



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP – 0610 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: Trane

Manufacturer's Technical Representative: Ryan Doud

Mailing Address: 3600 Pammel Creek Road, La Crosse, WI 54601

Telephone: (608) 787-4200

Email: rdoud@trane.com

Product Information

Product Name: Trane CenTraVac

Product Type: Water Cooled Centrifugal Liquid Chiller

Product Model Number: CVHF 350 – CVHF 1300

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

General Description: Catalogued Shell and Tube Water Cooled Chillers with 2-Stage Compressor

Mounting Description: Rigid Mounting to Floor & Elastomeric Pad

Applicant Information

Applicant Company Name: The VMC Group

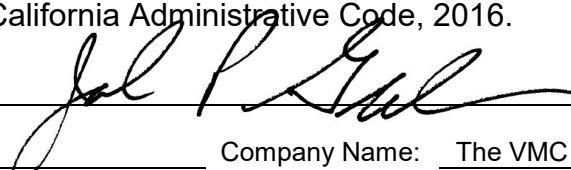
Contact Person: John P. Giuliano, PE

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780

Email: john.giuliano@thevmcgroup.com

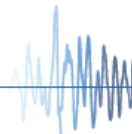
I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant:  Date: 5/31/19

Title: President Company Name: The VMC Group

"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 12/16/15)



OSHPD

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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: The VMC Group
Name: Mr. Ken Tarlow California License Number: SE2851
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): OSP-0610-10
BY: Timothy J Piland
DATE: 12/26/2019

Testing Laboratory

Company Name: Construction Engineering Research Laboratory
Contact Name: James Wilcoski
Mailing Address: 2902 Newmark Drive, Champaign, IL 61822
Telephone: (217) 352-6511 Email: james.wilcoski@usace.army.mil



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) = 0.84

S_{DS} (Design spectral response acceleration at short period, g) = 1.16 (z/h = 1); 1.86 (z/h = 0)

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

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1 and 0

Equipment or Component Natural Frequencies (Hz) = See Attachments

Overall dimensions and weight (or range thereof) = See Attachments

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) = OSP-0610-10

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = BY: Timothy J Piland

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = DATE: 12/26/2019

Equipment or Component Natural Frequencies (Hz) = _____

Overall dimensions and weight (or range thereof) = _____

Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☒ Drawings ☐ Calculations ☐ Manufacturer's Catalog

☒ Other(s) (Please Specify): Product Reports

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature: [Signature] Date: December 26, 2019

Print Name: Timothy J. Piland Title: SSE

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

Condition of Approval (if applicable): _____

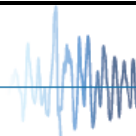


Table 1 - Product Table

Model	Compressor Configuration	Frequency [Hz]	Compressor Size	Shell Sizes	Shell Lengths	Max Length	Max Width	Max Height	Max Weight [lbs]	Unit Mounting	UUT
						[in]					
CVHF	2-stage single	60	350 to 570	032	SS & LL	135	82	100	21070	Rigid Extended Baseplate	UUT-1
		60	350 to 570	050	SS	135	82	100	20007	Rigid + Pad w/ Extened Baseplate	Interpolated
		60	350 to 570	050	SL & LL	180	82	100	22234		Interpolated
		60	350 to 570	050/080	SS	1350	82	104	21150		Interpolated
		60	350 to 570	050/080	LL	180	82	104	27037		Interpolated
		60	350 to 570	080	SS	135	95	114	27958		Interpolated
		60	350 to 570	080	SL & LL	180	95	114	31833		Interpolated
		60	620 to 870	080	SS	1350	95	114	30374		Interpolated
		60	620 to 870	080	SL & LL	180	95	114	34249		Interpolated
		60	620 to 870	080/142	LL	180	111	118	41235		Interpolated
		60	620 to 870	142	ML & LL	180	117	122	44300		Interpolated
		60	1070 to 1300	080/142	LL	180	111	122	42416		Interpolated
		60	1070 to 1300	142	ML & LL	180	119	122	44787		Interpolated
		60	1070 to 1300	142	EL	203	119	122	46064		Interpolated
		60	1070 to 1300	142/210	EL, ML, & LL	180	126	135	60915		Interpolated
		60	1070 to 1300	210	LL	180	126	135	54233		Interpolated
		60	1070 to 1300	250	EL	203	139	139	67500	Extended Baseplate w/Pads	UUT-2

S=Short Length

M=Medium Length

L=Long Length

E = Extended

First Letter = Evaporator Shell Length

Second Letter = Condenser Shell Length

Table 2 - Shells

	Size	MFR	Evaporator			Condenser			Economizer			Materials	UUT
			Max Dimensions [in]		Max Weight [lbs]	Max Dimensions [in]		Max Weight [lbs]	Max Dimensions		Max Weight [lbs]		
			OD	L		OD	L		OD	L			
Shells	032S	Trane	27.75	135	2900	19.938	135	2460	14	47.75	404	Carbon Steel	UUT-1
	032L		27.75	180	3500	19.938	180	3006	14	47.75	404	Carbon Steel	Interpolated
	050S		35	135	4900	24.938	135	3526	17.5	58.875	420	Carbon Steel	Interpolated
	050L		35	180	6000	24.938	180	4436	17.5	58.875	420	Carbon Steel	Interpolated
	080S		48.312	135	7200	30.75	135	5280	22	73.75	420	Carbon Steel	Interpolated
	080L		48.312	180	9000	30.75	180	6776	22	73.75	420	Carbon Steel	Interpolated
	142M		52.312	160	11036	n/a	n/a	n/a	25.5	139.56	878	Carbon Steel	Interpolated
	142L		52.312	180	11938	40.5	180	10995	25.5	139.56	878	Carbon Steel	Interpolated
	142E		52.312	203	12921	n/a	n/a	n/a	25.5	139.56	878	Carbon Steel	Interpolated
	210L		59.812	180	14755	45.062	180	14154	25.5	139.56	878	Carbon Steel	Interpolated
	250E		66.312	203	20068	n/a	n/a	n/a	25.5	139.56	878	Carbon Steel	UUT-2
	250L		n/a	n/a	n/a	49.312	180	17341	25.5	139.56	878	Carbon Steel	UUT-2

S=Short Length

M=Medium Length

L=Long Length

E = Extended

Table 3 - AFDs

AFD's	Product Series / Model	MFR	Materials	Input Voltage [V]	Input Phase	Input Current [Amps]	Output [HP]	Max Dimensions [in]			Max Weight [lbs]	UUT
								Length	Width	Height		
AFD's	Liqui-flo2 / Frame 3	Rockwell	Carbon Steel	575	3	768	200	18	60	62	1700	UUT-1
	Liqui-flo2 / Frame 4	Rockwell	Carbon Steel	575	3	1530	400	26	98	76	3000	UUT-2

Table 4 - Compressors

Compressors	Model Number	MFR	Configuration	Frequency [Hz]	Size (NTON)	Body/Impeller Materials	Max Dimensions [in]			Max Weight [lbs]	UUT
							Length	Width	Height		
	CPSZ048	Trane	2-stage single	60	350 to 570	Cast Iron/Aluminum	78.5	51.5	51	8013	UUT-1
	CPSZ087	Trane	2-stage single	60	620 to 870	Cast Iron/Aluminum	81.5	55	55.5	5756	Interpolated
	CPSZ130	Trane	2-stage single	60	1070 to 1300	Cast Iron/Aluminum	80.5	59.5	59.5	10714	UUT-2

Table 5 - Control Panels

Control Panels	Part Number	MFR	Materials	Max Dimensions [in]			Max Weight [lbs]	UUT
				Length	Width	Height		
	X19091214	Trane	Carbon Steel	6	30	36	131	UUT-1, UUT-2

Table 6 - Purge

Purge	Model Number	MFR	Materials	Max Dimensions [in]			Max Weight [lbs]	UUT
				Length	Width	Height		
	PRGG	Trane	Carbon Steel	27.5	21.75	25.75	140	UUT-1, UUT-2



UNIT UNDER TEST (UUT) Summary Sheet

UUT-01

30899-1901, UUT-03

Model Line	Model Number	Manufacturer
CTV	CVHF350	Trane

Product Construction Summary

Carbon Steel Shell & Tube Water Cooled Chiller

Options / Subcomponent Summary

Shells: Trane, AFD: Rockwell, Compressor: Trane, Control Panel: Trane, Purge: Trane

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
21,070	135	82	100	9.5	11.5	17.0

UUT Highest Passed Seismic Run Information

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)
CBC 2016	ICC-ES AC156	1.16	1.0	1.50	1.86	1.39	-	-
CBC 2016	ICC-ES AC156	1.86	0.0	1.50	-	-	1.24	0.50

Test Mounting Details

Chiller is rigidly base mounted to table interface fixture using (10) 7/8" diameter, grade 8 bolts



All units were filled with contents and maintained structural integrity and functionality after AC156 test.



UNIT UNDER TEST (UUT) Summary Sheet

UUT-02

30899-1901, UUT-04

Model Line	Model Number	Manufacturer
CTV	CVHF1300	Trane

Product Construction Summary

Carbon Steel Shell & Tube Water Cooled Chiller

Options / Subcomponent Summary

Shells: Trane, AFD: Rockwell, Compressor: Trane, Control Panel: Trane, Purge: Trane

UUT Properties

Weight [lbs]	Dimensions [in]			Lowest Nat. Freq. [Hz]		
	Length	Width	Height	F-B	S-S	V
67,500	203	139	139	8.0	9.0	17.0

UUT Highest Passed Seismic Run Information

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)
CBC 2016	ICC-ES AC156	1.16	1.0	1.50	1.86	1.39	-	-
CBC 2016	ICC-ES AC156	1.86	0.0	1.50	-	-	1.24	0.50

Test Mounting Details

Chiller is partially rigid base mounted on (12) 14"x18"x3/4" VMC Maxi-Flex Black Elastomeric Pads to table interface fixture using (18) 7/8" diameter, grade 8 bolts



All units were filled with contents and maintained structural integrity and functionality after AC156 test.