APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0152

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: IEA, LLC, an Engendren Corporation Subsidiary

Manufacturer's Technical Representative: Rob Walsh

Mailing Address: 9625 55th Street, Kenosha, WI 53144

Telephone: (262) 842-1414 Email: RWalsh@iearad.com

Product Information

Product Name: Emergency and Standby Power Systems

Product Type: Remote Radiators

Product Model Number: RCC10001S-AFC, RCC1002S-AFC, RCC1502S-AFC

General Description: RCCs are stand-alone air cooling units used to cool hot turbocharger air prior to being introduced to the engine's combustion process. An RCC is used when the radiator cannot be mounted near the engine.

Mounting Description: Custom Frame, Floor Mounted

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: Dynamic Certification Laboratories, LLC

Contact Person: Kelly Laplace

Mailing Address: 1315 Greg Street, Sparks, NV 89431

Telephone: (775) 358-5085 Email: kelly@shaketest.com

Title: Business Manager

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

Company Name: THE VMC GROUP

Name: Kenneth Tarlow California License Number: S2851

Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814

Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

Certification Method

☐ GR-63-Core ☒ ICC-ES AC156 ☐ IEEE 344 ☐ IEEE 693 ☐ NEBS 3

☐ Other (Please Specify):

Testing Laboratory

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)

Contact Person: Kelly Laplace

Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431

Telephone: (775) 358-5085 Email: kelly@shaketest.com

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.7

S_{DS} (Design spectral response acceleration at short period, g) = 2.26

a_p (Amplification factor) = 2.5

R_p (Response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 02/04/2028

Date: 2/4/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: S_{DS} (g) = 2.26 z/h = 1

Condition of Approval (if applicable):

Table 1 - Special Seismic Certification
Certified Component Matrix

DCL Project No.: 77276-2101

Manufacturer: IEA
Product Line: RCC
Product Construction: Steel structure with inlet and outlet pipes
Test Level: Sds = 2.26g, z/h = 1.0

Model	Dimensions (in)			Approx. Weight (lb)	Manufacturer	Frame Construction	Sds (g), z/h=1.0	UUT
	Length	Width	Height					
RCC1001-AFC[1]	30.5	26	64.9	350	IEA	Carbon steel	2.26	Extrapolated
RCC1002S-AFC	78	22	50.7	690	IEA			UUT-01
RCC1502S-AFC	66.4	36	81	1,100	IEA			UUT-02

1. RCC1001-AFC uses the same radiators as UUT-01 and the frame is of similar construction of UUT-02

Table 2 - Special Seismic Certification
Certified Subcomponent Matrix - Frame

DCL Project No.: 77276-2101

Product Line: RCC
Test Level: Sds = 2.26g, z/h = 1.0

Frame							
Model	**Dimensions (in)**			**Approx. Weight (lb)**	**Manufacturer**	**Construction Material**	**UUT**
	Length	**Width**	**Height**				
Frame Assy RCC10 X2 1000KW	78.00	16.66	41.38	256	IEA	Carbon steel	UUT-01
Frame Assy RCC15 X2 2000KW	66.38	36.00	71.13	383			UUT-02

Table 3 - Special Seismic Certification
Certified Subcomponent Matrix - Housing

DCL Project No.: 77276-2101

Product Line: RCC
Test Level: Sds = 2.26g, z/h = 1.0

Housing							
Model	**Dimensions**			**Approx. Weight (lb)**	**Manufacturer**	**Construction Material**	**UUT**
	Length	**Width**	**Height**				
Housing RCC1001S	15.75	17.32	39.26	121	Professional Fabricators	Stainless Steel	UUT-01
Housing Welded SS RCC15	18.88	20.32	44.00	205			UUT-02

Table 4 - Special Seismic Certification
Certified Subcomponent Matrix - Core

DCL Project No.: 77276-2101

Product Line: RCC
Test Level: Sds = 2.26g, z/h = 1.0

Core							
Model	Dimensions			Approx. Weight (lb)	Manufacturer	Construction Material	UUT
	Length	Width	Height				
Cool Sect RCC10 SX3 500 KW	15.75	14.75	22.13	48	IEA	Aluminum	UUT-01
Cool Sect RCC SX4 1.5	18.88	17.52	25.13	89			UUT-02

Table 5 - Special Seismic Certification
Tested Units

DCL Project No.: 77276-2101

Manufacturer: IEA
Product Line: RCC
Product Construction: Steel structure with inlet and outlet pipes
Test Level: Sds = 2.26g, z/h = 1.0

Model	Dimensions			Approx. Weight (lb)	Manufacturer	Construction Material	UUT
	Length	Width	Height				
RCC1002S-AFC	78.00	22.00	50.70	690	IEA	Carbon steel	UUT-01
RCC1502S-AFC	66.40	36.00	81.00	1100			UUT-02

UUT-01
UNIT UNDER TEST (UUT)
Summary Sheet

DCL Project Number: 77276-2101

Manufacturer: IEA, LLC

Product Line: RCC

Model Number: RCC1002S-AFC

Product Construction Summary:
Steel structure with inlet and outlet pipes

Options / Component Summary:
Carbon steel frame, stainless steel housing, and aluminum core

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
690	78.0	22.0	50.7	9.8	9.5	>33

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2019	ICC-ES AC156	2.26	1.0	1.5	3.62	2.71	1.51	0.60

Unit Mounting Description: Each radiator was mounted to the manufacturer-provided steel frame with twelve 3/8-inch Grade 8 bolts. The frame was mounted to the shake table using eight 1/2-inch Grade 8 bolts.

Overall view of UUT-01

UUT-02
UNIT UNDER TEST (UUT)
Summary Sheet

DCL Project Number: 77276-2101

Manufacturer: IEA, LLC

Product Line: RCC

Model Number: RCC1502S-AFC

Product Construction Summary:
Steel structure with inlet and outlet pipes

Options / Component Summary:
Carbon steel frame, stainless steel housing, and aluminum core

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1,100	66.4	36.0	81.0	8.2	4.7	27.4

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2019	ICC-ES AC156	2.26	1.0	1.5	3.62	2.71	1.51	0.60

Unit Mounting Description: Each radiator was mounted to the manufacturer-provided steel frame with twelve 3/8-inch Grade 8 bolts. The frame was mounted to the shake table using six 5/8-inch Grade 8 bolts.

Overall view of UUT-02