440-480V/3Ph	UUT2

Table 4 - Certified Subcomponents



Manufacturer: Filtrine

Product Line: PCP Closed Loop Process Liquid Chillers

Components: Condensers, evaporators, pumps

Certification Level: S_{DS} = 1.60g, z/h=1.0

Condenser			
Model Number	Manufacturer	Description	Unit
KCM009A-T3A-A11H	Keeprite	208/230V	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	UUT2

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

Evaporator			
Model Number	Component Manufacturer	Description	Unit
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	Kelvion ¹	5"x20" brazed plate	UUT2 ²

1. Was GEA Heat Exchangers

2. Manufacturing process is ISO 9001 certified

Pump			
Manufacturer Model Number	Manufacturer	Description	Unit
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	UUT2

Table 5 - Certified Subcomponents



Manufacturer: Filtrine

Product Line: PCP Closed Loop Process Liquid Chillers

Components: Fan motors, control transformers

Certification Level: $S_{DS} = 1.60g$, $z/h=1.0$

Fan Motor			
Model Number	Manufacturer	Description	Unit
3/4 hp 208-230/60/3 1075 rpm	Marathon	3/4 hp	UUT1
3/4 hp 460/60/3 1075 rpm	Marathon	3/4 hp	UUT2

Control Transformer			
Manufacturer Model Number	Manufacturer	Description	Unit
AE070150	Acme Transformer	208/230/460 Pri 120 sec	UUT1
AE070250	Acme Transformer	208/230/460 Pri 120 sec	UUT2

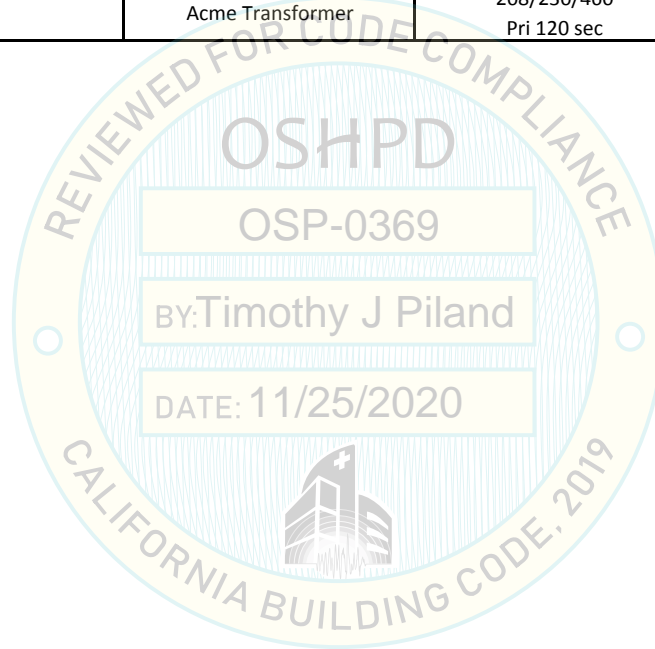


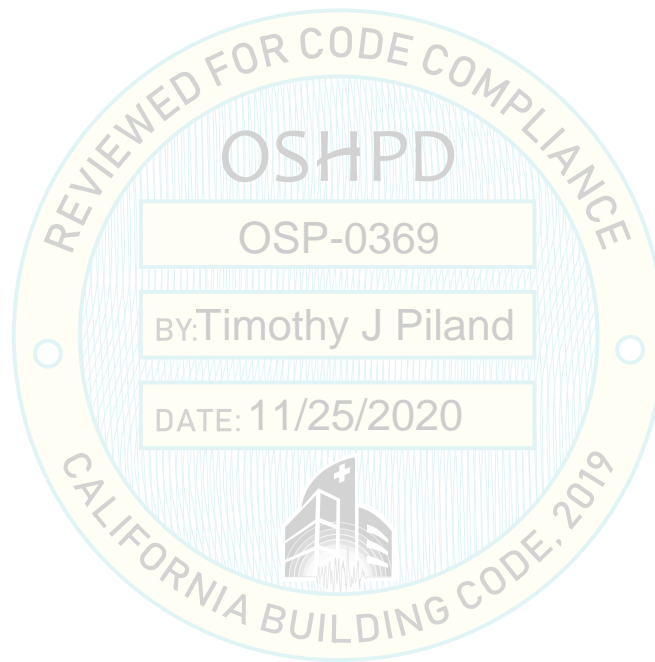
Table 6 - Tested Units



Manufacturer: Filtrine

Product Line: PCP Closed Loop Process Liquid Chillers

Model Number	Dimensions			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 mounted	2.0	UUT1
PCP-3000-330A-WP-OSP	140	52	85	5,420		1.6	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	62	27	66	14.0	11.5	15.8

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	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 spaced at 25" in length and 29" in depth on center. For each mounting bolt, a 1-inch diameter carbon steel pipe was placed under the channel and the mounting bolt was passed through the pipe for support.

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	140	52	85	4.8	3.8	6.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.6	1.0	1.5	2.56	1.92	1.07	0.43

Unit Mounting Description:



The unit was rigid-base mounted to the shake table interface plate with ten (10) 1/2-inch diameter Grade 5 bolts spaced at 32" in length and 54" in depth on center. For each mounting bolt, a 1-inch diameter carbon steel pipe was placed under the channel and the mounting bolt was passed through the pipe for support.