Facilities Development Division www.oshpd.ca.gov/fdd
400 R Street. Suite 200, Sacramento, California 95811-6213 Phone (916) 440-8300 Fax (916) 654-2973

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.

OSP – 0050-10

Check whether application is: NEW [X] RENEWAL [ ]

1.0

The Trane Company — *Manufacturer*

Steve Lotspaih — *Manufacturer's Technical Representative*

3600 Pammel Creek Road, La Crosse, WI 54601 — *Mailing Address*

608-787-4100 — *Telephone*

slotspaih@trane.com — *E-mail Address*

2.0

T-Series Climate Changers — *Product Name*

Packaged Air Handling Units — *Product Type*

T-Series Sizes 003 through 100

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

General Description: These units are packaged Air Handling Units which are manufactured in sizes from 003 – 100. They have a variety of options for their coils, fans and other active components, listed in the attachments. Units were tested with fixed base (no external isolators) and fans were internally isolated.

3.0

The VMC Group — *Applicant Company Name*

John Wilson, Jr. — *Contact Person*

113 Main St, Bloomingdale NJ, 07403

Mailing Address

973-838-1780 — *Telephone*

jwilson@thevmcgroup.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

9/17/2010 — *Date*

CEO — *Title*

The VMC Group — *Company Name*

1/8

Registered Design Professional Preparing the Report

4.0

The VMC Group
Company Name

Ahmed Haider, PE — *Contact Name*
C68541 — *California License Number*

456-D West Huntington Drive, Arcadia CA 91007
Mailing Address

973-838-1780 — *Telephone*
ahmed.haider@thevmcgroup.com — *E-mail Address*

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

Panache Engineering
Company Name

Eui S. Kim — *Contact Name*
S-5138 — *California License Number*

150 North Santa Ana Ave, Arcadia, CA 91006
Mailing Address

626-203-6401 — *Telephone*
panacheg@gmail.com — *E-mail Address*

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

70. ☒ *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

University of California, Berkeley — *Company Name*
Don Clyde — *Contact Name*

PEER, UC Berkeley, 1301 South 46th St, Bldg 484, Richmond, CA 94804
Mailing Address

510-665-3414 — *Telephone*
dclyde@berkeley.edu — *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) = 4.16 g

S_{DS} (Spectral response acceleration at short period) =1.85 g

a_p (In-structure equipment or component amplification factor) =2.5

R_p (Equipment or component response modification factor) =2.0

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) =N/A

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 (V/W) =

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

S_1 (Spectral response acceleration at 1 second period) =

R (Response modification coefficient)=1.0

Ω_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

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

☒ *Test Report* ☒ *Drawings* ☒ *Manufacturer's Catalog*

☐ *Calculations* ☐ *Others (Please Specify):*

11.0 ***OSHPD Approval*** *(For Office Use Only)*

9/20/2010	**December 31, 2016**
Signature & Date	*Approval Expiration Date*
Chris Tokas, SHFR	S_{DS} (g) = **1.85** z/h = **1.0**
Name & Title	*Special Seismic Certification Valid Up to*

Condition of Approval (if any): **Approval is limited to fixed base units (with no external isolator) and internally isolated fans with components listed in the attachments.**

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T-Series Chart: OSP Included Components and Tested Units

T-Series Available Sizes

Unit Size	Unit Height	Unit Width	Max Module Length	Max Module Weight	UUT
3	32.5	37	60.75	469	
6	35	50	68.25	1110	
8	38.75	54	79	1140	
10	41.75	66	83.5	1329	3
12	45.75	70	83.5	1367	
14	48.75	74	99	1375	
17	52.75	80	99	1612	
21	57.25	82	108	2409	
25	63.5	84	115.5	2338	
30	63.5	97	120	2383	
35	72.75	102	127	2964	
40	72.75	115	135	3051	
50	85	126	148.5	3736	
57	97	126	152	3938	
66	97	141	152	5008	
80	112	141	152	4884	
100	124.5	156	158	5077	1,2

Overall unit length is variable depending on the installed modules

Summary of Tested Components

UUT	Description	L	W	H	Wt	Lowest Fn (S-S, X)	Lowest Fn (F-B, Y)	Lowest Fn (Vert, Z)
#1	Size 100 End Module w/Fan	96	156	124	5400	2	2.2	3.9
#2	Size 100 End Module w/Fan	111	84	92	5500	2.4	2	3.4
#3	Complete Size 10 Unit	295	66	41.8	4120	12.5	30	10.1
#4	HV VFD Control	28.2	14	47	220	29.7	17.2	18
#5	HV VFD Control	22.5	13.3	34.5	126	24.2	N/A	N/A
#6	Low Voltage Control	15	5.5	17	38	N/A	N/A	N/A
#7	Gas Ht Control - Option A	14	4	8		27.2	17.9	N/A
#8	Gas Ht Control - Option D1	15.5	8.5	10		N/A	18	N/A
#9	Gas Ht Burner - JR50A	27.1	24.5	19.3	110	28.1	16.4	N/A
#10	Gas Ht Burner - FDM300	18.9	29.6	30.6	120	15.6	20.3	26.4

Complete size 10 unit was tested with and without end panels.

	Fan Option	T-Series Unit Size																												
		3			6			8			10			12			14			17			21			25			
		Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	UUT
Fans	A	9.5	FC	2	12.25	FC	5	13.5	FC	5	15	FC	5	16.5	FC	7.5	18.25	FC	7.5	20	FC	10	22.38	FC	10	25	FC	10	3
	B	9.5	FC	5	10.5	FC	5	12.25	FC	5	13.5	FC	7.5	15	FC	10	16.5	FC	10	18.25	FC	10	20	FC	20	22.38	FC	20	
	D	9	BC	3	12	AF	7.5	12	AF	7.5	15	AF	10	18	AF	10	18	AF	10	20	AF	15	22	AF	15	22	AF	15	
	E	9	BC	5	12	AF	7.5	12	AF	10	15	AF	15	18	AF	15	18	AF	15	20	AF	20	22	AF	30	22	AF	30	
	F										12	AF	7.5	15	AF	10	15	AF	10	18	AF	10	20	AF	15	20	AF	15	
	G										12	AF	10	15	AF	15	15	AF	15	18	AF	20	20	AF	30	20	AF	30	
	P										18	AF	10										29.13	AF	20	32.38	AF	20	3

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T-Series Chart: OSP Included Components and Tested Units

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	Fan Option	T-Series Unit Size																								
		30			35			40			50			57			66			80			100			
		Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	Size	Type	Max HP	UUT
Fans (cont'd)	A	25	FC	20	27.63	FC	25	30.25	FC	25	33	FC	30	33	FC	30	33	FC	60	36	FC	40	40	FC	40	
	B	22.38	FC	25	25	FC	30	27.63	FC	30	30.25	FC	40	30.25	FC	40	36	FC	50	36	FC	75	40	FC	75	
	D	25	AF	20	25	AF	20	28	AF	20	32	AF	30	32	AF	30	36	AF	30	40	AF	60	44	AF	40	
	E	25	AF	40	25	AF	40	28	AF	50	32	AF	60	32	AF	60	36	AF	75	40	AF	100	44	AF	100	
	F	22	AF	15	22	AF	15	25	AF	20	28	AF	25	28	AF	25	32	AF	30	36	AF	30	40	AF	60	
	G	22	AF	30	22	AF	40	25	AF	50	28	AF	60	28	AF	60	32	AF	60	36	AF	75	40	AF	100	1
	P	35.56	AF	25	35.56	AF	30	39.38	AF	30	43.44	AF	40	43.44	AF	40	52.88	AF	50	58.50	AF	60	64.75	AF	75	2

	Trane Dwg Number		Voltage	HP	Input Current Rating	Output Current	UUT
High Voltage VFD Controls	X13170444	6	575	25	26.3	27	
		7	575	30	31.2	32	
		3	460	25	34	34	
		8	575	40	39.9	41	
		4	460	30	41	40	
		5	460	40	53	52	
		1	200/230	20	61.9	62.1	
		2	200/230	25	78.2	78.2	1
	X13170844	8	575	50	50.6	52	
		9	575	60	60.4	63	
		4	460	50	64	65	
		10	575	75	75	77	
		5	460	60	77	77	
		1	200/230	30	92	92	
		11	575	100	92.4	99	
		6	460	75	104	106	
		2	200/230	40	117/101.3	120/104	
		12	575	125	117	125	
		7	460	100	128	130	
		3	230	50	126.6	143	2

VFD Controls included switches and transformers

Low Voltage VFD Controls	Model	UUT
	MP580	6

This is the only option offered in the T-Series

5A

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T-Series Chart: OSP Included Components and Tested Units

T-SERIES FAN VOLTAGE & HP RANGE		Mfr	UUT
03	200V,230V,460V,575V / 1-5HP	ABB or Danfoss	
06	200V,230V,460V,575V / 1-7.5HP		
08	200V,230V,460V,575V / 1-7.5HP		
10	200V,230V,460V,575V / 1-15HP		3
12	200V,230V,460V,575V / 1-15P		
14	200V,230V,460V,575V / 1-15P		
17	200V,230V,460V,575V / 1-20HP		
21	200V,230V,460V,575V / 1-25HP		
25	200V,230V,460V,575V / 1-30HP		
30	200V,230V,460V,575V / 1-40HP		
35	200V,230V,460V,575V / 1-40HP		
40	200V,230V,460V,575V / 1-50HP		
50	200V,230V,460V,575V / 1-60HP		
57	200V,230V,460V,575V / 1-60HP		
66	200V,230V,460V,575V / 2-75HP		
80	200V,230V,460V,575V / 2-100HP		
100	200V,230V,460V,575V / 10-100HP		1,2

ABB has OSP -0083, and Danfoss has OSP -0087

	Model Option	Voltage	Phase	Heat Range	UUT
Gas Heat Module Control	A - Control Box	120	1	200 - 1000	7
	B1 - Control Box and Xfmr	Up to 575	3	200 - 1000	
	C1 - Control Box and Xfmr	Up to 575	3	1250 - 2400	
	D1 - Control Box and Xfmr	575	3	2000 - 2400	8

c/a

T-Series Chart: OSP Included Components and Tested Units

Coil type		Rows Available per size					Rows tested	Length	UUT
		3-6	8-30	35-40	50-57	66-100			
1/2"	Small	2	2	2	2,4	2,4			
	Medium	2-8	2-8	2-8	N/A	N/A	8	51	3
	Extended Medium	2-8	2-8	2-8	2-8	2-8			
	Medium Large	N/A	2-8	2-8	2-8	2-8			
	Medium Large w/Access	N/A	2-8	2-8	2-8	2-8			
	Large	2-8	2-8	2-8	2-8	N/A			
	Large w/Access	N/A	2-8	2-8	2-8	N/A			
5/8" or 1"	Small	1,2	1,2	1,2	1-3	1-3			
	Medium	1-4	1-4	1-4	N/A	N/A	1 (5/8")	50	3
	Extended Medium	1-6	1-6	1-6	1-6	1-6			
	Medium Large	N/A	1-10	1-10	1-10	1-10			
	Medium Large w/Access	N/A	1-4	1-6	1-6	1-6			
	Large	1-10	1-10	1-10	1-10	N/A			
	Large w/Access	N/A	1-8	1-10	1-10	N/A			

Gas Heat Burners		Mfr
03	JR15A	Power Flame
06	JR15A	
08	JR15A	
10	JR15A	
12	JR15A	
14	JR15A	
17	JR15A, 30A	
21	JR15A, 30A, FDM225	
25	JR15A, 30A, FDM225	
30	JR15A, 30A, FDM225	
35	JR15A, 30A, 50A, FDM225	
40	JR15A, 30A, 50A, FDM225	
50	JR30A, 50A, FDM225, FDM300	
57	JR30A, 50A, FDM225, FDM300	
66	JR30A, 50A, FDM225, FDM300	
80	JR30A, 50A, FDM225, FDM300	
100	JR30A, 50A, FDM225, FDM300	

One JR50A and one FDM300 was tested as UUT 9 & 10.

Other Components tested include multiple dampers and actuators, a humidifier grid
Flat and Angled Filters

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Trane T-Series TEST SUMMARY

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The Trane T-Series is a modular rooftop AHU which has a series of pre-sized components joined together in listed sizes by coil area.

Sample units are not to scale.

All details are generic.

Various Dimensions (Width and height are set by unit tonnage):

Coil Area:	~~Size 3 (Min)~~	Size 10	Size 100 (Max)
Length:	~~Variable~~	Variable	Variable
Max Module	~~61"~~	80"	104"
Width:	~~37"~~	66"	156"
Height:	~~33"~~	42"	124"

Components ~~Previously~~ Tested:

High Voltage VFD Control:
- 1 Small
- 1 Large

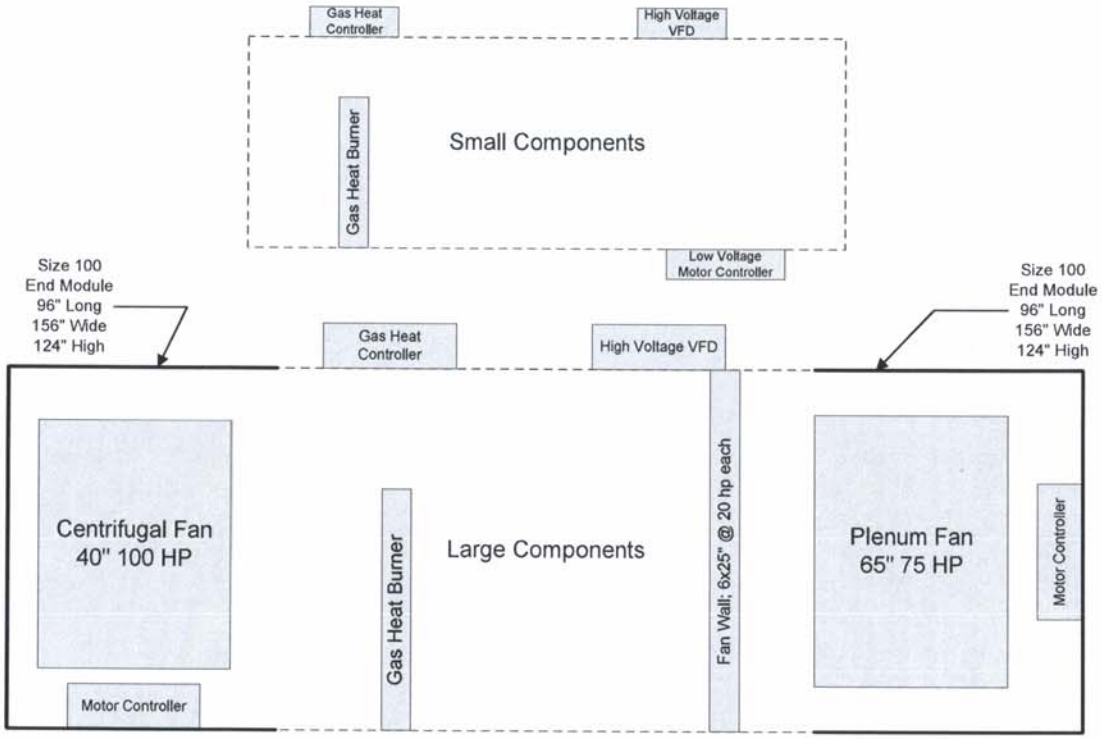
Low Voltage VFD Control:
- 1 Size (Only one offered)

Gas Heat Controls:
- 1 Small
- 1 Large

Gas Heat Burner:
- 1 Small
- 1 Large

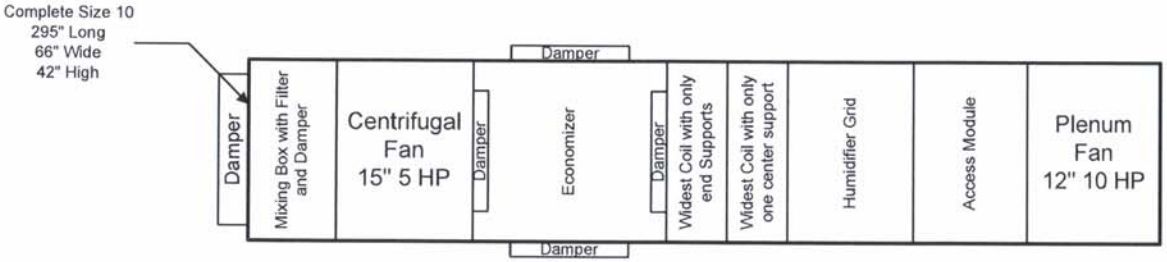
Fans:
- 1 Large AF Centrifugal Fan
- 1 Large Plenum Fan
- 1 Large Fan Wall (No longer offered)

Cabinets:
- 2 Largest End Modules with open end



Tested components and cabinets

All Views are Planview



Components and cabinet ~~to be~~ tested – Size 10 unit, 4120#

Proprietary and Confidential to The VMC Group