



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0673

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Haskris Company

Manufacturer's Technical Representative: Kerem Korunmus

Mailing Address: 776 North Oaklawn Ave, Elmhurst, IL 60126

Telephone: (847) 956-6420

Email: kerem@haskris.com

Product Information

Product Name: OPC Process Chillers

Product Model Number(s): See Attachment

Product Category: Chillers

Product Sub-Category: Chillers - Air Cooled

General Description: Modular process fluid chillers constructed of carbon steel.

Mounting Description: Base Mounted Rigid, Neoprene Vibration Isolated, and Spring Vibration Isolated

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: Manwill Engineering LLC

Contact Person: Derek Manwill

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: (541) 241-2102

Email: derek@manwillse.com

Title: President



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

Company Name: MANWILL ENGINEERING LLC

Name: Derek Manwill

California License Number: S6266

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: (541) 241-2102

Email: derek@manwillse.com

Certification Method

☐ GR-63-Core

☒ ICC-ES AC156

☐ IEEE 344

☐ IEEE 693

☐ NEBS 3

☐ Other (Please Specify): _____

Testing Laboratory

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)

Contact Person: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas TX 75229-3513

Telephone: (972) 247-9657

Email: Jeremy@etldallas.com

BY: Mohammad Karim

DATE: 12/5/2025



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Seismic Parameters

Certified Response Spectral Acceleration Factors:(F_p/W_p)

Horizontal (A Flx-H), g= 3.20 (A Rig-H), g= 2.15

Vertical (A Flx-V), g= 1.68 (A Rig-V), g= 0.68

S_{DS} (Design spectral response acceleration at short period, g) = 2.50 @ z/h=0; 2.00 @ z/h=1

H_f (Force amplification height factor) = 1 @ z/h=0; 3.5 @ z/h=1

R_u (Structure ductility reduction factor) = 1 @ z/h=0; 1.3 @ z/h=1

I_p (Importance factor) = 1.5

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

HCAI Approval (For Office Use Only) - Approval Expires on 12/05/2031

Date: 12/5/2025

Name: Mohammad Karim

Title: Supervisor, Health Facilities

Condition of Approval (if applicable):

OSP-0673

BY: Mohammad Karim

DATE: 12/5/2025

HASKRIS OPC Process Chillers

TABLE 1

Mounting: Base mounted rigid, neoprene vibration isolated, and spring vibration isolated.	S _{DS} (g)	z / h	H _f / R _μ	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}	I _p
	2.00	1	3.5 / 1.3	3.20	2.15	1.68	0.68	1.5
	2.50	0	1.0 / 1.0					

Product Construction: Carbon steel frame and panels. The weight of an n-module unit must be less than or equal to the maximum weight listed below for the same number of modules. External water and power connections must be flexible.

Options/Subcomponents: See Table 2 for a list of certified subcomponents. Voltage: 200-460V, 60Hz.

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
OPC Process Chillers						
OPC3	38.0	38.0	70.0	850	1-module	EXTRAP
OPC5	38.0	38.0	73.0	950	1-module	EXTRAP
OPC8	38.0	38.0	73.0	1,000	1-module	EXTRAP
OPC10	38.0	38.0	73.0	1,000	1-module	EXTRAP
OPC12	38.0	38.0	73.0	1,000	1-module	EXTRAP
OPC13	38.0	38.0	73.0	1,000	1-module	EXTRAP
OPC15	38.0	38.0	73.0	1,080	1-module	UUT 1
OPC16	38.0	76.0	73.0	2,000	2-module	INTERP
OPC20	38.0	76.0	73.0	2,000	2-module	INTERP
OPC24	38.0	76.0	73.0	2,000	2-module	INTERP
OPC26	38.0	76.0	73.0	2,000	2-module	INTERP
OPC30	38.0	114.0	73.0	2,600	3-module	INTERP
OPC36	38.0	114.0	73.0	2,800	3-module	INTERP
OPC39	38.0	114.0	73.0	2,800	3-module	INTERP
OPC40	38.0	152.0	73.0	3,600	4-module	INTERP
OPC48	38.0	152.0	73.0	3,600	4-module	INTERP
OPC52	38.0	152.0	73.0	3,600	4-module	INTERP
OPC60	38.0	190.0	73.0	4,096	5-module	UUT 2

End of TABLE 1. Notes, information, and seismic parameters are shown at the beginning of the table.

HASKRIS OPC Process Chillers

TABLE 2 - SUBCOMPONENTS

	S _{DS} (g)	z / h	H _f / R _μ	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}	I _p
Mounting: Mounted within component.	2.00	1	3.5 / 1.3	3.20	2.15	1.68	0.68	1.5
	2.50	0	1.0 / 1.0					

Construction/Options: Model number uniquely identifies manufacturer, materials, and configuration of subcomponents.

Substitutions: Subcomponents weighing less than 10-lb, electric motors, base-mounted horizontal pumps, compressors, and base-mounted vertical pumps (vertical pumps up to 20hp only) may be substituted per CBC 1705A.14.3.1 Exceptions 5-7, provided they meet the five listed requirements in that section.

Model Number - Manufacturer	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
Type: Compressor, Scroll, ZR - Mfr: Copeland						
ZR38K5E-TFD	9.7	9.7	19.9	61	3HP, 460V	EXTRAP
ZR38K5E-TF5	9.7	9.7	19.9	61	3HP, 230V	UUT 2
ZR68KCE-TFD	9.7	9.7	17.8	86	5.5HP, 460V	INTERP
ZR68KCE-TF5	9.7	9.7	17.8	86	5.5HP, 230V	INTERP
ZR108KCE-TFD	10.4	11.2	21.0	132	8HP, 460V	INTERP
ZR108KCE-TF5	10.4	11.2	21.0	132	8HP, 230V	INTERP
ZR125KCE-TFD	10.4	11.2	21.0	135	10HP, 460V	INTERP
ZR125KCE-TF5	10.4	11.2	21.0	135	10HP, 230V	INTERP
ZR144KCE-TFD	10.4	11.2	21.0	135	12HP, 460V	INTERP
ZR144KCE-TF5	10.4	11.2	21.0	135	12HP, 230V	INTERP
ZR160KCE-TFD	10.4	11.2	21.7	143	13HP, 460V	INTERP
ZR190KCE-TFD	10.4	11.2	21.7	146	15HP, 460V	UUT 2
Type: Compressor, Scroll, ZB - Mfr: Copeland						
ZB30KCE-TFD	9.7	10.1	17.2	78	4HP, 460V	EXTRAP
ZB45KCE-TFD	9.7	10.1	17.2	87	6HP, 460V	UUT 2
ZB58K5E-TFD	12.3	14.3	19.9	126	8HP, 460V	INTERP
ZB76K5E-TFD	12.3	14.3	21.5	135	10HP, 460V	INTERP
ZB95K5E-TFD	12.3	14.3	22.2	143	13HP, 460V	INTERP
ZB114KCE-TFD	12.3	14.3	22.2	146	15HP, 460V	UUT 1
Type: Compressor, Scroll - Mfr: Danfoss						
SZ147A4ALB	9.6	9.6	20.8	148	460V	UUT 2
Type: Pump, Vertical - Mfr: Grundfos - Material: Stainless Steel						
CR11-5	8.3	8.3	20.9	55	1/2HP, 230V/460V	EXTRAP
CR15-5	8.3	8.3	26.5	75	2HP, 230V/460V	UUT 1
CR115-3	10.1	9.8	34.7	163	5.4HP, 460V	INTERP
CR115-4	10.1	9.8	36.5	196	7.5HP, 460V	UUT 2
Type: Pump, Horizontal - Mfr: Grundfos - Material - Stainless Steel						
CM5-3	13.6	5.6	7.6	38	1.4HP, 230V/460V	EXTRAP
CM5-4	16.3	7.0	7.9	53	2.3HP, 230V/460V	UUT 2
CM5-5	18.7	7.0	7.9	68	3.4HP, 230V/460V	INTERP
CM10-2	19.3	7.8	8.3	69	3.4HP, 230V/460V	INTERP
CM10-3	20.0	7.8	8.7	84	5.4HP, 230V/460V	INTERP
CM15-2	20.0	7.8	8.7	83	5,4HP, 230V/460V	INTERP
CM15-3	22.0	9.0	9.7	108	8.1HP, 230V/460V	UUT 2

TABLE 2 - SUBCOMPONENTS continues on the next page.

**HASKRIS
OPC Process Chillers**

TABLE 2 - SUBCOMPONENTS (CONTINUED)

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
Type: Fan & Motor Assembly - Mfr: EBM						
W3G800-HK21-68A	38.2	38.2	13.7	113	460V, 800mm blade	UUT 2
Type: Fan & Motor Assembly - Mfr: Ziehl-Abegg						
FN050-ZIQ.DC.V7P2-230V	25.8	25.8	7.4	39	1.0kW, 500mm blade	UUT 2
FN050-ZIQ.DC.V7P2-460V	25.8	25.8	7.4	39	1.0kW, 500mm blade	INTERP
FN080-ZIQ.GL.V7P3-230V	38.2	38.2	9.7	113	3.1kW, 800mm blade	INTERP
FN080-ZIQ.GL.V7P3-460V	38.2	38.2	9.7	113	3.1kW, 800mm blade	UUT 1,2
Type: Water Tank - Mfr: Haskris - Material: Polyethylene						
SP0012-RT	14.0	18.0	15.4	109	12 gallon, empty weight = 9-lb	UUT 2
14609	18.0	18.0	19.9	227	25 gallon, empty weight = 19-lb	UUT 1
45192	23.0	23.0	41.5	568	65 gallon, empty weight = 26-lb	UUT 2
Type: Heat Exchanger, Brazed Plate - Mfr: SWEP						
B80x12	2.6	4.7	20.7	10	B80 w/12 plates	EXTRAP
B80x20	3.3	4.7	20.7	13	B80 w/20 plates	EXTRAP
B80x30	4.2	4.7	20.7	17	B80 w/30 plates	EXTRAP
B80x42	5.3	4.7	20.7	20	B80 w/40 plates	EXTRAP
B80x48	6.0	4.7	20.7	24	B80 w/48 plates	UUT 2
B80x60	6.9	4.7	20.7	27	B80 w/60 plates	INTERP
B80x66	7.4	4.7	20.7	30	B80 w/66 plates	UUT 1,2
Type: Condenser - Mfr: Sanhua						
HX-L125-99-HASxxx	1.0	31.5	31.4	21		UUT 1,2
Type: Condenser - Mfr: Luvata						
M254CR2101LB-029.60x029	1.0	31.5	31.4	21		UUT 2
Type: Refrigerant Receiver - Mfr: Refrigeration Research						
3390	5.0	5.0	20.0	12		UUT 1,2
Type: Refrigerant Accumulators - Mfr: Refrigeration Research						
HX3738	5.0	5.0	13.0	9		EXTRAP
HX3700	6.0	6.0	15.0	15		UUT 1,2
HX3706	6.0	6.0	20.3	21		UUT 2
Type: Electrical Box - Mfr: Ensto						
OPCP202013G	5.2	7.8	7.8	10	Weight includes internals	EXTRAP
OPCP204013G	5.2	15.8	7.8	20	Weight includes internals	EXTRAP
OPCP404013G	5.2	15.7	15.7	35	Weight includes internals	UUT 1,2
OPCP406013G	5.2	23.6	15.7	65	Weight includes internals	UUT 2

TABLE 2 - SUBCOMPONENTS continues on the next page.

**HASKRIS
OPC Process Chillers**

TABLE 2 - SUBCOMPONENTS (CONTINUED)

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
Type: Transformer, Control Circuit - Mfr: Micron						
B150PU7	4.0	3.8	3.8	6.0	150VA, 240/480 x 24	EXTRAP
B150-2014-GAF	4.0	4.5	4.0	8.5	150VA, 240/480 x 24	UUT 2
B200PU7	4.4	4.5	4.4	8.9	200VA, 240/480 x 24	INTERP
B250PU7	4.4	4.5	4.4	9.3	250VA, 240/480 x 24	INTERP
B150-2003-1F	5.0	3.8	3.8	9.5	150VA, 208/230/460 x 24/115	INTERP
B200-2004-1F	4.4	4.5	4.4	9.8	200VA, 208/230/460 x 24/115	INTERP
B150-2104-GAF	4.0	4.5	4.0	10.0	150VA, 208/230/460 x 24/115	INTERP
B200-2015-GAF	4.0	4.5	4.0	10.0	200VA, 240/480 x 24	INTERP
B200-2105-GAF	4.0	4.5	4.0	10.0	200VA, 208/230/460 x 24/115	INTERP
B250-2016-GAF	4.0	4.5	4.0	11.0	250VA, 240/480 x 24	INTERP
B250-2006-GAF	4.0	4.5	4.0	11.0	250VA, 208/230/460 x 24/115	INTERP
B300PU7	4.8	4.5	4.4	11.0	300VA, 240/480 x 24	INTERP
B250-2005-1F	4.8	4.5	4.4	11.3	250VA, 208/230/460 x 24/115	UUT 1
B250-2005-1F	4.8	4.5	4.4	11.3	250VA, 208/230/460 x 24/115	INTERP
B350PU7	4.8	4.5	4.4	11.6	350VA, 240/480 x 24	UUT 2
Type: Transformer, Control Circuit - Mfr: Hammond Power Solutions						
PH150QR	4.0	4.9	3.8	5.7	150VA, 240/480 x 12/24	EXTRAP
PH250QR	4.5	5.4	3.8	7.5	250VA, 240/480 x 12/24	EXTRAP
PH150MLI	4.0	5.4	3.8	7.6	150VA, 208/230/460 x 24/115	EXTRAP
PH250MLI	4.5	5.2	4.4	10.1	250VA, 208/230/460 x 24/115	EXTRAP
PH350QR	4.5	5.2	4.4	10.1	350VA, 240/480 x 12/24	UUT 2
PH350MLI	4.5	5.6	4.4	11.0	350VA, 208/230/460 x 24/115	UUT 2

End of TABLE 2 - SUBCOMPONENTS. Notes, information, and seismic parameters are shown at the beginning of the table.

ATTACHMENT 3: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 1

Manufacturer: Haskris
Model number: OPC15
Unit function: Process Chiller
Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
38.0	38.0	73.0	1,080	13.6	7.8	27.9

Code & criteria: 2025 CBC, ICC-ES AC156-24 (2nd Edition)

Test laboratory: Environmental Testing Laboratory

Report: 20049TR1.0 (dated 10-16-20), tested on 9-9-20

S _{DS} (g)	z / h	H _f / R _μ	Spectral Accelerations (g)	
2.00	1	3.5 / 1.3	A _{FLX-H} = 3.20	A _{RIG-H} = 2.15
2.50	0	1.0 / 1.0	A _{FLX-V} = 1.68	A _{RIG-V} = 0.68

Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Base mounted rigid using (4) 5/8in ASTM A574 socket head bolts. Underneath the bolt head, there is (1) standard Grade 8 round washer and (1) 1.375in x 0.17in thick square plate washer.

Construction: Carbon steel frame and panels.

Subcomponents: Copeland - Compressor, Scroll, ZB (ZB114KCE-TFD), Grundfos - Pump, Vertical (CRI5-5), Ziehl-Abegg - Fan & Motor Assembly (FN080-ZIQ.GL.V7P3-460V), Haskris - Water Tank (14609), SWEP - Heat Exchanger, Braze Plate (B80x66), Sanhua - Condenser (HX-L125-99-HASxxx), Refrigeration Research - Refrigerant Receiver (3390), Refrigeration Research - Refrigerant Accumulators (HX3700), Ensto - Electrical Box (OPCP404013G), Micron - Transformer, Control Circuit (B250-2005-1F).

Testing notes: The unit was anchored using internal 10GA welded tabs, specifically added for seismic applications. The external anchor holes were not used.



UUT 2a - Neoprene Pads

Manufacturer: Haskris
Model number: OPC60
Unit function: Process Chiller
Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
38.0	190.0	73.0	4,096	5.1	6.4	12.5

Code & criteria: 2025 CBC, ICC-ES AC156-24 (2nd Edition)

Test laboratory: Environmental Testing Laboratory

Report: 20049TR1.0 (dated 10-16-20), tested on 9-9-20

S _{DS} (g)	z / h	H _f / R _μ	Spectral Accelerations (g)	
2.00	1	3.5 / 1.3	A _{FLX-H} = 3.20	A _{RIG-H} = 2.15
2.50	0	1.0 / 1.0	A _{FLX-V} = 1.68	A _{RIG-V} = 0.68

Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Base mounted neoprene vibration isolated on (8) 4in x 8in and (4) 4in x 4in Mason Super WMH 40 durometer neoprene pads (3/4in pad thickness with 1/4in steel plate) using (20) 1/2in ASTM A574 socket head bolts. Underneath the bolt head, there is (1) standard Grade 8 round washer, (1) 1.375in x 0.17in thick square plate washer, and (1) Mason HG-50 grommet.

Construction: Carbon steel frame and panels.

Subcomponents: Copeland - Compressor, Scroll, ZR (ZR38K5E-TF5, ZR190KCE-TFD), Copeland - Compressor, Scroll, ZB (ZB45KCE-TFD), Danfoss - Compressor, Scroll (SZ147A4ALB), Grundfos - Pump, Vertical (CRI15-4), Grundfos - Material - Stainless Steel - Pump, Horizontal (CM5-4, CM15-3), EBM - Fan & Motor Assembly (W3G800-HK21-68A), Ziehl-Abegg - Fan & Motor Assembly (FN050-ZIQ.DC.V7P2-230V, FN080-ZIQ.GL.V7P3-460V), Haskris - Water Tank (SP0012-RT, 45192), SWEP - Heat Exchanger, Braze Plate (B80x48, B80x66), Sanhua - Condenser (HX-L125-99-HASxxx), Luvata - Condenser (M254CR2101LB-029.60x029), Refrigeration Research - Refrigerant Receiver (3390), Refrigeration Research - Refrigerant Accumulators (HX3700, HX3706), Ensto - Electrical Box (OPCP404013G, OPCP406013G), Micron - Transformer, Control Circuit (B150-2014-GAF, B350PU7), Hammond Power Solutions - Transformer, Control Circuit (PH350QR, PH350MLI).

Testing notes: The unit was anchored using internal 10GA welded tabs, specifically added for seismic applications. The external anchor holes were not used.



ATTACHMENT 3: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 2b - Spring Isolators

Manufacturer: Haskris
Model number: OPC60
Unit function: Process Chiller
Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
38.0	190.0	73.0	4,096	3.0	2.7	6.0

Code & criteria: 2025 CBC, ICC-ES AC156-24 (2nd Edition)

Test laboratory: Environmental Testing Laboratory

Report: 20049TR1.0 (dated 10-16-20), tested on 9-10-20

S_{DS} (g)	z / h	H_f / R_μ	Spectral Accelerations (g)	
2.00	1	3.5 / 1.3	$A_{FLX-H} = 3.20$	$A_{RIG-H} = 2.15$
2.50	0	1.0 / 1.0	$A_{FLX-V} = 1.68$	$A_{RIG-V} = 0.68$

Importance Factor, $I_p = 1.5$: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Base mounted spring vibration isolated. Unit is rigidly bolted to a structural steel frame (C6x8.2 perimeter with W6x8.5 cross members) using (20) 5/8in ASTM A574 socket head bolts. Underneath the bolt head, there is (1) standard Grade 8 washer and (1) 1.375in x 0.17in thick square plate washer. The steel frame is bolted to (4) Mason SLRSO-C2-610 and (4) Mason SLRSO-C2-880 spring isolators using (16) 5/8in Grade 8 bolts.

Construction: Carbon steel frame and panels.

Subcomponents: Copeland - Compressor, Scroll, ZR (ZR38K5E-TF5, ZR190KCE-TFD), Copeland - Compressor, Scroll, ZB (ZB45KCE-TFD), Danfoss - Compressor, Scroll (SZ147A4ALB), Grundfos - Pump, Vertical (CRI15-4), Grundfos - Material - Stainless Steel - Pump, Horizontal (CM5-4, CM15-3), EBM - Fan & Motor Assembly (W3G800-HK21-68A), Ziehl-Abegg - Fan & Motor Assembly (FN050-ZIQ.DC.V7P2-230V, FN080-ZIQ.GL.V7P3-460V), Haskris - Water Tank (SP0012-RT, 45192), SWEP - Heat Exchanger, Braze Plate (B80x48, B80x66), Sanhua - Condenser (HX-L125-99-HASxxx), Luvata - Condenser (M254CR2101LB-029.60x029), Refrigeration Research - Refrigerant Receiver (3390), Refrigeration Research - Refrigerant Accumulators (HX3700, HX3706), Ensto - Electrical Box (OPCP404013G, OPCP406013G), Micron - Transformer, Control Circuit (B150-2014-GAF, B350PU7), Hammond Power Solutions - Transformer, Control Circuit (PH350QR, PH350MLI).

Testing notes: Each module of the unit was anchored using internal 10GA welded tabs, specifically added for seismic applications. The external anchor holes were not used. Weight of base plus isolators is 568-lb (not included in unit weight above).

