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 RENEWAL X Check whether application is: NEW APPLICATION NO. OSP - 0079 - 10 Temtrol George Halko 1.0 Manufacturer Manufacturer's Technical Representative 106 N. Industrial Blvd, PO Box 409, Okarche OK 73762 Mailing Address 405-263-7286 ghalko@temtrol.com Telephone E-mail Address Custom Air Conditioning Units **ITF Series Custom Air Conditioning Units** 2.0 Product Name Product Type Product size limits are shown in the attachments. Casing construction consists of 16 ga. galv. steel panels fastened to a unitized interior steel frame from outside with mechanical fasteners. Fans within the ACU shall be internally isolated and ACU shall be rigid mounted to the floor without external isolators. Product model No (List all unique product identification numbers and/or serial numbers) General Description: These units are custom sized air conditioning units using standard Temtrol mechanical frame construction methods. Internal components include plenum fans, housed fans, Fanwall Technology®, condenser fans, coils, dampers, filters, louvers, sound attenuators, air blenders, air to air exchangers, humidifier grids, motor disconnect, electrical starter panel, electrical control panel, VFD's, motor OL panel, compressors, UV lights, indirect gas heaters, internal fan isolation bases and Fanwall back draft dampers. All changes incorporated into the test units and those required to address anomalies observed during tests shall be incorporated into the certified unit. The VMC Group John P. Giuliano, PE 3.0 Applicant Company Name Contact Person 113 Main St, Bloomingdale NJ, 07403 Mailing Address 973-838-1780 john.giuliano@thevmcgroup.com E-mail Address Telephone I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review. 8/24/12 Signature of Applicant Date The VMC Group President Company Name Title

Office of Statewide Health Planning and Development

State of California – Health and Human Services Agency

osDpd

Office of Statewide Health Planning and Development



1.0		Registered Design Professional Preparing the Report								
		The VMC Group								
			Company Name							
		Mr. Kai Yin Ho		SE4941						
		Contact Name		California License Number						
		113 Main	N Street, Bloomingdale NJ, 0740	3						
			Mailing Address							
		973-838-1780		s.ho@thevmcgroup.com						
	0.17	Telephone		E-mail Address						
•	Call	fornia Licensed Structural Engineer	The VMC Group	e Report						
5.0			Company Name							
		Mr. Kai Yin Ho	Company Name	SE4941						
		Contact Name		California License Number						
		113 Mai	Note Street, Bloomingdale NJ, 0740 Mailing Address	3						
		973-838-1780		he@thovmcgroup.com						
		Telephone		s.ho@thevmcgroup.com <i>E-mail Address</i>						
	Anc	horage Pre-Approval		E-mail Address						
0	And	norage i re-Approvar								
U		Anchorage is pre-approved under C								
		• • • • •								
		(Separate application for anchorage	e pre-approval is required)							
	∇									
	\boxtimes	Anchorage is not Pre-approved								
		- · · ·								
		Anchorage is not Pre-approved								
).		- · · ·	⊠ ICC-ES AC-156	Other (Please Specify):						
).	Cert	ification Method	⊠ ICC-ES AC-156	Other (Please Specify):						
).	Cert	<i>ification Method</i> Testing in accordance with:	⊠ ICC-ES AC-156	Other (Please Specify):						
).	Cert	ification Method	⊠ ICC-ES AC-156	☐ Other (Please Specify):						
).	Cert	<i>ification Method</i> Testing in accordance with:	⊠ ICC-ES AC-156	Other (Please Specify):						
).	Cert	<i>ification Method</i> Testing in accordance with: Analysis Experience data								
).	Cert	<i>ification Method</i> Testing in accordance with: Analysis								
)_	Cert	<i>ification Method</i> Testing in accordance with: Analysis Experience data								
		<i>ification Method</i> Testing in accordance with: Analysis Experience data								
		<i>ification Method</i> Testing in accordance with: Analysis Experience data Combination of Testing, Analysis, a								
		<i>ification Method</i> Testing in accordance with: Analysis Experience data Combination of Testing, Analysis, a		Specify):						
		<i>ification Method</i> Testing in accordance with: Analysis Experience data Combination of Testing, Analysis, a <i>ing Laboratory (if applicable)</i> PEER, UC Berkeley <i>Company Name</i>		Specify): Wesley Neighbour Contact Name						
		<i>ification Method</i> Testing in accordance with: Analysis Experience data Combination of Testing, Analysis, a <i>ing Laboratory (if applicable)</i> PEER, UC Berkeley <i>Company Name</i>	nd/or Experience Data (Please S	Specify): Wesley Neighbour Contact Name						
0.		<i>ification Method</i> Testing in accordance with: Analysis Experience data Combination of Testing, Analysis, a <i>ing Laboratory (if applicable)</i> PEER, UC Berkeley <i>Company Name</i>	nd/or Experience Data (Please S	Specify): Wesley Neighbour Contact Name						



Office of Statewide Health Planning and Development



Testing Laboratory (if appli	cable)	
1 Trente	C	Timothy Geers
Company I	Name	Contact Name
	4600 East Tech Dr	, Cincinnati, OH 45245
	Mailin	g Address
513-528-	7900	tgeers@curtisswright.com
Telepl	none	E-mail:
Testing Laboratory (if appli	cable)	
2 Clark Dyn	amics	JR Antenucci
Company I	Name	Contact Name
	1801 Rt 51, Jeffe	rson Hills, PA 15025
	Mailin	g Address
412-387-	1001	jrantenucci@clarkdynamics.com
Telepl	none	E-mail:

"Equitable Healthcare Accessibility for California"

Office of Statewide Health Planning and Development

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	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) = 4.35	
	S _{DS} (Spectral response acceleration at short period) =1.93 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 Attached Matrix	
	Building period limits (if any) =N/A	
	Overall dimensions and weight (or range thereof) = See Attached Matrix	
	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) =	
	S₁ (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) December 31, 20	16
-	Signature & Date Approval Expiration Da	te
	M. R. Karim, SHFR S _{DS} (g) = 1.93 z/h = 1.0	4-
	Name & Title Special Seismic Certification Valid Up Condition of Approval (if any):	το





UUT #1 - End Section Module - 96L x 129W x 105H										
Cabinet Construction Summary:										
Standard, Mechanical Frame; Galvanize	ed Panels	, Galv. &	& SS Line	ers, 7" bas	e floor					
Wa	ll Remov	al Sum r	nary:							
Three	valls on u	ınit (End	Section)							
Co	omponen	t Summ	ary:							
		Dime	nsions		Lowest Natural Frequency					
Item	Length (in)	Width (in)	Height (in)	Weight (Ib)	F-B (Hz)	S-S (Hz)	V (Hz)			
Cabinet	96	129	103	7,200	12.5	23.7	24.5			
Sound Attenuator	112	36	84	500	12.8	N/A	N/A			
Movable Blade Damper/Actuator	122	16	36	175	N/A	N/A	N/A			
Temtrol Motor Overload Panel24102427N/AN/A							N/A			
Fanwall Array - 3x3 w/16" 5 hp fans 33 92 123 3795 12.2 22 25										
Yaskawa VFD - E7B (Large)	48	20	57	375	15.7	15.9	N/A			







UUT #2 - End Section Module - 96L x 129W x 105H										
Cabinet Construction Summary:										
Standard, Mechanical Frame; Galvanized Panels, Galv. & SS Liners, 7" base floor										
Wa	all Remov	al Sumr	nary:							
Three	walls on u	ınit (End	Section)							
C	omponen	t Summ	ary:							
		Dime	nsions		Lowest Natural Frequency					
Item	Length (in)	Width (in)	Height (in)	Weight (lb)	F-B (Hz)	S-S (Hz)	V (Hz)			
Cabinet	96	129	103	6,242	33.7	9.1	N/A			
Filter Rack - 96x124 (Flat filters)	124	12	96	737	17.4	N/A	N/A			
VFD - E7N - Large (Yaskawa)	33	18	51	142	16.2	20.3	N/A			
Temtrol Starter Panel - 50 HP	20 10 38 42 N/A N/A N/A									
J-Box	6	6	3	5	N/A	N/A	N/A			
Housed Fan - AF01-49" 50 hp	84	96	80	2815	3.4	3.8	N/A			



UUT #2



THE VMC GROUP

UUT #3 - End Section Module - 96L x 129W x 105H										
Cabinet Construction Summary:										
Standard, Welded Frame (Test not used for verification of unit construction)										
Wa	all Remov	al Summ	ary:							
Three	walls on u	nit (End	Section)							
C	omponen	t Summa	ry:							
		Dimer	nsions		-	/est Nat requenc				
Item	Length (in)	Width (in)	Height (in)	Weigh t (Ib)	F-B (Hz)	S-S (Hz)	V (Hz)			
Cabinet	98	131	98	6,253	11.4	8.0	33.2			
Heat Transfer Coil - With middle supports - 45x120	120	12	45	1860	N/A	N/A	N/A			
Movable Blade Damper/Actuator 126x48	126	48	8	280	N/A	N/A	N/A			
Plenum Fan - PF02-44" 50 hp	54	110	72	1900	3.1	4.6	N/A			
Filter Rack - 84x108	Filter Rack - 84x108 108 6 84 210 11.4 N/A N/A									
VFD - E7B - Medium (Yaskawa)	22	14	9	75	13.3	17.1	N/A			
Control Panel	48	41	16	160	N/A	N/A	N/A			







UUT #4 - "Small" Unit - 96L x 96W x 96H										
Cabinet Construction Summary:										
Standard, Mechanical Frame; Galvanized Panels, Galv. & SS Liners, 7" base floor										
Wa	all Remov	al Summ	ary:							
No walls	removed	(Entire ur	nit shaker	า)						
С	omponen	t Summa	ry:							
		Dimer	nsions		Lowest Natural Frequency					
Item	Length (in)	Width (in)	Height (in)	Weigh t (Ib)	F-B (Hz)	S-S (Hz)	V (Hz)			
Cabinet	96	96	96	3,975	12.0	17.8	N/A			
Movable Blade Damper/Actuator	18	18	7	25	N/A	N/A	N/A			
Housed Fan - AF-10" 1 hp	30	30	28	175	3.6	6.8	3.9			
Plenum Fan - PF-12" 5 hp	28	28	31	225	2.8	3.9	4.9			
VFD - V1000 - Large (Yaskawa)	6	6	13	17	N/A	N/A	N/A			
Scroll Compressor - Small (Copeland)	18	18	32	84	N/A	N/A	N/A			
							N/A			
Cabinet Door					14.2	15.9	N/A			



UUT #4





UUT #5 - "Medium" Unit - 96L x 144W x 144H									
Cabinet Construction Summary:									
Standard, Mechanical Frame; Galvanized Panels, Galv. & SS Liners, 7" base floor									
Wall Remov	Wall Removal Summary: (Cumulative)								
(1) No Walls removed; (2) One back par {DW	nel remove ′ Unit - En	•		unit}; (3) I	End Pa	anel re	moved		
Cor	nponent S	Summary	/:						
		Dime	nsions			/est Na requer			
Item	Length (in)	Width (in)	Height (in)	Weight (Ib)	F-B (Hz)	S-S (Hz)	V (Hz)		
Cabinet	96	144	144	5,890	4.1	9.0	25.0		
Humidifiers	8	24	24	38	N/A	N/A	N/A		
HEPA Filter Frame	26	10	26	25	N/A	N/A	N/A		
Fixed Blade Louvers (Horz.)	24	24	8	15	N/A	N/A	N/A		
Plenum Fan - PF-10" 1 hp	20	14	15	137	N/A	N/A	N/A		
Fanwall Fan - 12" 1 hp (unit / retrofit)	26	22	26	175	4.3	9.1	N/A		
Condenser Fan - Large	36	36	18	145	N/A	N/A	N/A		
							N/A		
Control Panel 24 6 22 60 2.8 N/A 27.7									
Heat Transfer Coil - Small - No Intermediate Support	24	8	18	37	N/A	N/A	N/A		







UUT #6 - "Large" Unit - 144L x 144W x 144H										
Cabinet Construction Summary:										
Standard, Mechanical Frame; Galvanized Panels, Galv. & SS Liners, 7" base floor										
Wall Remov	al Summ	ary: (Cu	mulative)							
	(1) No Walls removed; (2) Two end panels removed {Middle section}; (3) Back panel removed {DW Unit - Mid section}									
`	nponent S									
			nsions		_	vest Na requer				
Item	Length (in)	Width (in)	Height (in)	Weight (Ib)	F-B (Hz)	S-S (Hz)	V (Hz)			
Cabinet	144	144	144	7,435	5.0	6.7	16.6			
Fan Wall Fan - 22" 12 hp (unit / retrofit)	30	40	40	410	N/A	N/A	N/A			
Plenum Fan - PF-22" 10 hp	31	26	26	310	N/A	N/A	N/A			
Air to Air Exchanger (Innergytech)	24	24	24	177	N/A	N/A	N/A			
Condenser Fan - 24"	30	30	12	130	N/A	N/A	N/A			
Fixed Blade Blenders (Blender Products)	24	6	24	75	N/A	N/A	N/A			
Fixed Blade Louvers (Vert.)	24	8	24	70	N/A	N/A	N/A			
Filter Rack	24	2	24	3	N/A	N/A	N/A			
							15.0			
Scroll Compressor (Copeland)	26	32	36	84	N/A	N/A	N/A			
Control Panel	24	6	22	40	N/A	4.1	27.4			
Cabinet Door					9.1	4.3	N/A			





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Custom Air Handling Units Tested Components Summary

		Cabin	et Const	ructioon	Summary:							
Standard	I, SS Mech				el, Aluminum Liners, 7" base floo	or						
	.,			oval Sum								
1) One wall removed and connect	ed to LILIT					y (3) Three walls remove						
1) One wail removed and connect		#0, (Z)		tand alon	,							
				ent Sumn	-							
				one ounn								
	Dimensions											
Item	Length	Width	Height Weight (in) (lb)		Manufacturer	Description						
	(in)	(in)										
Cabinet	158	136	114	4,614	Temtrol (Governair)	ITF						
Control Damper w/Actuator	8	24	12	45	Temtrol (Governair) / Siemens	Damper / Actuator						
Smoke Damper w/ Actuator	5	120	48	160	Ruskin / Honeywell	SD-60 Series / Actuato						
Control Damper w/ Actuator	5	24	12	45	Ruskin / none	CD-60 Series / Actuato						
Ruskin EAMS	12	24	12	22	Ruskin	Air Measuring Station						
Ruskin AML Louver	3	12	24	40	Ruskin	Air Measuring Louver						
Ruskin EME Louver	3	48	96	330	Ruskin	Stationay Louver						
Refrigerant Heatpipe	13.4	125.5	57.1	1630	Innergy Tech	Migrating Refrigerant Co						
Large HeatWheel	16	103	103	1122	Innergy Tech	96" Dia						
Small Heatcraft Refrigerant Coil	5.5	24	25	53	Heatcraft	3 row, 6fpi						
Large Heatcraft Refrigerant Coil	7	96	36	132	Heatcraft	2 row, 6fpi						
Electric Heater	6.5	15	17.75	25	Markel	Unit Heater						
Humidifier	6.5	27	39	90	Dri-Steam	UltraSorb						
Humidifier	9.8	22	28	80	Nortec	UltraSorb						
Ventilation Fan	23	18	23	31	Dayton	20" Direct Drive						
Control Panel	10	16	42	120	Temtrol (Governair)	Component list to follow						
Airflow Station-Small	4	4	15	10	Paragon	Air Mearuring Station						
Airflow Station-Larger	4	4	34.5	18	Paragon	Air Mearuring Station						
Airflow Station-Small	4	4	15	10	Air Monitor Corp.	Air Mearuring Station						
Airflow Station-Larger	4	4	34.5	18	Air Monitor Corp.	Air Mearuring Station						

Lowest Natural FrequencyXYZof Cabinet (Hz)6.65.48.1

 \ast denotes component was pressurized with nitrogen charge during test. Unit passed pre and post shake functioanlity tests.

	Outer	14 ga Aluminum
Cabinet Wall Constuction	Inner	18 ga Aluminum
Cubinet Wai constaction	Insulation	Fiberglass / Foam
	Panel Width	Max Width 24"







UUT #8 Evaporator Condenser Module - 158L x 136W x 128H													
	Cabinet Constructioon Summary:												
	Standard, Mechanical Frame; Steel Panel, Galv. & SS Liners, 7" base floor												
Wall Removal Summary:													
(1) No walls removed and connected to UUT #7; (2) No walls removed and stand alone													
Component Summary:													
Dimensions													
Item		Length (in)	Width (in)	Height (in)	Weight (lb)	Manufacturer	Description						
Cabinet		158	136	114	10,500	Governair/Mammoth	ITF/WF						
Condenser Fans		107.75	49.5	18.25	900	Governair/Ziehl	36" Dia, 3 HP Motor						
Compressors		41.39	21.76	29.46	350	Emerson Compressors							
Small Evap Condenser (Coil *	128.25	45.875	20 800 Governair Finless Tube B			Finless Tube Bundle						
Condenser Pump *		28.75	14.5	12 550 ITT B & G 3hp Pump			3hp Pump						
Plate Heat Exchange	r*	11	9.5	20.625	20.625 100 SWEP / Flat Plate Plate Heat Exch								
Small HeatWheel		15	58	58			48" Dia						
Receiver *		35	7	7.125	30	Refrigeration Research	Liquid Receiver						
Small COAX Heat Exchar	iger *	13.875	12.3125	5.0625	20	Packless	Double Wound Helix 3 Tons						
Large COAX Heat Exchar	iger *	18	17.5	7.375	65	Packless	Double Wound Helix 7-1/2 Tons						
Spray Tree		97.75	39	6.75	60	Governair	PVC Pipe						
Lowest Natural Frequency of Cabinet (Hz)	X 6.4	Y 6.7	Z 8.2			• •	urized with nitrogen charge d post shake functioanlity tests						
	J	4	1	1	-	· ·	· · ·						
			OL	iter		Jan	net) / 20ga Steel (Cabinet)						
Cabinet Wall Constuction	on			ner		20ga Galv (Cabinet) / 20ga 304 SS (Condenser)							
	-		Insul			Fiberglass / Foam							
			Panel	vvidth		Max 24"							





	ompon	ent												Table	ə 1
Housed	HP	1	3	5	7 1/2	10	20	30	40	50	60	75	100	Test	Manufacturer
Fan Size	Weight	43	43	55	108	172	324	525	640	662	1036	1047	1302	Unit	
Weight		Х	х	х	Х	х	х	х	х	Х	х	Х	Х	4	
Size		Х	X	X	х	X	х	X	х	х	X	х	х		
Weight		^	^	^	^	^	^	^	^	^	^	^	^		
Size		Х	х	х	х	х	х	х	х	х	х	Х	х		
Weight Size			1	1							1				
Weight		Х	Х	Х	х	Х	Х	Х	Х	Х	Х	Х	х		
Size		V			~	~	v	~	v	v			х		
Weight		Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	×		
Size		Х	х	х	х	х	х	х	х	х	х	х	х		
Weight			I	<u> </u>							1				
Size Weight		Х	Х	Х	х	Х	х	Х	х	Х	Х	Х	х		
Size															air
Weight		Х	Х	Х	Х	х	Х	Х	Х	Х	Х	Х	Х		/em
Size		х	х	х	х	х	х	х	х	х	х	х	х		Temtrol - Governair
Weight					^					~			~		2
Size Weight		Х	х	х	х	х	х	х	х	х	х	Х	х		emt
Size				1		<u> </u>	<u> </u>	<u> </u>			1				μ.
Weight		Х	Х	Х	Х	Х	х	Х	х	Х	Х	Х	х		
Size		х	х	х	х	х	х	х	х	х	х	х	х		
Weight		~	^	^		^	^	^	^		^	^	^		
Size Weight		Х	х	х	х	х	х	х	х	х	х	Х	х		
Size			1	1							1				
Weight		Х	Х	Х	х	Х	Х	Х	Х	Х	Х	Х	х		
Size		х	x	х	x	х	х	х	v	х	х	х	х		
Weight		~	^	^	^	<u>^</u>	<u> </u>	<u>^</u>	Х	^	^	^	^		
Size		х	х	х	х	х	х	х	х	х	х	Х	х	2	
Weight							<u> </u>	<u> </u>	1						
Size Weight		Х	Х	х	х	х	х	х	х	х	х	Х	х		
	Includes	Ontion	nal Inte	rnal Se	eismic Te	olatio	n Bas		1		I	1			

Motor - Baldor - Dual Voltage 208/230V & 460V (UUT2 & UUT4) Wheel Construction - steel Housing Construction - steel



	ompon	ent												Table	2
Plenum	HP	1	3	5	7 1/2	10	20	30	40	50	60	75	100	Test	Manufacturer
Fan	Weight	43	43	55	108	172	324	525	640	662	1036	1047	1302	Unit	Thanalactarer
Size Weight		х	Х	Х	х	х	х	х	х	Х	х	х	Х	5	
Size Weight		х	х	х	х	х	х	х	х	х	х	х	х	1&4	
Size Weight		х	х	х	х	х	х	х	х	х	х	Х	х		
Size Weight	15	х	х	х	х	х	х	х	х	х	х	х	Х		
Size Weight		х	х	х	х	х	х	х	х	х	х	х	Х		
Size Weight		х	х	х	х	х	х	х	х	х	х	х	х		
Size Weight		х	х	х	х	х	х	х	х	х	х	х	Х		
Size Weight		х	х	х	х	х	х	х	х	х	х	х	х	6	/emair
Size Weight		х	х	х	х	х	х	х	х	х	х	х	х		Temtrol - Governair
Size Weight		х	х	х	х	х	×	х	х	х	х	х	х		Temtro
Size Weight		х	х	х	х	х	х	х	х	х	х	х	х		
Size Weight		х	х	х	х	х	х	х	х	х	х	х	х		
Size Weight	36 482	х	Х	х	х	х	х	х	х	х	х	х	Х		
Size Weight		х	х	х	х	х	х	х	х	х	х	х	Х		
Size Weight		х	х	х	х	х	х	х	х	х	х	Х	Х	3	
Size Weight		х	х	х	х	х	х	х	х	х	х	х	Х		
Size Weight		х	х	х	х	х	х	х	х	х	х	х	х		

Motor - Baldor - 208V, 230V, 460V

Wheel Construction - Aluminum or steel Housing Construction - Aluminum or steel

Ean Component

Size

24"

30"

Fan Co	mpon	ent																							Table	e 3	
Fanwall	HP Weight	1 45	1.5 54	2	2.5 58	3	3.5 8	4 5	4.5	5	5.5	6 105	6.5	7	7.5	8	8.5 154	9	9.5	10	10.5	11 170	11.5	12	Test Unit	Mfr	
Size Weight	10	Х	х	х	х	х	х	Х	Х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	Х			
Size Weight		х	х	х	х	х	х	х	х	х	х	Х	Х	х	х	Х	Х	Х	х	Х	х	х	х	х	5		
Size Weight		Х	Х	х	х	х	х	Х	х	х	Х	Х	Х	х	х	х	х	х	х	Х	х	х	х	Х		vernair	
Size Weight		Х	Х	х	х	х	х	х	х	х	х	Х	Х	х	х	х	Х	х	х	х	х	х	х	х	1	- 60	
Size Weight		Х	х	х	х	х	х	х	Х	х	х	х	Х	х	х	х	Х	х	х	Х	х	х	х	х		Temtro	
Size Weight		Х	х	х	х	х	х	х	х	х	х	Х	Х	х	х	х	Х	х	х	х	х	х	х	х			
Size Weight		х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	х	6		

Fanwall - Small, Medium, And Large FWT Cubes Tested With FBD Fanwall Backdraft (FBD) Included (Test Units 5 & 6)

Manufacturer

Governair

Fanwall Retrofit Cubes Approved Motor - Baldor - 208V, 230V, 460V

Tested Wheel Construction - Aluminum

Housing Construction - Aluminum

Compressor Voltage - 208V, 230V, 460V Tested

Weight (Lb)

130

145

Condenser Fans -Air Cooled Table 4 Test

Unit

6

5

ssors						Table 5	
Topo		Unit	Dimens	sions		Monufacturar	
TONS	W	н	L	Weight	UUT	Manufacturer	
5	18	32	18	84	4		Model ZP54K3E Shake Tested
40	22	29.5	41.4	350	8	Conclored	Model ZPT470KCE-TWD-251 Tested
						Copeianu	
30	32	36	26	390	6		Model ZP385KCE Shake Tested
	Tons 5 40	5 18 40 22	W H 5 18 32 40 22 29.5	W H L 5 18 32 18 40 22 29.5 41.4	Unit Dimensions W H L Weight 5 18 32 18 84 40 22 29.5 41.4 350	Unit Dimension UUIT Dimension UUT W H L Weight UUT 5 18 32 18 84 4 40 22 29.5 41.4 350 8	Image: Ward of the second se

Motor - 208V, 230V, 460V Tested



Coil Component

Coil Co	ompor	nent																					Tabl	e 6
											F	in Length	1										Test	Mfr
		12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126		Unit	IVIII
	12	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х			
	15	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х			
	18	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	_	5	
	21	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	ength		.=
	24	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Le		rnai
ght	27	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	.⊆		Ver
Height	30	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	LL J		ß
	33	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Max		-
ii.	36	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	21		mtro
	39	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	16		ē
	42	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	2		-
	45	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	1	3**	
	48	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х			
	51	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х]		1
	OSHPD	Approve																						

Single Coil Size Minimum FH = 12" (+1.5" increments), Max FL = 216" (1" increments)

Multi-stacked coils available (2,3 or 4) coils high (No coil rack required)

Coil Variables:

1. Tube Wall = .017, .020, .025, .035, .049

2. Fin Material = Alum , Copper

3. Fin Thickness = .006, .008, .010

4. Fin Spacing (FPI) = 4, 6, 7, 8, 9, 10, 11, 12, 13, 14

5. Rows = 1, 2, 3, 4, 6, 8, 10, 12

Coil Casing = Galvanized or Stainless Steel Type CW, HW, NFS & DX are OSHPD approved.

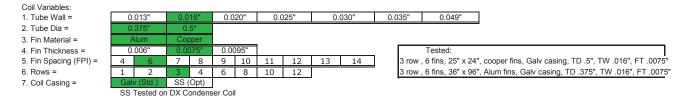
DX Evaporator Coil - Heatcraft

Table 6A

								Fin L	_ength								Test	Mfr
		6		24		48	48.1		96	96.1		144	144.01		192		Unit	IVIII
	6	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х			
	9	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	-C		
	12	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Length		
	15	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Lei		
Height	18	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Fin		ŧ
- T	21	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х			HeatCraft
Fin	24	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Max.		eat
*	25	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	- 1	7	Í
	27	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	192'		
	30	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	~		
	33	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х			
	36	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		7	
			0 Tube	Sheets			1 Tu	ibe Sh	eets	2	Fube Sh	eets	4 Tul	be She	ets			

OSHPD Approved coils:

Single Coil Size Minimum FH = 6" (+1.5" increments), Max FL = 192" (1" increments) Multi-stacked coils available (2,3 or 4) coils high (No coil rack required) Includes E Series and C Series Coils





Gas Heat - Indirect	t	Tab	le 7
Input	Weight (Lb)	Manufacturer (HMA Series)	Test Unit
200 MBH	120		
400 MBH	237	Heatco	4
600 MBH	378		

VFD

Table 9	

Model	Weight Lb.	UUT	Manufacturer
E7N-Large	142	2	Yaskawa
E7B-Large	375	1	Yaskawa
E7B-Medium	75	3	Yaskawa
V1000-Large	17	4	Yaskawa
ACH550-Large	135	5	ABB
ACS320-Small	37	6	ABB

Starte	r Pan	el		Table 10			
Height	Width	Weight (Lb.)	UUT	Manufacturer			
22 1/2	10	14					
26	10.5	21					
42	16	38		Temtrol / Governair			
38	20	42	2				
56	24	47					

Gasketed NEMA 3R/12 Enclosure Non-Automatic Circuit Breaker Switch With Flange Mounted Disconnect Handle Type 4X "Hand-Off-Auto" Switch. Magnetic NEMA Size Starter With 3 Phase Overload Panel N.O. And N.C. Aux. Contacts Dual Element Motor Fusing 120 Volt Control Transformer With Primary And Secondary Fusing Control Terminal Strip Ground Lugs Stranded Copper, THHN Wiring

Electrical Control Panel Table 8

Height	Width	Weight (Lb.)	UUT	Manufacturer
24	18	60	5	•
30	30	100		
46	36	150		Temtrol / Governair
80	64	300	3	•
42	16	150	7	••
36	24	90	7	••

Fuses

Digital Scroll Controller

•• Current Transducer

- So
 24
 90
 7

 Manual Starter Protector (MSP) With Auxillary Contacts
 208/230/460VAC

 Power Block
 Display Module Touch Screen

 120/24VAC Transformer
 Display Module Keypad

 Starters
 NEMA 1 Or 3R Enclosure
 .
- .
- Contactors
- Circuit Breakers
- Alerton / ALC / •• Siemens DDC Controls
- 120/24VAC Relays/Bases
- . Timers
- . Hand/Off/Auto Switches
- . Indicator Lights
- . Phase Monitor
- . Current Switches and Current Transducer
- In-Panel Disconnect .
- .
- Ground Lugs Stranded Copper Wiring (THHN, THW, MTW) .

Motor Overload Panel

r	Ove	rload	l Pane		Tab	le 11
	Height	Width	Weight (Lb.)	UUT	Manufactur er	
	12	12	7			
	12	16	10	5	.=	
	16	20	17		Temtrol / Governair	
	20	16	19		ver	
	20	20	24		Ö	
	20	24	25		-	
	24	20	25		itro	
	24	24	27	1	e	
	24	30	35		F	
	30	30	39			

- . 208/320/460 Volt
- . MOP Includes Manual Starter Protector (MSP) With Auxiliary Contacts, Starter Monitoring Terminals Power Terminals And Power Block
- NEMA 4 Enclosure .



Damper Component

Dampe	er Com	pone	nt																							Table 1	2
													Width													Test Unit	Mfr
		6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	Test Unit	IVIII
	6	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		
	12	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		
	18	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	4	Jair
¥	24	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		,en
eigh	30	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Go
Η̈́	36	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	1	ol/o
*	42	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		ntr
	48	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	3	Ter
	54	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		
	60	Х	Х	Х	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X	Х	Х	Х	Х	Х	Х	Х	Х		

* Single Damper Size (60" x 144")

Damper Component (Ruskin)

Dampo	er Con	pone	nt (Ru	ıskin)																					Table 1	2A
													Width													Test Unit	Mfr
		8	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	Test Unit	IVIII
	8	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		
	12	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		
	18	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		iar
t	24	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	7	en (en
łeight	30	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		õ
Ξ	36	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		ol/o
*	42	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		ntr
	48	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X	Х	Х	Х	Х	7	Ter
	54	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		·
	60	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		

* Single Damper Size (60" x 60") Includes CD-60 and SD-60 Model Dampers Includes 120V and 24V Actuators

Other Components Covered By This OSP

·	-	Table 13
Description	Test Unit	Manufacturer
Fixed Blade Horizontal Louver	5	Temtrol / Governair
Fixed Blade Vertical Louver	6	Temtrol / Governair
Fixed Blade Vertical Louver	7	Ruskin
Fixed Blade Vertical Louver w/ Air Monitor	7	Ruskin
Sound Attenuator	1	Temtrol / Governair
Air To Air Exchanger	6	Innergy Tech
Filter Rack - Type 8 - 120" x 132"	2	Temtrol / Governair
Fixed Blade Blenders	6	Blender Products
Filter Frames - HEPA	5	Temtrol / Governair
Filter Frames - Type 8 Holding	6	Temtrol / Governair
Humidifier Grids	5	Vapac
Humidifier Grids	7	Nortec
Humidifier Grids	7	Dri-Steam
Reciever - Size Depends on unit capacity	8	Refrigeration Research

Heatpipe Component

noutpi	PC 00	mpon																			abio	107
			Length Std Increments																Test	Mfr		
		24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	Unit	IVIII
	5																					
s s	10																					낭
ר Fa	15																					- E
.≡ _e	20																					gy
bes ingl	25									Х										Х	7	Jer
Si	30																					<u> </u>
	32																					
					Single	modu	le						5	Side by	/ Side	module	S					

OSHPD Approved coils: Single Coil Module: 25 Tubes In Face only Side-by-Side Module permitted. Single-stacked coils available only (No coil rack required) Coil Variables:

1. Fin Material = Alum only

2. Fin Spacing (FPI) = 11 only

3. Rows = 6 only 4. Coil Casing = Stainless Steel



Heatw	heel C	Table 14			
Dia	Height	Width	Weight (Lb.)	UUT	Manufacturer
48	58	58	720	8	
54	64	64	790		_
62	72	72	910		Innergy Tech
70	80	80	1080		⊢ ≥
78	87	87	1230		erg
88	95	95	1400		E
96	103	103	1560	7	_
108	115	115	1800		

Other Components Covered By This OSP Table 15										
Description	Test Unit	Manufacturer	Power							
UV Light	5	Lumalier	120V							
Motor Disconnect	2	Temtrol / Governair	208-460V							
Air Monitor Station	7	Ruskin	24V							
Air Monitor Station	7	Paragon	24V							
Air Monitor Station	7	Ebtron	24V							
UV Light	7	UV Resources	120V							
Hot Gas Bypass Valve and Controller IB-6	7 & 8	Sporlan	24V							

Coax Heat Exchan	ger						Table 16
Model	Capacity		Unit D	imensi	ons	Test Unit	Manufacturer
	Tons	W	н	L	Weight		
COAX-2201-J	2	10.6	4	13			
COAX-2251-J	2.5	10.4	5.1	12.5			
COAX-2301-J	3	12.3	5	14	20	8	
COAX-2351-J	3.5	12.4	6.1	14.3			
COAX-2401-J	4	14.1	5	16.3			
COAX-2501-J	5	15.4	6	17			
COAX-2601-J	6	15.25	7.25	17.8			
COAX-2751-J	7.5	17.5	7.4	18			Packless
COCX-2201-J	2	10.6	4	13			Fackless
COCX-2251-J	2.5	10.4	5.1	12.5			
COCX-2301-J	3	12.3	5	14			
COCX-2351-J	3.5	12.4	6.1	14.3			
COCX-2401-J	4	14.1	5	16.3			
COCX-2501-J	5	15.4	6	17			
COCX-2601-J	6	15.25	7.25	17.8			
COCX-2751-J	7.5	17.5	7.5	18	65	8	

Outer Shell: Steel Inner Tube: Copper, Cupro-Nickel

Electric Heater "208/230V , 460V"

Table 15A

Model	KW Rating		Unit	Dimen	isions	Test	Manufacturer		
Widdei	Kw Kating	W	Н	D	Weight	Unit	wanuracturer		
5100 Series	3.3 - 5.0	15	17.8	6.5	25	7	Markel		

Tested - 208V & 460V

Plate Heat Exch	Plate Heat Exchanger													
Model		Unit	Dimer	nsions	Test Unit	Manufacturer								
	W	Н	L	Weight										
Flat Plate	10	21	8	100	8	SWEP								



DDC Sensors Table 18	;	
	Test 1	
Sensor Type	Unit	Power
 Outside Tempeature and Humidity 	7	1
 Duct Temperature Sensor 	7	N/A
 Smoke Dectector with sampling tube 	7	1 or 2
 Smoke Dectector - Ionization 	7	1 or 2
Differential Pressure Transmitter	7	1
 Differential Pressure Switch 	7	N/A
 Differential Pessure Switch with Reset 	7	1
 Thermister Type 2 - 10K - Duct 	7	N/A
 Thermister Type 2 - 10K Averaging 	7	N/A
 Remote Bulb Thermister - 30 to 120 	7	N/A
 Low Limit Thermister with reset 	7	1
Air Probe	7	1
Air Probe Swith	7	1

Air Probe Swith
 7
 1
 Active Components use by DDC controllers in TABLE 8 throughout the air tunnel to measure and record data.

1- Component powered by 24V 2- Component powered by 120V Control singal to input of controller is either 0 to 10V, 4mA to 20mA or resistant value

Evap Condenser Module	Evap Condenser Modules Table 19													
Model #	Nominal Cooling Capacity		Unit	Dimen	sions	Test Unit	Manufacturer							
	Tons	W	Н	L	Weight									
SCE-ECM1-11-110-4-S-N-E	110	136	128	158	10,500	8	Governair / Mammoth							

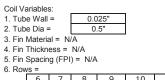
Conde	nser Fans	Table 19A		
Size	Weight (Lb)	Test Unit	Manufacturer	
36"	420	8	Governair	

Condenser Pumps			Table 19B		
Size	Weight (Lb)	Test Unit	Manufacturer		
3 hp	125	8	ITT Bell & Gosset		
Motor	- 460V Tested				

Motor - 208V, 230V, 460V Tested

Conde	nser C	Tabl	e 19C		
		Coil Length		Test	Mfr
		92	129	Unit	IVIII
* Coil Width	6	Х	Х		
	9	Х	Х		
	12	Х	Х		
	15	Х	Х		
	18	Х	Х		Governair / Mammoth
	21	Х	Х		
	24	Х	Х		
	25	Х	Х	8	
	27	Х	Х		
с *	30	Х	Х		
*	33	Х	Х		
	36	Х	Х	8	
	39	Х	Х		
	42	Х	Х		
	45	Х	Х		
	48	Х	Х		
		3 tube sheets			

(Coil In Horizontal Configuration)



7. Coil Casing = Stainless Steel (Standard)

8. Coil Construction = Brazed

