

Cat® Electric Power

Sizing Gensets (Specsizer)

Krishnan Pandiaraj

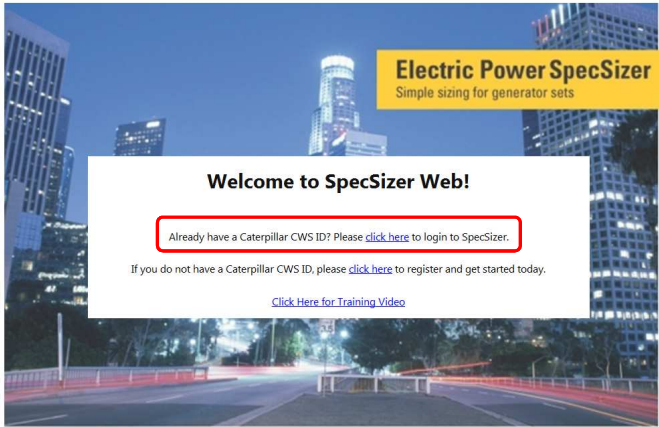



BUILT FOR IT.




Electric Power SpecSizer

- SpecSizer Web - <https://specsizer.cat.com>



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Electric Power SpecSizer

- Generator Set Sizing Program
 - User Preferences, My SpecSizer – Site Conditions
- Load Analysis and Load Step Optimization
 - Add Loads: Template loads, Cat UPS loads, Optimizer
- Genset Selection
 - Site Specific Environmental Considerations
 - Generator Set Details
- Reports and Guide Specifications
- File Sharing | Help & Support
 - specsizersupport@cat.com

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- **User Preferences** (top half of page) - Set defaults for Site Conditions for new projects
 - Set "Region" here: (aligns product selection to regional price lists / product offerings)

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User Preferences My SpecSizer

User Preferences

GENERAL

First Name: Krishnan	Address: Old Glenarm Street
Last Name: Pandiaraj	City: Lame
Email: PandiK@cat.com	State: N.Ireland
Phone: +44 442828261449	Postal Code: BT40 1EJ
Title: Senior Engineer - Dev/Res	Country: GB
Company: CATERPILLAR (NI) LIMITED	Affiliation: CA
Primary Role:	Region: <ul style="list-style-type: none"> Asia Pacific Europe/Africa/Middle East/Russia/CIS/Mongolia Latin America/Caribbean/Mexico United States Canada

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Electric Power SpecSizer

- **User Preferences** (bottom half of page) – set defaults for Site Conditions for new projects
 - Genset Product: Caterpillar (for Cat compact and Olympian branded gensets) - filters genset list for "Select Genset" page
 - Eight (8) language options



DEFAULT VALUES

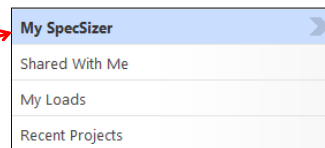
Fuel: Diesel	Unit of Measure: English
Generator Set Duty: Prime	Maximum Ambient: 25.0 Deg C / 77 Deg F
Motor Units KW/HP: kW	Altitude: 152.4 M.A.S.L. / 500.0 F.A.S.L.
60Hz Motor Type: IEC	Genset Product: Caterpillar (highlighted with a red arrow)
Project Reference #: L_KP1602	Humidity: 30 %
Emissions: ?	Single Phase Electrical Supply: 50 Hz / 240 V
Diesel: All Certified & Non-Certified	3-Phase Electrical Supply: 50 Hz / 400/230 V
Natural Gas: All Certified & Non-Certified	Language: Chinese, English, French, German, Italian, Portuguese, Russian, Spanish
LPG: All Certified & Non-Certified	Hints: (check gensets to compare gensets you have selected & drop loads and steps)

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- User Preferences → **My SpecSizer** (main page)



My SpecSizer

Create A New 3-Phase Project | Create A New Single Phase Project | Create A New Folder | [Create a new project or select from list of saved projects](#)

Search: Go Clear Search

Now displaying 1-6 of 6

Name	Last Modified	Delete
Dealer Inquiries		
SCENARIOS		
Testing Files		
Training Files		
Perez (English) 4/1/2014 10:20AM	Currently Shared with 6 user(s). (edit) 4/1/2014 10:24 AM	Copy/Move
Perez (Spanish) 4/1/2014 11:01AM	Currently Shared with 6 user(s). (edit) 4/1/2014 11:17 AM	Copy/Move

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Electric Power SpecSizer

- My SpecSizer → Create A New 3-Phase Project → **Define Site Conditions**
 - GENERAL (top half of page): Defaults auto-populated from User Preferences, are editable. Region not editable here, editable on User Preferences only

CAT

User Preferences **My SpecSizer**

✓ The project has been successfully saved.

GENERAL

Customer Name: Malaga EP Days #1

Sharing: Currently Shared with 0 user(s). [Edit Sharing](#)

Project Name/Ref #: L_KP160402_1

Created Date: 4/5/2016

Created By: pandik

Modified Date: 4/5/2016 1:43:41 AM

Project Location: My SpecSizer

Region: Europe/Africa/Middle East/Russia/CIS/Mongolia

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Electric Power SpecSizer

- My SpecSizer → Create A New 3-Phase Project → **Define Site Conditions**

SITE CONDITIONS

Generator Set Duty: Prime

Fuel: Diesel

Unit of Measure: English

Maximum Ambient: 25.0 Deg C 77 Deg F

Altitude: 152.4 M.A.S.L. 500.0 F.A.S.L.

% Humidity: 30

Electrical System Connection: 3-Phase

Electrical Supply: 50 Hz 400/230 V

Sizing Method: Conventional

Percent (%) of Intermittent Motors: 25

Expansion Capacity (%): 0

Genset Product: CAT Compact International

Transient Restrictions: Load Level

Emissions Certification: All Certified & Non-Certified

Voltage Regulator: Best Fit

Genset Availability: ✓ Products are available for the selected site conditions. (8.5 - 300.0 kVA)

Voltage Regulator: CDVR can be forced by selecting: Optional (3:1) Slope Performance

Voltage Regulator: Optional (3:1) Slope Performance

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Electric Power SpecSizer

- Add Loads:** New feature – Template loads

Add Load LIGHTING

LOAD DETAILS

Step Number: 1
Load Number: 3
Load Name:
Quantity: 1
Connection: Distr. 3-Phase
Rating: kW
Type: Fluorescent
Permitted Frequency Dip: 30
Permitted Voltage Dip: 30
☐ Save As Template
Submit Cancel

Add New Load **Optimize My Loads**

Preload	
3-Phase Motor	
Single Phase Motor	
3-Phase Air Conditioning	
Single Phase Air Conditioning	2 Load(s)
Centrifugal Pump	1 Load(s)
Chiller	1 Load(s)
Lighting	Template Lighting Load 100kW
Resistive	50kW Fluorescent
Office Equipment	200 kW FL Lighting
	Flourescent Light

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- Add Loads:** New Feature - Effective frequency/voltage dip: added to help user see effect of restrictive fdip/vdip rule: Sequence restrictive loads later if possible to downsize genset

STEP LIST

Step Name		Step	
		SkVA	SkW
Step1	2 Load(s)	156.2	131.8
Step2	1 Load(s)	1,557.0	544.9
Step3	1 Load(s)	200.0	150.0

Effective		
Frequency	Voltage	
10.0	10.0	
10.0	10.0	
10.0	10.0	

LOAD LIST

Load Name
Cat Flywheel UPS, 3-Phase, IGBT, 9% Walk-In, 30% Battery Recharge, 75% Duty Point, No Battery Revert 1 X 500.00 kVA
50kW Fluorescent - Fluorescent Lighting, Distr. 3-Phase 1 X 50.00 kW
Summary

User Defined/Effective		
Frequency	Voltage	
10.0/10.0	10.0/10.0	
30.0/10.0	30.0/10.0	
-/10.0	-/10.0	

- 3-Phase Motor in Step 2 and Fluorescent Lighting in Steps 1 & 3 adopted 10% Fdip/Vdip of Step#1 UPS load;
- Motors & Lighting were spec'd for 30% Fdip/Vdip, restricted to 10% Fdip/Vdip due to UPS sequenced prior

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- Motors:** cause high Inrush – Reduced Voltage Starters can reduce size of recommended genset, reduces load's SkVA & SkW

Starting Method: **Direct On Line**

Use Standard Defaults: **VSD**

Efficiency: **Autotransformer 80%**

DOL SKVA: **Autotransformer 65%**

DOL Starting PF: **Autotransformer 50%**

Running PF: **Wye Delta**

Duty Point %: **Direct On Line**

Edit Load 3-PHASE MOTOR LOAD

LOAD DETAILS

Step Number: 2

Load Number: 1

Load Name:

Quantity: 1

Type: IEC HP

Output Rating: 200 HP

Permitted Frequency Dip %: 30

Permitted Voltage Dip %: 30

Starting Method: **Direct On Line**

Use Standard Defaults: ☐

Efficiency: 0.9

DOL SKVA: 1557

DOL Starting PF: 0.35

Running PF: 0.9

Duty Point %: 100

☐ Intermittent Starting

☒ Motor Starting Under Load

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- UPS load:** new UPS load options (besides generic/User-Defined UPS)
 - Cat Battery UPS & Cat Flywheel UPS!

(3) UPS Types:

UPS Type: **Cat Flywheel UPS**

UPS Model: **User Defined**

UPS Rating: **Cat Battery UPS** kVA

☒ N+1 Option

Permitted Frequency Dip %: 10

Permitted Voltage Dip %: 5

Efficiency %: 7

Running PF: 0

Use Standard Default: 20

20% max allowed Fdip/Vdip on all UPS
Sequence later in load scenario if possible

Edit Load ups

LOAD DETAILS

Step Number: 1

Load Number: 1

Load Name:

Quantity: 1

Phase: 3-Phase

Connection: 3-Phase

UPS Type: **Cat Flywheel UPS**

UPS Model: UPS1000Z

UPS Rating: 750 kVA

Output Power: 500 kVA

Rectifier: IGBT

Permitted Frequency Dip %: 10

Permitted Voltage Dip %: 10

Efficiency %: 0.9

Running PF: 0.9

Use Standard Default: ☐

Rated Output PF: 0.95

Recharge Rate %: 40

Walk-In From %: 11

Save As Template: ☐

☒ N+1 Option

Duty Point %: 67

☐ Inter

☐ Allow UPS to Revert to Battery During Subsequent Transients

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- **Select Genset:** Optimized genset may be possible (downsizes genset!)
 - Optimizer runs automatically in background & prompts user if Optimized load scenario or genset is possible

STEP LIST		
Step Name		
Step1	2 Load(s)	
Step2	1 Load(s)	
Step3	3 Load(s)	
Step4	2 Load(s)	



⚠ An optimized load scenario exists that may result in a smaller genset. [Go to Optimized Scenario.](#)

Number Of Gensets: 3

50 Hz 400/231V 3512 Prime, LOW BSFC, SCAC; Alternator: 1667 PM SRS FORM
Factory Rating: 1,280 EKW / 1,600 kVA Site: 1,269.2 EKW / 1,586.5 kVA

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Electric Power SpecSizer

⚠ An optimized load scenario exists that may result in a smaller genset. [Go to Optimized Scenario.](#)

2. Add Loads ← 3. Select Genset →

Continue

Load Optimization in Progress

STEP LIST		
Step Name		
Step1	2 Load(s)	
Step2	1 Load(s)	
Step3	3 Load(s)	
Step4	2 Load(s)	

Returns User to 'Select Genset' page to view resized Genset

1. Define Site Conditions → 2. Add Loads → 3. Select Genset → 4. Data & Reports

GENSETS

✓ The project has been successfully saved.

✓ Note: The selected genset is the BEST FIT for the site/load requirements. [Go to Best Fit Genset](#)

Number Of Gensets: 1

50 Hz 400/231V 3516 Prime, LOW BSFC, SCAC; Alternator: 1844 PM SRS FORM
Factory/Site Rating: 1,820 EKW / 2,275 kVA

⚠ An optimized load scenario exists that may result in a smaller genset. [Go to Optimized Scenario.](#)

Number Of Gensets: 3

50 Hz 400/231V 3512 Prime, LOW BSFC, SCAC; Alternator: 1667 PM SRS FORM
Factory Rating: 1,280 EKW / 1,600 kVA Site: 1,269.2 EKW / 1,586.5 kVA

Note: Go to Optimized Scenario

- Returns to Add Loads
- Tool automatically resequences loads & load steps
- Click 'Continue' or click 'Select Genset'
- Tool returns to 'Select Genset' page; displays resized, recommended Genset
- Save Optimized Genset, or return to Original (load) Scenario (original sized genset)
- Save file

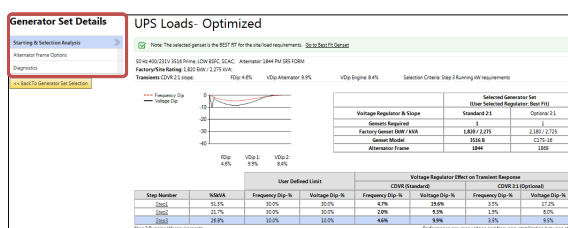
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Electric Power SpecSizer

- Select Genset: click **View** → **Generator Set Details**
 - Generator Set Details
 - Starting & Selection Analysis
 - Alternator Frame Options
 - Diagnostics

Factory Genset kW/kVA	Site Genset kW/kVA	Site Alternator kVA	Genset Model	Generator Set Duty	Emissions	Frame	Excitation	Winding	Type	Std/Opt	RkVA	VDip1	% Genset Capacity Used	
<input type="checkbox"/> 2,260 / 2,825	2,260 / 2,825	3,000	C175-16	Prime	LOW BSFC	1868	PM	FORM	SRS	Optional	3,000.0	17.2%	77.5	View
<input type="checkbox"/> 2,260 / 2,825	2,260 / 2,825	3,000	C175-16	Prime	LOW BSFC	1868	PM	FORM	SRS	Standard	3,000.0	17.2%	77.5	View
<input type="checkbox"/> 2,180 / 2,725	2,180 / 2,725	3,000	C175-16	Prime	LOW BSFC	1868	PM	FORM	SRS	Optional	3,000.0	17.2%	80.4	View
<input type="checkbox"/> 2,180 / 2,725	2,180 / 2,725	2,750	C175-16	Prime	LOW BSFC	1866	PM	FORM	SRS	Optional	2,750.0	10.3%	-	View
<input type="checkbox"/> 2,180 / 2,725	2,180 / 2,725	2,750	C175-16	Prime	LOW BSFC	1866	PM	FORM	SRS	Optional	2,750.0	10.3%	-	View
<input type="checkbox"/> 2,180 / 2,725	2,180 / 2,725	2,750	C175-16	Prime	LOW BSFC	1866	PM	FORM	SRS	Standard	2,750.0	10.3%	-	View
<input type="checkbox"/> 2,180 / 2,725	2,180 / 2,725	2,750	C175-16	Prime	LOW BSFC	1866	PM	FORM	SRS	Standard	2,750.0	10.3%	-	View
<input type="checkbox"/> 1,820 / 2,275	1,820 / 2,275	2,500	3516 B	Prime	EMISSION	1844	PM	FORM	SRS	Standard	2,500.0	19.6%	96.3	View
<input type="checkbox"/> 1,820 / 2,275	1,820 / 2,275	2,500	3516 B	Prime	EMISSION	1844	PM	FORM	SRS	Standard	2,500.0	19.6%	96.3	View
<input type="checkbox"/> 1,820 / 2,275	1,820 / 2,275	2,500	3516 B	Prime	LOW BSFC	1844	PM	FORM	SRS	Standard	2,500.0	19.6%	96.3	View
<input checked="" type="checkbox"/> 1,820 / 2,275	1,820 / 2,275	2,500	3516 B	Prime	LOW BSFC	1844	PM	FORM	SRS	Standard	2,500.0	9.9%	96.3	View
<input type="checkbox"/> 1,600 / 2,000	1,600 / 2,000	2,750	3516 B	Prime	EMISSION	1866	PM	FORM	SRS	Optional	2,750.0	10.3%	-	View



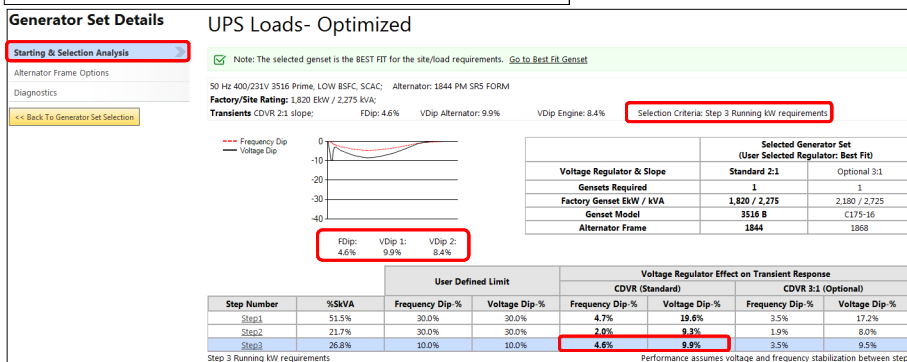
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- Select Genset: click **View** → **Generator Set Details** → **Starting & Selection Analysis**
 - Details related to site loads, e.g. loads' calculated transients
 - Selection Criteria – why the next smaller genset than Best-Fit would fail

Note: Vdip1 = synchronous (alternator only) voltage dip
Note: Vdip2 = frequency-induced (engine caused) voltage dip



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- Select Genset: click **View** → **Generator Set Details**

Generator Set Details

- Starting & Selection Analysis
- Alternator Frame Options
- Diagnostics

Now displaying 161-180 of 970

Model	Generator Set			Duty	Emissions	Feature Code	Site kVA	Arrangement Number	Alternator					% Genset Capacity Used	
	Factory EKW/kVA	Site EKW/kVA							Frame Excitation	Winding	Type	Std/Opt	RkVA	VDip1	
3516 B	+1,600 / 2,000	+1,591.3 / 1,989.1	Prime	EMISSION	516DEB2	2,000	2523850	1625	PM	RANDOM	SRS	Optional	2,000.0	21.1%	98.1
3516 B	+1,600 / 2,000	+1,591.3 / 1,989.1	Prime	EMISSION	516DEB2	2,000	2523850	1625	PM	RANDOM	SRS	Optional	2,000.0	21.1%	98.1
3516 B	+1,600 / 2,000	+1,591.3 / 1,989.1	Prime	LOW BSFC	516DEB2	2,000	2523850	1625	PM	RANDOM	SRS	Optional	2,000.0	21.1%	98.1
3516 B	+1,600 / 2,000	+1,590.3 / 1,987.9	Prime	LOW BSFC	516DEB2	2,000	2523850	1625	PM	RANDOM	SRS	Optional	2,000.0	21.1%	98.2
3516 B	+1,600 / 2,000	+1,591.3 / 1,989.1	Prime	LOW BSFC	516DEB2	2,000	2523850	1625	PM	RANDOM	SRS	Optional	2,000.0	9.7%	98.2
3516	+1,460 / 1,825	+1,460 / 1,825	Prime	LOW BSFC	516DE9F	2,750	3723064	1866	PM	FORM	SRS	Optional	2,750.0	8.1%	-
3516	+1,460 / 1,825	+1,460 / 1,825	Prime	LOW BSFC	516DE9F	2,750	3723064	1866	PM	FORM	SRS	Optional	2,750.0	8.1%	-
3516	+1,460 / 1,825	+1,451.8 / 1,814.7	Prime	LOW BSFC	516DR9N	2,500	3723056	1844	PM	FORM	SRS	Optional	2,500.0	7.8%	-
3516	+1,460 / 1,825	+1,454.8 / 1,818.5	Prime	LOW BSFC	516DR9N	2,150	2523866	1647	PM	RANDOM	SRS	Optional	2,150.0	8.4%	-

Note: The selected genset is **USER SELECT** and meets or exceeds the site/load requirements. [Go to Best Fit Genset](#)

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- Select Genset: click **View** → Generator Set Details → **Alternator Frame Options**

- Provides details of all Alternators that are options for selected genset model & rating
- Provides Alternators' RkVA values (running kVA capacity)
- Can order an Alternator with better Non-Linear load capability
 - e.g. for Data Centers, an option for sites with high harmonic & voltage & current distortion loads

Starting & Selection Analysis

Alternator Frame Options

Diagnostics

<< Back To Generator Set Selection

Note: The selected genset is the BEST FIT for the site/load requirements. [Go to Best Fit Genset](#)

3516 Prime, LOW BSFC, SCAC, Alternator: 1625 PM SRS RANDOM

Factory Rating: **1,600 EKW / 2,000 kVA**; Site: **1,591.3 EKW / 1,989.1 kVA**

Transients **CDVR 2:1 slope**; FDip: **2.9%** VDip Alternator: **9.7%** VDip Engine: **5.5%**

Engine Performance Number: **DM7939** Top-Level Feature Code: **516DEB2**
Electricity Supply: **3-Phase 50 Hz 400/230 V** Generator Arrangement Number: **2523850**

Selection Criteria: **Step 3 Running kW requirements**

Selected Generator Set Standard & Optional Alternator Frames										Alternator Frame					
Genset Model	Alternator Type	Alternator Arrangement Number	Winding Type	Excitation	Temperature Rise	Standard	Optional	1866	1669	1842	1647	1667	1625		
3516 B	SRS	3723064	FORM	PM	80 C		X	2,750.0							
3516 B	SRS	3723064	FORM	PM	80 C		X	2,750.0							
3516 B	SRS	3723064	FORM	PM	80 C		X	2,750.0							
3516 B	SRS	3723064	FORM	PM	80 C		X	2,750.0							
3516 B	SRS	3723064	FORM	PM	80 C		X	2,750.0							
3516 B	SRS	3723064	FORM	PM	80 C		X	2,750.0							

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- Select Genset: click **View** → Generator Set Details → **Diagnostics**
 - Technical data for sized genset: Genset, Alternator, Engine and Project information
 - Diagnose sized genset's technical capabilities; provides useful product numbers for TMI system searches, On-Line Price List searches

Generator Set Details UPS Loads- Optimized

Starting & Selection Analysis
Alternator Frame Options
Diagnostics
[Back To Generator Set Selection](#)

Note: The selected genset is the BEST FIT for the site/load requirements. [Go to Best Fit Genset](#)

50 Hz 400/231V 3516 Prime, LOW BSFC, SCAC; Alternator: 1844 PM SRS FORM
Factory/Site Rating: 1,820 EKW / 2,275 KVA;
Transients CDVR 2:1 slope; FDip: 4.6% VDip Alternator: 9.9% VDip Engine: 8.4% Selection Criteria: Step 3 Running kW requirements

Genset Diagnostics							
Genset Model	Site kW/KVA	Rating kW	Top-Level Feature Code	Facility Code	Source (Price List)	Region	
3516 B	1,820.0 / 2,275.0	1,820.0 / 2,275.0	516DE8R	LE Griffin	X	#1	3516 PGDG
				88 Lafayette		#2	E860 APPS
				XJ Tianjin		#3	E500 EAME
				JC Larne		#4	E50W Canada
				LS Newberry			E50Z LACD

Alternator Diagnostics							
Genset Model	Site kW/KVA	Rating kW	Alternator Arrangement Number	Alternator Rating kVA	Efficiency	Temperature Rise	Standard
3516 B	1,820.0 / 2,500.0	1,820.0 / 2,275.0	3723056	2,500.0	95.6	105 C	X

Engine Diagnostics							
Genset Model	Site kW/KVA	Rating kW	DM Performance Number	Rack Stop kW	Max Single Step kW	Fan kW (Power)	Fan Ratio
3516 B	1,825.0 / 2,275.0	1,820.0 / 2,275.0	DM7967	2,502.5	1,687.9	46.0	0.0

Project Diagnostics

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- Compare Gensets' performance: click **View** → **Generator Set Details**

GENSETS

Note: The selected genset is the BEST FIT for the site/load requirements. [Go to Best Fit Genset](#)

Number Of Gensets: 1

C13 Prime, LOW BSFC, ATAAC; Alternator: LC6124B AREP LC RANDOM

Factory/Site Rating: 280 EKW / 350 KVA;
Transients RA50M 1:1 slope; FDip: 8.4% VDip Alternator: 9.3% VDip Engine: 8.4%

[Compare Gensets](#) [Compare Optional vs Standard](#)

Now displaying 901-920 of 934

Model	Factory EKW/KVA	Site EKW/KVA	Duty	Emissions	Feature Code	Site kVA	Arrangement Number	Frame	Excitation	Alternator
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	455	4215088	LC6124B	AREP	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	455	3969607	LC6114D	SE	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	455	3969607	LC6114D	SE	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE18	400	4215199	LC6134C	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	400	4215199	LC6134C	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	400	4215200	LC6124C	AREP	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE18	400	4215199	LC6114C	SE	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	400	4215199	LC6114C	SE	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE33	380	3969606	LC6134B	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE18	380	3969606	LC6134B	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	380	3969606	LC6134B	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	380	4215087	LC6124B	AREP	LC

Now displaying 901-920 of 934

Model	Factory EKW/KVA	Site EKW/KVA	Duty	Emissions	Feature Code	Site kVA	Arrangement Number	Frame	Excitation	Alternator
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	455	4215088	LC6124B	AREP	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	455	3969607	LC6114D	SE	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	455	3969607	LC6114D	SE	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE18	400	4215199	LC6134C	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	400	4215199	LC6134C	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	400	4215200	LC6124C	AREP	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE18	400	4215199	LC6114C	SE	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	400	4215199	LC6114C	SE	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE33	380	3969606	LC6134B	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE18	380	3969606	LC6134B	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	380	3969606	LC6134B	PM	LC
C13	280 / 350	280 / 350	Prime	LOW BSFC	C13DE02	380	4215087	LC6124B	AREP	LC

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Electric Power SpecSizer

- Compare Gensets' performance

GENSETS

☒ Note: The selected genset is the BEST FIT for the site/load requirements. [Go to Best Fit Genset](#)

Number Of Gensets:

C13 Prime, LOW BSFC, ATAAAC: Alternator: LC6124B AREP LC RANDOM

Factory/Size Rating: 280 kW / 350 kVA:

Transients: R450M 1:1 slope: FDip: 8.4% VDip Alternator: 9.3% VDip Engine: 4.4%

[Compare Gensets](#) [Compare Optional vs Standard](#)

GENSETS

[Back to Generator Set Selection](#) [Hide Matching Rows](#)

☒ Note: The selected genset is the BEST FIT for the site/load requirements.

	<input checked="" type="checkbox"/> Best Fit <input checked="" type="checkbox"/> Selected Select	User Selected Select	User Selected Select
Voltage Regulator & Slope	Standard 1:1 - R450M	Standard 1:1 - R450M	Standard 1:1 - R450M
Genset Product	Caterpillar	Caterpillar	Caterpillar
Fuel	Diesel	Diesel	Diesel
Duty Cycle	Prime	Prime	Prime
Emissions Cert.	LOW BSFC	LOW BSFC	LOW BSFC
Model	C13	C13	C13

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Electric Power SpecSizer

- Data & Reports: **Project Sizing Report**, Load Report & Transient Performance Report
 - Sizing Report – Provides Project, Load Analysis, Genset, Engine & Alternator data for sized Genset

1. Define Site Conditions ▶ 2. Add Loads ▶ 3. Select Genset ▶ **4. Data & Reports**

Project Sizing Report

CATERPILLAR Project Sizing Report

Modified Date: 4/8/2014
Customer Name: UPS loads- Optimized
Project Name/Ref #: bakersj
Prepared By: bakersj

Electricity Supply: 50 Hz 400/230 V
Connection: STAR
Max. Ambient Temperature: 77.0 F
Altitude: 500.0 Ft. A.S.L.

Load Analysis Summary

Max Transient Load Step	3,705.0 SKVA	1,037.4 SKW
Peak Transient Load	3,705.0 SKVA	1,130.4 SKW
Final Running Load	1,856.3 kVA	1,682.1 kW 0.91 PF
Max Running Non Linear Load	1,093.6 RKVA	
Maximum Running Load	1,856.3 kVA	1,682.1 kW

Generator Set

Genset Model	(1) of 3516 B	Nameplate Rating	1,820.0 kW / 2,275.0 kVA
Voltage Regulator and Slope	CDVR, 3:1 slope	Site Output	1,820.0 kW / 2,275.0 kVA
Feature Code	516DE92	Rating Type	Prime
Fuel	Diesel		
Dry Weight	0.0 lbs		
Length / Width / Height	249.1in / 90.0in / 93.2in		

Selected generator set requires a CDVR voltage regulator, with slope adjustment of 3:1 slope

Alternator Motor Starting Capability *		Block Load (only) Transient Response *			
Instantaneous Voltage Dip ***	skVA Capability	Load Change %	FDip %	VDip %	Recovery Time (sec)
10%	1,684	0 - 25	1.9	4.5	< 3
20%	3,788	0 - 50	4.1	11.0	< 3
30%	6,494	0 - 75	7.6	21.5	< 3
35%	8,159	0 - 100	12.2	35.5	4.2

Engine Technical Data at 100% Load

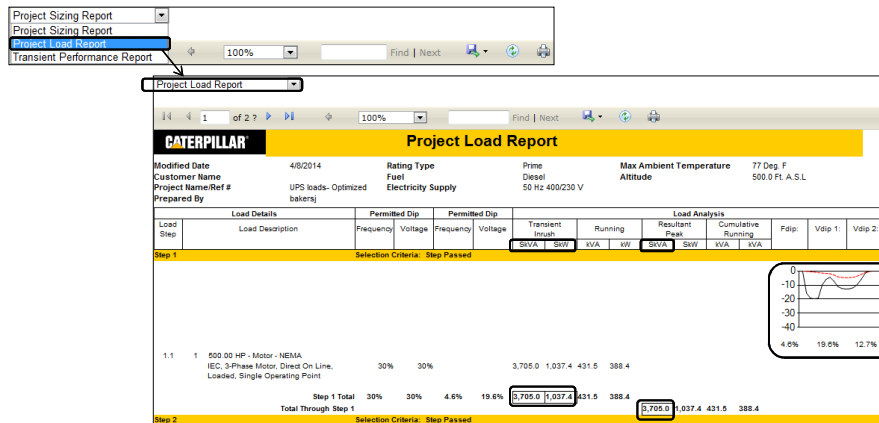
Make/Model	3516 B	Emissions/Certifications	LOW BSFC
Aspiration	TA	Governor	ADERS
Cylinder Configuration	VEE - 16	Aftercooler Type	SCAC
Displacement	4,765 Cubic Inch / 78 Liter	Rejection To Jacket Water	33,268 BTU/min

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Electric Power SpecSizer

- Data & Reports: **Load Report**
 - Worst sizing factors (Inrush, Running & Non-Linear) are boxed in load step they occur; work to reduce these sizing parameters to downsize genset
 - Transient graph provided for each load step

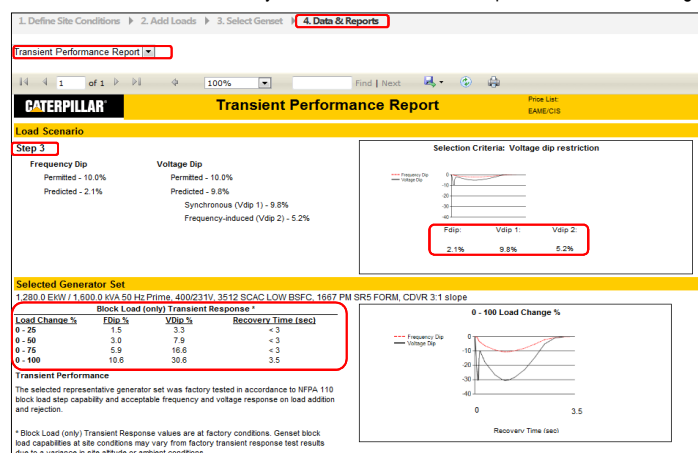


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- Data & Reports: **Transient Performance Report**
 - Load Scenario – load step & step's transients that the genset sizing is based upon
 - Selected Generator Set – factory block load test, transient response at 25% load changes



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Electric Power SpecSizer

- Sales Support web links & documents

Create Guide Spec Customer Sales Support Links Dealer Sales Support Links

1. Define Site Conditions 2. Add Loads 3. Select Genset 4. Data & Reports

GENSETS

✓ The project has been successfully saved.

✓ Note: The selected genset is the BEST FIT for the site/load requirements. [Go to Best Fit Genset](#)

Number Of Gensets: 1 50 Hz 400/231V 3516 Prime, LOW BSFC, SCAC; Alternator: 1844 PM SRS FORM
Factory/Site Rating: 1,820 EkW / 2,275 kVA;
Transients CDVR 3:1 slope; FDip: 1.8% VDip Alternator: 2.3% VDip Engine: 4.1% Selection Criteria: Step 4 Running kW requirements

Compare Selected Compare Optional vs Standard Create Guide Spec Customer Sales Support Links Dealer Sales Support Links

Guide Spec Document Generation

Engine Model: 3516
Duty: Prime
Voltage: 400/230 V
Factory kW Rating: 1820
Frequency: 50 Hz
Alternator Excitation: PM

Customer Sales Support Links
Electronic Media Center (EMC)
EDDC*

Dealer Sales Support Links
Power Net*
Electronic Media Center (EMC)
TMI Web*
EDDC*

Note: Guide Spec & Sales Support Links are accessible from 'Select Genset' page

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Electric Power SpecSizer

- Guide Spec – MSWord doc, editable
 - Available in English & French
 - Discussions on Spanish Guide Spec planned; communicate if need for other languages

Guide Spec Document Generation

Engine Model: 3512
Duty: Prime
Voltage: 400/230 V
Factory kW Rating: 1280
Frequency: 50 Hz
Alternator Excitation: PM

Control Panel		Battery Charger	
EMCP 3.1	<input type="radio"/>	Standard	<input checked="" type="radio"/>
EMCP 3.2	<input type="radio"/>	Premium	<input type="radio"/>
EMCP 3.3	<input type="radio"/>	None	<input type="radio"/>
EMCP 4.1	<input type="radio"/>	Enclosure	
EMCP 4.2	<input checked="" type="radio"/>	Weather Proof	<input checked="" type="radio"/>
EMCP 4.3	<input type="radio"/>	Sound Attenuated	<input type="radio"/>
EMCP 4.4	<input type="radio"/>	User defined	<input type="radio"/>
Control Panel Options		None	<input type="radio"/>
Local Annunciator	<input type="checkbox"/>	Start Module	
Remote Annunciator	<input type="checkbox"/>	Generator Set Start Module (GSM)	<input checked="" type="checkbox"/>
Generator Temp. Monitoring	<input type="checkbox"/>	50 Hz Double Conversion UPS	
Additional I/O Module	<input type="checkbox"/>	100 kVA Single Module	<input type="checkbox"/>

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Electric Power SpecSizer

2.1.3 Engine
The engine shall be diesel fueled, four (4) cycle, water-cooled, while operating with nominal speed not exceeding 1800 RPM. The engine will utilize in-cylinder combustion technology, as required, to meet applicable EPA non-road mobile regulations and/or the EPA NSPS rule for stationary reciprocating compression ignition engines. Additionally, the engine shall comply with the State Emission regulations at the time of installation/commissioning. Actual engine emissions values must be in compliance with applicable EPA emissions standards per ISO 8178 - D2 Emissions Cycle at specified kW / bHP rating. Utilization of the "Transition Program for Equipment Manufacturers" (also known as "Flex Credits") to achieve EPA certification is not acceptable. The in-cylinder engine technology must not permit unfiltered exhaust gas to be introduced into the combustion cylinder. Emissions requirements / certifications of this package: EU STAGE II

2.1.3.1 Engine Governing
The engine governor shall be a electronic Engine Control Module (ECM) with 24-volt DC Electric Actuator. The ECM shall be enclosed in an environmentally sealed, die-cast aluminum housing which isolates and protects electronic components from moisture and dirt contamination. Speed drop shall be adjustable from 0 (isochronous) to 10%, from no load to full rated load. Steady state frequency regulation shall be +/- 6 RPM. Speed shall be sensed by a magnetic pickup off the engine flywheel ring gear. A provision for remote speed adjustment shall be included. The ECM shall adjust fuel delivery according to exhaust smoke, altitude and cold mode limits. In the event of a DC power loss, the forward acting actuator will move to the minimum fuel position.

2.2 Generator
2.2.1 Generator Specifications
The synchronous three phase generator shall be a single bearing, self-ventilated, drip-proof design in accordance with NEMA MG 1 and directly connected to the engine flywheel housing with a flex coupling. The generator shall meet performance class G2 of ISO 8528. The excitation system shall enable the alternator to sustain 300% (250% for 50Hz) of rated current based on the 125C (Class H) or 105C (Class F) rise rating for ten seconds during a fault condition and shall improve the immunity of the voltage regulator to non-linear distorting loads. The excitation system shall be of brushless construction and be

Note: Guide Spec comprised of (3) sections: Genset, ATS & Switchgear

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 - Previously added User can be moved from left to right box by clicking on green plus sign

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My Loads
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My SpecSizer
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Name
50 files

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Edit Sharing
Enter the email address of the user you wish to share this project with.

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Currently shared with:
baker_steven_j@cat.com

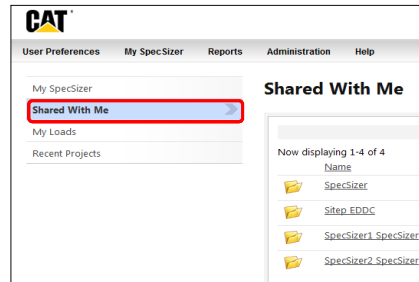
specizersupport@cat.com Add

Save Cancel

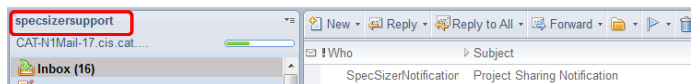
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- **SpecSizer Help & Support** – email inquiry to specsizersupport@cat.com
 - Share user sizing file with specsizersupport@cat.com | Share file using (edit) link



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Electric Power SpecSizer

- Gas Genset Availability
 - End of October/November for Dealers
 - All NG units in GERP
 - 423ekW – 2.5eMW
 - Over 600 Gas genset configurations
 - Including Price List and DTO Gensets
 - Targeting 4th Quarter of 2016 for Customer & Consultant Availability
 - Future Plans
 - Link to CSQ
 - Gas Spec Sheets
 - Add Methane Number Program
 - Add CG Gensets

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Questions?

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