



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP – 0580 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: Advanced Cooling Technologies, Inc.

Manufacturer's Technical Representative: Tim True

Mailing Address: 3127 Independence Drive, Livermore, CA 94551

Telephone: 925.918.0767

Email: tim.true@advancedcoolingtech.com

Product Information

Product Name: Airsys Medicoool Air-Cooled Chillers

Product Type: Air-Cooled Chiller

Product Model Number: See Attachment 1

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

General Description: Carbon steel air-cooled chillers. Seismic enhancements made to the test units shall be incorporated into the production units.

Mounting Description: Rigid floor mounted and isolated floor mounted on neoprene pads.

Applicant Information

Applicant Company Name: Manwill Engineering LLC

Contact Person: Derek Manwill, SE

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: 541.241.2102

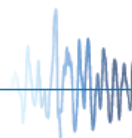
Email: derek@manwillSE.com

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: 10/15/2018

Title: President Company Name: Manwill Engineering LLC

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





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
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**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

Company Name: Manwill Engineering LLC

Name: Derek Manwill, SE

California License Number: S6266

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: 541.241.2102

Email: derek@manwillSE.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-0580-10

BY: Ali Sumer

DATE: 02/26/2019

**Testing Laboratory**

Company Name: Environmental Testing Laboratory

Contact Name: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas, TX 75229

Telephone: 972.247.9657

Email: jeremy@etldallas.com



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## Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components ( $F_p/W_p$ ) = Rigid:1.5, Iso.:3.6 ( $S_{DS} = 2.0g$ ); Rigid:1.13, Iso.:1.5 ( $S_{DS} = 2.5g$ )

$S_{DS}$  (Design spectral response acceleration at short period, g) = 2.0 ( $z/h = 1$ ); 2.5 ( $z/h = 0$ )

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

$R_p$  (Equipment or component response modification factor) = 6.0 (rigid); 2.5 (neoprene isolated)

$\Omega_0$  (System overstrength factor) = 2.0

$I_p$  (Importance factor) = 1.5

$z/h$  (Height factor ratio) = 1 ( $S_{DS} = 2.0g$ ); 0 ( $S_{DS} = 2.5g$ )

Equipment or Component Natural Frequencies (Hz) = See Attachment 2

Overall dimensions and weight (or range thereof) = See Attachments 1 & 2

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-0580-10

$\Omega_0$  (System overstrength factor) = \_\_\_\_\_

$C_d$  (Deflection amplification factor) = BY:Ali Sumer

$I_p$  (Importance factor) = 1.5

Height to Center of Gravity above base = DATE: 02/26/2019

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): Attachments 1 & 2

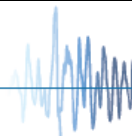
## OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature: [Signature] Date: February 22, 2019

Print Name: Ali Sumer Title: DSE

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

Condition of Approval (if applicable): \_\_\_\_\_



## ATTACHMENT 1: CERTIFIED COMPONENTS

## SEISMIC COMPLIANCE REPORT

### TABLE 1 - RIGID

DOCUMENT NO.: 18042CR1.0

MANUFACTURER:    ADVANCED COOLING TECHNOLOGIES, INC.							
PRODUCT FAMILY:   AIRSYS MEDICOOL CHILLERS							
MODEL NUMBER		DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
		DEPTH	WIDTH	HEIGHT			
Airsys Medicoool Air-Cooled Chillers							
MEDICOOL/CH10E1P4R407.M.GEH		55.5	25.2	65.0	640	10kW	UUT 1
MOUNTING:	Rigid floor mounted.				SEISMIC LEVELS:	S <sub>DS</sub> = 2.0g for z/h = 1 S <sub>DS</sub> = 2.5g for z/h = 0  I <sub>p</sub> = 1.5	
NOTES:	Product Construction: Carbon steel construction. 480V, 3ph, 60Hz. Options/Subcomponents: Model number uniquely identifies subcomponents, materials, construction, and configuration. There are no options or variations.						

### TABLE 2 - ISOLATED

MANUFACTURER:    ADVANCED COOLING TECHNOLOGIES, INC.						
PRODUCT FAMILY:    AIRSYS MEDICOOL CHILLERS						
MODEL NUMBER	DIMENSIONS (in)			MAX. WT. (lb)	DESCRIPTION / NOTES	BASIS
	DEPTH	WIDTH	HEIGHT			
Airsys Medicoool Air-Cooled Chillers						
MEDICOOL/CH55E4P4R410A.M	79.9	55.1	78.3	2130	55kW	UUT 2
MEDICOOL/CH70E4P4R410.M	111.4	40.9	75.2	2920	70kW	UUT 3
MOUNTING:	Isolated floor mounted on neoprene pads.			SEISMIC	S <sub>DS</sub> = 2.0g for z/h = 1 S <sub>DS</sub> = 2.5g for z/h = 0	I <sub>p</sub> = 1.5
				LEVELS:		
NOTES:	Product Construction: Carbon steel construction. 480V, 3ph, 60Hz. Options/Subcomponents: Model number uniquely identifies subcomponents, materials, construction, and configuration. There are no options or variations.					

## ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

## SEISMIC COMPLIANCE REPORT

### UUT 1 - 10kW

DOCUMENT NO.: 18042CR1.0

<b>MANUFACTURER:</b>	ADVANCED COOLING TECHNOLOGIES, INC.
<b>MODEL NUMBER:</b>	MEDICOOL/CH10E1P4R407.M.GEH
<b>UNIT FUNCTION:</b>	CHILLER
<b>SERIAL NUMBER:</b>	F30218040069

DIMENSIONS (in)			WEIGHT (lb)	RES. FREQ. (Hz)		
DEPTH	WIDTH	HEIGHT		F-B	S-S	V
55.5	25.2	65.0	640	10.0	8.9	>33

BUILDING CODE	TEST CRITERIA	LAB REPORT NO.
2016 CBC	ICC-ES AC156	ETL 18042TR1

S <sub>DS</sub> (g)	z/h	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
2.0	1	3.20	2.40	1.68	0.68
2.5	0				

#### IMPORTANCE FACTOR, I<sub>p</sub> = 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.

<b>MOUNTING:</b>	Rigid floor mounted using (6) 5/16" Grade 8 bolts with clipped washers.
<b>CONSTRUCTION:</b>	Carbon steel construction.
<b>SUBCOMPONENTS:</b>	Subcomponents are uniquely identified by the model number.
<b>TESTING NOTES:</b>	N/A



### UUT 2 - 55kW

<b>MANUFACTURER:</b>	ADVANCED COOLING TECHNOLOGIES, INC.
<b>MODEL NUMBER:</b>	MEDICOOL/CH55E4P4R410A.M
<b>UNIT FUNCTION:</b>	CHILLER
<b>SERIAL NUMBER:</b>	F30217050116

DIMENSIONS (in)			WEIGHT (lb)	RES. FREQ. (Hz)		
DEPTH	WIDTH	HEIGHT		F-B	S-S	V
79.9	55.1	78.3	2130	6.2	8.5	16.9

BUILDING CODE	TEST CRITERIA	LAB REPORT NO.
2016 CBC	ICC-ES AC156	ETL 18042TR1

S <sub>DS</sub> (g)	z/h	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
2.0	1	3.20	2.40	1.68	0.68
2.5	0				

#### IMPORTANCE FACTOR, I<sub>p</sub> = 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.

<b>MOUNTING:</b>	Isolated floor mounted on (6) 4"x4"x0.75" neoprene pads using (6) 5/8" Grade 8 bolts.
<b>CONSTRUCTION:</b>	Carbon steel construction.
<b>SUBCOMPONENTS:</b>	Subcomponents are uniquely identified by the model number.
<b>TESTING NOTES:</b>	#14x1.5" Buildex Tek screws were added to secure the panels. Nothing was done to the back mesh panels. The two full height front panels each received (7) screws: (3) along each side (1in from top, middle, 3in from bottom; all 0.75in from the side) and (1) in the middle top (1in from top). The two side panels each received (10) screws: (3) along each side (1in from top, middle, 3in from bottom; all 0.75in from the side) and (2) in the top and bottom (1in from top/bottom at third points). The electrical enclosure door received (2) screws: top right and bottom right corners (1in from top/bottom, 0.75in from side). The panel below the electrical enclosure door received (4) screws: each corner (1in from top/bottom, 0.75in from side).





## ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

## SEISMIC COMPLIANCE REPORT

### UUT 3 - 70kW

DOCUMENT NO.: 18042CR1.0

<b>MANUFACTURER:</b>	ADVANCED COOLING TECHNOLOGIES, INC.
<b>MODEL NUMBER:</b>	MEDICOOL/CH70E4P4R410.M
<b>UNIT FUNCTION:</b>	CHILLER
<b>SERIAL NUMBER:</b>	F30218040098

DIMENSIONS (in)			WEIGHT (lb)	RES. FREQ. (Hz)		
DEPTH	WIDTH	HEIGHT		F-B	S-S	V
111.4	40.9	75.2	2920	7.4	8.9	22.9

<b>BUILDING CODE</b>	<b>TEST CRITERIA</b>	<b>LAB REPORT NO.</b>
2016 CBC	ICC-ES AC156	ETL 18042TR1

<b>S<sub>DS</sub> (g)</b>	<b>z/h</b>	<b>A<sub>FLX-H</sub> (g)</b>	<b>A<sub>RIG-H</sub> (g)</b>	<b>A<sub>FLX-V</sub> (g)</b>	<b>A<sub>RIG-V</sub> (g)</b>
2.0	1	3.20	2.40	1.68	0.68
2.5	0				

#### IMPORTANCE FACTOR, I<sub>p</sub> = 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.



<b>MOUNTING:</b>	Isolated floor mounted on (6) 4"x4"x0.75" neoprene pads using (6) 5/8" Grade 8 bolts.
<b>CONSTRUCTION:</b>	Carbon steel construction.
<b>SUBCOMPONENTS:</b>	Subcomponents are uniquely identified by the model number.
<b>TESTING NOTES:</b>	#14x1.5" Buildex Teks screws were added to secure the panels. Nothing was done to the back mesh panels. The two side panels and the three full height front panels each received (7) screws: (3) along each side (1in from top, middle, 3in from bottom; all 0.75in from the side) and (1) in the middle top (1in from top). The electrical enclosure door received (2) screws: top right and bottom right corners (1in from top/bottom, 0.75in from side). The panel below the electrical enclosure door received (4) screws: each corner (1in from top/bottom, 0.75in from side).

DATE: 02/26/2019