



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR OSHPD SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY	
APPLICATION #:	OSP - 0434

**OSHPD Special Seismic Certification Preapproval (OSP)**

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: Staco Energy Products Co.

Manufacturer's Technical Representative: Steve Smith

Mailing Address: 2425 Technical Drive, Dayton, Ohio 44342

Telephone: (937) 253-1191 Email: [smiths@stacoenergy.com](mailto:smiths@stacoenergy.com)

**Product Information**

Product Name: FirstLine P

Product Type: Uninterruptible Power Supply **OSP-0434**

Product Model Number: See Certified Product Listing Tables, attached.

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

General Description: Uninterruptible power supplies containing fans, power and bypass modules, inductors, switches, transformers, fuse & fuse holders, terminal blocks, capacitors, contactors, and bus bars. Seismic enhancements made to the test units required to address the anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Rigid Base Mount

**Applicant Information**

Applicant Company Name: VMC Group

Contact Person: John P. Giuliano, PE

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

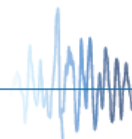
Telephone: 973-838-1780 Email: [john.giuliano@thvmcgroup.com](mailto:john.giuliano@thvmcgroup.com)

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: 10/9/19

Title: President Company Name: VMC Group

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





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

Company Name: VMC Group

Name: Mr. Ken Tarlow California License Number: SE2851

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

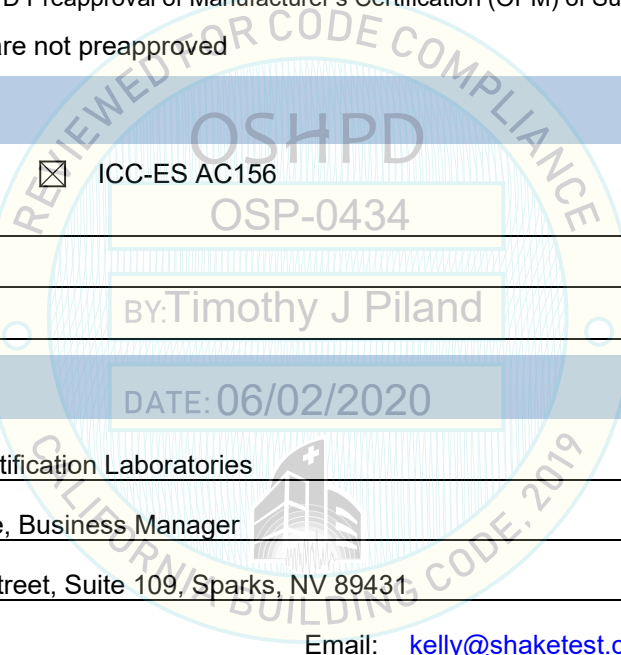
Telephone: 973-838-1780 Email: [ken.tarlow@thevmcgroup.com](mailto:ken.tarlow@thevmcgroup.com)

**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): \_\_\_\_\_



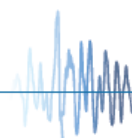
**Testing Laboratory**

Company Name: Dynamic Certification Laboratories

Contact Name: Kelly Laplace, Business Manager

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 89431

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





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**Seismic Parameters**

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

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.125 ( $S_{DS} = 2.50, z/h = 0$ ); 1.44 ( $S_{DS} = 2.00, z/h = 1$ )

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

$a_p$  (In-structure equipment or component amplification factor) = 1.0

$R_p$  (Equipment or component response modification factor) = 2.5

$\Omega_0$  (System overstrength factor) = 2.0

$I_p$  (Importance factor) = 1.5

$z/h$  (Height factor ratio) = 0 ( $S_{DS} = 2.50$ ); 1 ( $S_{DS} = 2.00$ )

Equipment or Component Natural Frequencies (Hz) = See Attachments

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

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) = \_\_\_\_\_

$\Omega_0$  (System overstrength factor) = by Timothy J Piland

$C_d$  (Deflection amplification factor) = \_\_\_\_\_

$I_p$  (Importance factor) = 1.5

Height to Center of Gravity above base = \_\_\_\_\_

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): \_\_\_\_\_

**OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2025**

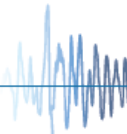
Signature:  Date: June 2, 2020

Print Name: Timothy J Piland Title: SSE

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

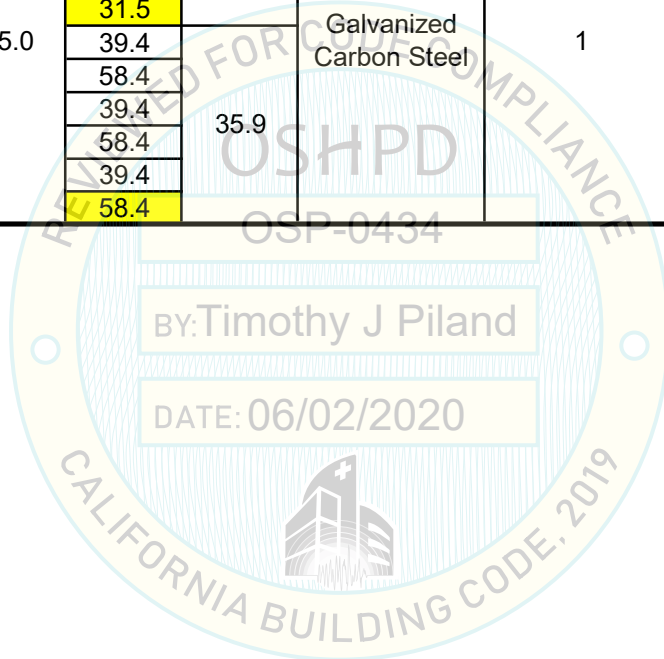
Condition of Approval (if applicable): \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



**Table 1 - Certified Uninterruptable Power Supplies Matrix**

Model Number	Rating (kVA)	Input Voltage	Current [ A ]	Max. Enclosure Dimensions [ in ]			Enclosure Material	Enclosure NEMA Rating	Maximum Weight [ lbs ]	Manufacturer	UUT
				Height	Width	Depth					
FLU-065-00-S	65	480V	125	75.0	31.5	33.5	Galvanized Carbon Steel	1	Staco Energy	Extrapolated	
FLU-080-00-S	80		150								
FLU-100-00-S	100		175								
FLU-125-00-S	125		200								
FLU-125-00-S	125		200								31.5
FLU-160-00-S	160		300	39.4	35.9	Interpolated					
FLU-160-T-S	160		300	58.4							
FLU-200-00-S	200		350	39.4							
FLU-200-T-S	200		350	58.4							
FLU-250-00-S	250		400	39.4							
FLU-250-T-S	250		400	58.4							
FLU-250-T-S	250		400	58.4						2,700	UUT-02



**Table 2 - Certified Subcomponents: Fans & Motor Assemblies**

Model	Rating	Weight [ lbs ]	Manufacturer	UUT
W2S130-AA03-01	223CFM / 380m <sup>3</sup> /h	2.4	Ebm-Papst	UUT-01
W2E200-HK38-01	544CFM / 925m <sup>3</sup> /h	4.6		UUT-01 / 02

**Table 3 - Certified Subcomponents: Power Modules**

Model	Rating	Weight [ lbs ]	Manufacturer	UUT
SEMIX 223GB12E4	1200V 200A	0.7	SEMIKRON	Extrapolated
SEMIX 303GB12E4	1200V 300A	0.7		UUT-01
SEMIX 453GB12E4	1200V 450A	0.7		UUT-02
CM200DX-24S	1200V 200A	0.8	MITSUBISHI	Extrapolated
CM300DX-24S	1200V 300A	0.8		UUT-01
CM450DX-24S	1200V 450A	0.8		UUT-02

**Table 4 - Certified Subcomponents: Bypass Modules**

Model	Rating	Weight [ lbs ]	Manufacturer	UUT
SKKT 162/16E	SCR 1200V 160A	0.4	SEMIKRON	UUT-01
SKKT273/16E	SCR 1400V 250A	0.9		UUT-02

**Table 5 - Certified Subcomponents: Inductors**

Model	Rating	Weight [ lbs ]	Manufacturer	UUT
C7387	185uH - 110A	29.0	ELETTRMIL	Extrapolated
C7391	0,15mH - 145A	30.9		UUT-01
C7043	0,125mH - 170A	30.9		Interpolated
C8321/0	0,095mH - 215A	37.5		UUT-02
C8328/0	0,075mH - 270A	41.9		Interpolated
C7849	0,06mH - 335A	61.7		UUT-01
C7386	1.125mH - 110A	62.0		Interpolated
C7390	0,72mH - 240 DC	70.6		UUT-01
C7042	0,6mH - 295A DC	79.4		Interpolated
C8323/0	0,47mH - 380A DC	94.8		UUT-02
C7385	900uH -190A DC	104.0		Interpolated
C8324/0	0,375mH - 475A DC	110.3		UUT-01
C8065/0	0,3mH - 590A DC	110.3		Interpolated
C7389	0,90mH - 145A	114.7		UUT-02
C7041	0,75mH - 170A	127.9		Interpolated
C8327/0	0,55mH - 215A	154.4		UUT-01
C8322/0	0,45mH - 270A	172.0		Interpolated
C7850	0,34mH - 335A	198.5		UUT-02

**Table 6 - Certified Subcomponents: Switches**

Model	Rating	Weight (lbs.)	Manufacturer	UUT
OT160E3	125A 600V	2.2	ABB	Extrapolated
OT200U03P	200A 600V	4.0		UUT-01
OT400U03P	400A 600V	7.5		UUT-02

**Table 7 - Certified Subcomponents: Transformers**

Model	Rating	Weight [ lbs ]	Material	Manufacturer	UUT
C7384	80kVA	629.0	Aluminum	ELETTROMIL	Extrapolated
C7388	100kVA	694.6			UUT-01
C7040	125kVA	771.8			Interpolated
C8325/0	160kVA	771.8			UUT-02
C8326/0	200kVA	860.0			
C7848	250kVA	1,014.3			
95945403	TRASF 100VA230-400/400V 50-60	4.4	Copper	P.M.A.	UUT-01 / 02
95945402	TRASF 100VA 230-480/400 50-60	4.4			UUT-01 / 02
95980010	AUTOT.3F+N 440-480/400V 1k2VA	8.8			UUT-01 / 02

**Table 8 - Certified Subcomponents: Current Transformers**

Model	Rating	Weight [ lbs ]	Manufacturer	UUT
HAS 200-S	SENSOR CORR OPEN LOOP 200A	< 0.2	LEM	Extrapolated
HAS 300-S	SENSOR CORR OPEN LOOP 300A	< 0.2		UUT-01
HAS 500-S	SENSOR CORR OPEN LOOP 500A	< 0.2		UUT-02
151085	TA 200/0.2A	0.8	SIRIO	UUT-01
150461	TA 400/0.2A	0.8		UUT-01 / 02

**Table 9 - Certified Subcomponents: Fuse Holders**

Model	Rating	Weight [ lbs ]	Manufacturer	UUT
B305050	690V - 32A	< 0.2	FERRAZ	UUT-01 / 02
USCC1	600V - 30A	< 0.2		UUT-02
002541000	690V - 32A	< 0.2	ETI	UUT-01 / 02

**Table 10 - Certified Subcomponents: Terminal Blocks**

Model	Rating	Weight (lbs.)	Manufacturer	UUT
BP100	20 A	< 0.2	CABUR	UUT-01 / 02

**Table 11 - Certified Subcomponents: Capacitors**

Model	Material	Weight [ lbs ]	Manufacturer	UUT
416.84.4180	Polyurethane Resin / PPM Film	0.9	DUCATI	Extrapolated
416.84.4310		1.2		UUT-01
416.84.4521		2.0		UUT-02
416.84.3631		2.0		Interpolated
416.84.3691		2.0		
416.84.3751		2.4		UUT-01 / 02
APUX472X450DJ1	Aluminium Electrolytic	2.5	ITELCOND	Extrapolated
APUX682X450DJ1		2.5		UUT-01
APUX103X450DJ1		2.5		UUT-02

**Table 12 - Certified Subcomponents: Contactors**

Model	Rating	Weight [ lbs ]	Manufacturer	UUT
3RT1015-1BB41	15A-24Vdc	0.6	SIEMENS	UUT-01 / 02
3RT1054-6AP36	160A-220V	7.0		Interpolated
3RT1055-6AP36	185A-220V	7.1		UUT-01
3RT1064-6AP36	275A-220V	13.7		Interpolated
3RT1065-6AP36	330A-220V	14.0		
3RT1466-6AP36	400A-220V	14.0		UUT-02

**Table 13 - Certified Subcomponents: Fuses**

Model	Rating	Weight [ lbs ]	Manufacturer	UUT	
KTK-R-4/10	400mA CC 600Vac 10x38	< 0.2	BUSSMANN	UUT-02	
170M1318*	125A aR 700Vdc 200kA	0.3		Interpolated	
170M1368**		0.3		Interpolated	
170M1319*	160A aR 700Vdc 200kA	0.3		Interpolated	
170M1369**		0.3		Interpolated	
170M1320*	200A aR 700Vdc 200kA	0.3		UUT-01 / 02	
170M1370**		0.3		UUT-01 / 02	
170M1321	250A aR 690Vac 200kA	0.3		Interpolated	
170M1321*	250A aR 700Vdc 200kA	0.3		Interpolated	
170M1371**		0.3		Interpolated	
170M1322	315A aR 690Vac 200kA	0.3		UUT-02	
170M1322*	315A aR 700Vdc 200kA	0.3		UUT-01	
170M1372**		0.3		UUT-01	
170M2620**	350A aR 690Vac 200kA	0.3		UUT-02	
170M2670***		0.3		UUT-02	
002625102	4A gR 900Vdc 10x38	< 0.2		ETI	UUT-01 / 02

**Table 13 - Certified Subcomponents: Fuses Continued**

Model	Rating	Weight [ lbs ]	Manufacturer	UUT
ATQR-4/10	400mA CC 600Vac 10x38	< 0.2	FERRAZ	UUT-02
Q1014567	2A gR 690v 10x38	< 0.2		UUT-02
W1014572	4A gR 690V 10x38	< 0.2		UUT-01 / 02
DCT4-2	4A gR 900Vdc 10x38	< 0.2		UUT-01 / 02
M330038	125A aR 690V 200kA	0.3		Interpolated
N330039	160A aR 690V 200kA	0.3		Interpolated
P330040	200A aR 690V 200kA	0.3		UUT-01
Q330041	250A aR 690Vac 200kA	0.3		Interpolated
R330042	315A aR 690Vac 200kA	0.3		UUT-02
50 179 06.2	2A gR 690v 10x38	< 0.2	SIBA	UUT-02
50 179 06.4	4A gR 690V 10x38	< 0.2		UUT-01 / 02
50 215 26.4	4A gR 900Vdc 10x38	< 0.2		UUT-01 / 02
20 292 21.125*	125A aR 700Vdc 200kA	0.3		Interpolated
20 292 20.125**		0.3		Interpolated
20 292 21.160*	160A aR 700Vdc 200kA	0.3		Interpolated
20 292 20.160**		0.3		Interpolated
20 292 21.200*	200A aR 700Vdc 200kA	0.3		UUT-01 / 02
20 292 20.200**		0.3		UUT-01 / 02
20 292 21.250*	250A aR 700Vdc 200kA	0.3		Interpolated
20 292 20.250**		0.3		Interpolated
20 292 21.315*	315A aR 700Vdc 200kA	0.3		UUT-01
20 292 20.315**		0.3		UUT-01
20 189 21.350*	350A aR 690Vac 200kA	0.3		UUT-02
20 189 20.350**		0.3		UUT-02

**Notes**

1. \* - No Indicator
2. \*\* - With Visual Indicator
3. \*\*\* - Type T Indicator (microswitch)

**Table 14 - Certified Subcomponents: Bus Bars**

Riello Part Number	Description	Material	Manufacturer	UUT
0SBAA0028A	BARRA CU ALT-1 MOD.INV MPS HP	Copper	Riello	UUT-01 / 02
0SBAA0031A	BARRA CU N-COND.INV MPS HP			UUT-01 / 02
0SBAA0096A	BARRA CU COMM ALT-1 MPS HP120			UUT-01
0SBAA0097A	BARRA CU COMM ALT-2 MPS HP120			UUT-01
0ULSBAA0001A	BARRA CU TERRA			UUT-01
0ULSBAA0002A	BARRA CU INPUT 1 FASE A			UUT-01
0ULSBAA0003A	BARRA CU INPUT 1 FASE B			UUT-01
0ULSBAA0004A	BARRA CU INPUT 1 FASE C			UUT-01
0ULSBAA0005A	BARRA CU INPUT FASE N			UUT-01
0ULSBAA0006A	BARRA CU OUTPUT FASE N			UUT-01
0ULSBAA0007A	BARRA CU INPUT 2 FASE C			UUT-01
0ULSBAA0008A	BARRA CU INPUT 2 FASE B			UUT-01
0ULSBAA0009A	BARRA CU INPUT 2 FASE A			UUT-01
0ULSBAA0010A	BARRA CU IN/OUT			UUT-01
0ULSBAA0011A	BARRA CU SHUNT N > TERRA			UUT-01



**Table 14 - Certified Subcomponents: Bus Bars (Continued)**

Riello Part Number	Description	Material	Manufacturer	UUT
0ULSBAA0012A	BARRA CU +/- BATTERIA	Copper	Riello	UUT-01
0ULSBAA0013A	BARRA CU COLL TL OUT			UUT-01
0ULSBAA0014A	BARRA CU NEUTRO			UUT-01
0ULSBAA0015A	BARRA CU INPUT 1-2 FASE A			UUT-01
0ULSBAA0016A	BARRA CU COLL TL IN			UUT-01
0ULSBAA0017A	BARRA CU INPUT 1-3 FASE B			UUT-01
0ULSBAA0018A	BARRA CU SUPP LEM			UUT-01
0ULSBAA0019A	Barra Cu Neg Input Fusibile			UUT-01
0ULSBAA0020A	BARRA CU NEG OUTPUT FUSIBILE			UUT-01
0ULSBAA0021A	BARRA CU NEG MOD INV/RD			UUT-01 / 02
0ULSBAA0022A	BARRA CU POS MOD INV/RD			UUT-01 / 02
0ULSBAA0024A	BARRA CU NEG COND INV/RAD			UUT-01 / 02
0ULSBAA0025A	BARRA CU POS COND INV/RD			UUT-01 / 02
0ULSBAA0026A	BARRA CU INPUT 1-2 FASE B			UUT-01
0ULSBAA0027A	BARRA CU INPUT 1-3 FASE C			UUT-01
0ULSBAA0028A	BARRA CU INPUT 1-2 FASE C			UUT-01
0ULSBAA0029A	BARRA CU OUTPUT 1 FASE A			UUT-01
0ULSBAA0030A	BARRA CU OUTPUT 2 FASE A			UUT-01
0ULSBAA0031A	BARRA CU OUTPUT 3 FASE A			UUT-01
0ULSBAA0032A	BARRA CU OUTPUT 1 FASE B			UUT-01
0ULSBAA0033A	BARRA CU OUTPUT 2 FASE B			UUT-01
0ULSBAA0034A	BARRA CU OUTPUT 3 FASE B			UUT-01
0ULSBAA0035A	BARRA CU OUTPUT 1 FASE C			UUT-01
0ULSBAA0036A	BARRA CU OUTPUT 2 FASE C			UUT-01
0ULSBAA0037A	BARRA CU OUTPUT 3 FASE C			UUT-01
0ULSBAA0038A	BARRA CU COM MODULI			UUT-01
0ULSBAA0039A	BARRA CU COMM ALT HIP 125 UL			UUT-01
0ULSBAA0040A	BARRA CU NEG TY1 MOD INV			UUT-01
0ULSBAA0041B	BARRA CU POS MOD INV			UUT-01
0ULSBAA0042A	BARRA CU NEG TY2 MOD INV			UUT-01
0ULSBAA0043A	BARRA CU DA SW A COM STAT			UUT-01
0ULSBAA0044A	BARRA CU ALT-2 MOD RD-INV HIP			UUT-01
0ULSBAA0045A	BARRA CU ALT-1 MOD RD-INV HIP			UUT-01
0ULSBAA0046A	BARRA CU GND SK FILTRO			UUT-01
0ULSBAA0047A	BARRA CU NEG MOD RD/BATT			UUT-01
0ULSBAA0048B	BARRA CU POS MOD RD/BATT			UUT-01
0ULSBAA0049A	BARRA CU COLL MODULI			UUT-01
0ULSBAA0050A	BARRA CU OUT FUSE FASE A			UUT-01
0ULSBAA0051A	BARRA CU OUT FUSE FASE B			UUT-01
0ULSBAA0052A	BARRA CU OUT FUSE FASE C			UUT-01
0ULSBAA0053A	BARRA CU FASE A			Interpolated
0ULSBAA0054A	BARRA CU FASE B			
0ULSBAA0055A	BARRA CU FASE C			
0ULSBAA0056A	BARRA CU BYPASS FASE A			
0ULSBAA0057A	BARRA CU BYPASS IN FASE B			
0ULSBAA0058A	BARRA CU BYPASS IN FASE C			
0ULSBAA0059A	BARRA CU BYPASS OUT FASE B			
0ULSBAA0060A	BARRA CU BYPASS OUT FASE C			

**Table 14 - Certified Subcomponents: Bus Bars (Continued)**

Riello Part Number	Description	Material	Manufacturer	UUT	
0ULSBAA0061A	BARRA CU NEUTRO IN/OUT	Copper	Riello	Interpolated	
0ULSBAA0062A	BARRA CU BOND N_TERRA				
0ULSBAA0063A	BARRA CU COMM INPUT				
0ULSBAA0064A	BARRA CU +/- BATTERIA 80				
0ULSBAA0065A	BARRA CU ALT-3 MOD INV MHT			UUT-02	
0ULSBAA0066A	BARRA CU MOD COM ST-1 MHT			UUT-02	
0ULSBAA0067A	BARRA CU MOD COM ST-2 MHT			UUT-02	
0ULSBAA0068A	BARRA CU MOD COM ST-3 MHT			UUT-02	
0ULSBAA0069A	BARRA CU MOD COM ST-4 MHT			UUT-02	
0ULSBAA0070A	BARRA CU MOD COM ST-5 MHT			UUT-02	
0ULSBAA0071A	BARRA CU MOD COM ST-6 MHT			UUT-02	
0ULSBAA0072A	BARRA CU MOD COM ST-7 MHT			UUT-02	
0ULSBAA0073A	BARRA CU NEG MOD INV SX			UUT-02	
0ULSBAA0074A	BARRA CU POS MOD INV SX			UUT-02	
0ULSBAA0075A	BARRA CU POS MOD INV DX			UUT-02	
0ULSBAA0076A	BARRA CU NEG MOD INV DX			UUT-02	
0ULSBAA0077A	BARRA CU COM INV			UUT-02	
0ULSBAA0078A	BARRA CU NEUTRO IN SK FILTRO			UUT-02	
0ULSBAA0079A	BARRA CU NEUTRO INPUT			UUT-02	
0ULSBAA0080A	BARRA CU BOND N - TERRA			Interpolated	
0ULSBAA0081A	BARRA CU TERRA MHT UL				
0ULSBAA0082A	BARRA CU POS BATT				UUT-02
0ULSBAA0083A	BARRA CU NEG BATT				UUT-02
0ULSBAA0084A	BARRA CU SWIN-SWOUT FASE A			UUT-02	
0ULSBAA0085A	BARRA CU SWIN-SWOUT FASE B			UUT-02	
0ULSBAA0086A	BARRA CU SWIN-SWOUT FASE C			UUT-02	
0ULSBAA0087A	BARRA CU COLL TL IN FASE A			UUT-02	
0ULSBAA0088A	BARRA CU COLL TL IN FASE B			UUT-02	
0ULSBAA0089A	BARRA CU COLL TL IN FASE C			UUT-02	
0ULSBAA0090A	BARRA CU TERRA SK FILTRO			UUT-02	
0ULSBAA0091A	BARRA CU NEUTRO OUT SK FILTRO			UUT-02	
0ULSBAA0092A	BARRA CU SWBY FASE A			UUT-02	
0ULSBAA0093A	BARRA CU SWBY FASE B			UUT-02	
0ULSBAA0094A	BARRA CU SWBY FASE C			UUT-02	
0ULSBAA0095A	BARRA CU SWOUT FUSE			UUT-02	
0ULSBAA0096A	BARRA CU COLL TL OUT FASE A			UUT-02	
0ULSBAA0097A	BARRA CU COLL TL OUT FASE B			UUT-02	
0ULSBAA0098A	BARRA CU COLL TL OUT FASE C			UUT-02	
0ULSBAA0099A	BARRA CU COLL SWOUT CS			UUT-02	
0ULSBAA0100A	BARRA CU NEUTRO OUTPUT			UUT-02	
0ULSBAA0101A	BARRA CU NEG MODULI			UUT-02	
0ULSBAA0102A	BARRA CU POS MODULI			UUT-02	
0ULSBAA0103A	BARRA CU POS COLL MODULO	UUT-02			
0ULSBAA0104A	BARRA CU NEG COLL MODULO	UUT-02			
0ULSBAA0105A	BARRA CU NEG COLL MOD TY1	UUT-02			
0ULSBAA0105A	BARRA CU NEG COLL MOD TY1	UUT-02			
0ULSBAA0106A	BARRA CU NEUTRO TCE	UUT-02			
0ULSBAA0107A	BARRA CU BOND N-TERRA TCE	UUT-02			

**Table 14 - Certified Subcomponents: Bus Bars (Continued)**

Riello Part Number	Description	Material	Manufacturer	UUT	
0ULSBAA0108A	BARRA CU POS TCE	Copper	Riello	UUT-02	
0ULSBAA0109A	BARRA CU NEG TCE			UUT-02	
0ULSBAA0110A	BARRA CU IN-OUT BATT TCE			UUT-02	
0ULSBAA0111A	BARRA CU FASE A TCE			UUT-02	
0ULSBAA0112A	BARRA CU FASE B TCE			UUT-02	
0ULSBAA0113A	BARRA CU FASE C TCE			UUT-02	
0ULSBAA0114A	BARRA CU IN-OUT FASE TCE			UUT-02	
0ULSBAA0115A	BARRA CU OUT-BY TCE			UUT-02	
0ULSBAA0116A	BARRA CU FASE C SWMB OUT TCE			UUT-02	
0ULSBAA0117A	BARRA CU FASE B SWMB OUT TCE			UUT-02	
0ULSBAA0118A	BARRA CU FASE A SWMB OUT TCE			UUT-02	
0ULSBAA0119A	BARRA CU FASE C SWMB BY TCE			UUT-02	
0ULSBAA0120A	BARRA CU FASE B SWMB BY TCE			UUT-02	
0ULSBAA0121A	BARRA CU FASE A SWMB BY TCE			UUT-02	
0ULSBAA0122A	BARRA CU COMM IN-BY TCE			UUT-02	
0ULSBAA0123A	BARRA CU NEG COLL MOD TY2			UUT-02	
0ULSBAA0124A	BARRA CU NEG COLL MOD TY3			UUT-02	
0ULSBAA0136A	BARRA CU FLEX 32x1x5 L=730			UUT-02	
0ULSBAA0137A	BARRA CU FLEX 32x1x5 L=500			UUT-02	
0ULSBAA0141A	BARRA CU FLEX 20x1x4 L=290			UUT-02	
0ULSBAA0142A	BARRA CU N OUTPUT N INPUT			UUT-02	
0ULSBAA0143A	BARRA CU SWIN-SWBY FASE A			Interpolated	
0ULSBAA0144A	BARRA CU SWIN-SWBY FASE B				
0ULSBAA0145A	BARRA CU SWIN-SWBY FASE C				
0ULSBAA0146A	BARRA CU INPUT COMM TY1				
0ULSBAA0147A	BARRA CU INPUT COMM TY2				
0ULSBAA0148A	BARRA CU NEG COLL MOD TY4				UUT-02
0ULSBAA0149A	BARRA CU SWIN FUSE				UUT-02
0ULSBAA0150A	BARRA CU SWOUT FUSE				UUT-02
0ULSBAA0155A	Barra Cu Flex 32x1x4 L=560				UUT-02
0ULSBAA0156A	Barra Cu Flex 32x1x4 L=500				UUT-02
0ULSBAA0157A	Barra Cu Flex 32x1x4 L=530			UUT-02	
0ULSBAA0158A	BARRA CU PH A TL2-FUSE			UUT-02	
0ULSBAA0159A	BARRA CU PH B TL2-FUSE			UUT-02	
0ULSBAA0160A	BARRA CU PH C TL2-FUSE			UUT-02	
0ULSBAA0161A	BARRA CU PH A TL3-FUSE			UUT-02	
0ULSBAA0162A	BARRA CU PH B TL3-FUSE			UUT-02	
0ULSBAA0163A	BARRA CU PH C TL3-FUSE			UUT-02	
0ULSBAA0164A	BARRA CU BLOCCO FUSE MHT UL			UUT-02	
0ULSBAA0165A	BARRA CU BATT MOD RD-INV MHT			UUT-02	
0ULSBAA0166A	BARRA CU PIASTRA NEGATIVO MHT			UUT-02	
0ULSBAA0167A	BARRA CU IN BATT MHT			Extrapolated	

**Table 15 - Certified Subcomponents: Miscellaneous**

Model	Description	Material	Manufacturer	UUT	
9L..2077.03.	MPS-HP Int.AC+RC SCR 80k	FR4 (fiberglass cloth with an epoxy resin)	Riello	Extrapolated	
9L..2077.02.	MPS-HP Int.AC+RC SCR 100k			UUT-01	
9L..2077.01.	MPS-HP Int.AC+RC SCR 125k			UUT-02	
9L..2077.04.	MPS-HP Int.AC+RC SCR 250k			UUT-01 / 02	
9L..2108.03.	Board MHT Interf. V-I 100k PF 0.9			UUT-01	
9L..2108.04.	Board MHT Interf. V-I 125k PF 0.9			UUT-01 / 02	
9L..2108.01.	Board MHT Interf. V-I 160k PF 0.9			UUT-01 / 02	
9L..2108.02.	Board MHT Interf. V-I 200k PF 0.9			UUT-01 / 02	
9L..2108.05.	Board MHT Interf. V-I 250k PF 0.9			UUT-01 / 02	
9LAB2090B01APT	Sentry can interface I/O Expander			UUT-01 / 02	
9LAB2090B01BPT	Sentry can interface I/O Expander			UUT-01 / 02	
9L..2074.01.	Suppressor Board			Interpolated	
9L..2074.02.	Board filter X-Y			UUT-01	
9L..2098.01.	Sentry Contactors single Driver MPS			Interpolated	
9L..2128.01.	Board filter X-Y MPS			UUT-02	
9L..2117.01	Board filter RF Battery			UUT-01 / 02	
9L..2100.01.	Board filter EMC			UUT-01 / 02	
9L..2102.01.	Sentry MPS Driver IGBT smd			UUT-01 / 02	
9L..2120.01.	Board MPS Global power supply UL			UUT-01 / 02	
9L..2034.01.	Board Parallel			UUT-01 / 02	
9..2076.01.	Interf.contr.inv.SMT Coll			UUT-01 / 02	
9..2032.01.	Sentry MS Systemm Board			UUT-01 / 02	
9..2112.01.	Sentry MPS IGBT rectifier control			UUT-01 / 02	
9..2124.01.	MPS Control Board panel graph			UUT-01 / 02	
9..2101.02.	S.MPS Parallel RJ45 Flat			UUT-01	
9L..2113.01.	Board MPS RS-232			UUT-02	
9L..2078.01	MPS static switch driver Sentry			UUT-01 / 02	
9..2132.01.	Board Display grahf 8 key ov. C			UUT-01 / 02	
YSKCSA2AUL	SNMP Ethernet Card			UUT-01 / 02	
825-0593	Shunt Trip Board			Staco	UUT-01 / 02



# UNIT UNDER TEST (UUT) Summary Sheet

UUT-01

97462-1502

Model Line	Model Number	Manufacturer
FirstLine P	FLU-125-00-S	Staco Energy Products Co.

### Product Construction Summary

Galvanized Carbon Steel

### Options / Subcomponent Summary

Fans & motors: 223 & 544 CFM / 380 & 925 m3/h; Power module:1200V/300A; Bypass Module:1200V/160A; Inductors:0,125mH-170A, 0,6mH-295A DC, 0,75mH-170A; switch:200A/600V; Transformer:125kVA; Current Transformers:300A, 500A, 200/0.2A; Fuse Holder:690V-32A; Terminal Block:20A; Capacitors: DUCATI & ITELCOND; Contactors:15A-24Vdc, 185A220V; Fuses:Bussman, ETI, FERRAZ, SIBA; Bus Bars: See Table14.

### UUT Properties

Weight [ lbs ]	Dimensions [ in ]			Lowest Nat. Freq. [ Hz ]		
	Length	Width	Height	F-B	S-S	V
1,750	75	31.4	33.5	9.0	9.3	18.5

### UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
CBC 2016	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54
		2.50	0.0	1.5	2.50	0.80	1.68	0.68

### Test Mounting Details

UUT-1 was floor-mounted to the interface plate using qty (6) 3/8" Grade 8 bolts in the manufacturer-provided mounting holes. The interface plate was attached to the shake table with M12 threaded rod spaced at approximately 8 inches on-center.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.



# UNIT UNDER TEST (UUT) Summary Sheet

UUT-02

97462-1502a

Model Line	Model Number	Manufacturer
FirstLine P	FLU-250-T-S	Staco Energy Products Co.

### Product Construction Summary

Galvanized Carbon Steel

### Options / Subcomponent Summary

Fan & motor: 544 CFM / 925 m<sup>3</sup>/h; Power module:1200V/450A; Bypass Module:1400V/250A; Inductors:0,06mH-335A, 0,3mH-590A DC, 0,34mH-335A; switch:400A/600V; Transformer:250kVA; Current Transformers:500A, 400/0.2A; Fuse Holders:690V-32A, 600V-30A; Terminal Block:20A; Capacitors: DUCATI & ITELCOND; Contactors:15A-24Vdc, 400A-220V; Fuses:Bussman, ETI, FERRAZ, SIBA; Bus Bars: See Table14.

### UUT Properties

Weight [ lbs ]	Dimensions [ in ]			Lowest Nat. Freq. [ Hz ]		
	Length	Width	Height	F-B	S-S	V
2,700	75.0	58.4	35.9	10.3	7.0	33.3

### UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S <sub>DS</sub>	z/h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
CBC 2016	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.34	0.54
		2.50	0.0	1.5	2.50	0.80	1.68	0.68

### Test Mounting Details

UUT-2 was floor-mounted to the interface plate using qty (20) 3/8" Grade 8 bolts in the manufacturer-provided mounting holes. The interface plate was attached to the shake table with M12 threaded rod spaced at approximately 8 inches on-center.



All units were filled with contents and maintained structural integrity and functionality after AC-156 test.