



Project Heartland

Proposed Conditions Modelling Report

CLIENT

Aligned Data
Centers

CLIENT CONTACT

Cardell Andrews

DATE

20 July 2026

This report presents the proposed conditions acoustic model for the Project Heartland data center campus in Coal City, Illinois. It summarizes the equipment sound data used as inputs to the model; the corresponding manufacturer cut-sheets are attached as an appendix to this report.

1.0 Sound Source Data

The equipment sound data below is taken from the manufacturer submittals attached in the Appendix. The values are equipment sound data as provided by the manufacturer; except where noted as sound power (Lw), they should not be interpreted as predicted sound pressure levels at the property line or at nearby receivers. Where a submittal provides data in a form requiring conversion for the model (for example, sound pressure at a stated distance), this is noted.

Table 1: Equipment Sound Data Summary

Equipment	Basis	Octave Band Level (dB) at Center Frequency (Hz)								Overall dBA	Source
		63	125	250	500	1k	2k	4k	8k		
Chiller – Munters TMA Geoclima 2.0MW HA	PWL	97	104	99	100	101	97	92	88	104	Munters submittal, p. 8
Emergency Generator: Exhaust (silenced) – Cat 3516E	SPL at 10 ft*	62	71	69	75	76	75	76	73	83	Genset submittal (Bergari), p. 5
Emergency Generator: Enclosure Vent Fan – Greenheck SE1-12-432-A4	PWL	66	66	69	62	64	63	56	50	57	Genset submittal (Greenheck), p. 6
Transformer – pad-mounted (12 units)	Overall only**	–	–	–	–	–	–	–	–	79	Aligned correspondence

* Silenced exhaust sound pressure level at 10 ft, not sound power Level; conversion to sound power is required for use in the acoustic model. The 63 Hz value is estimated as octave-band data was not provided at that frequency.

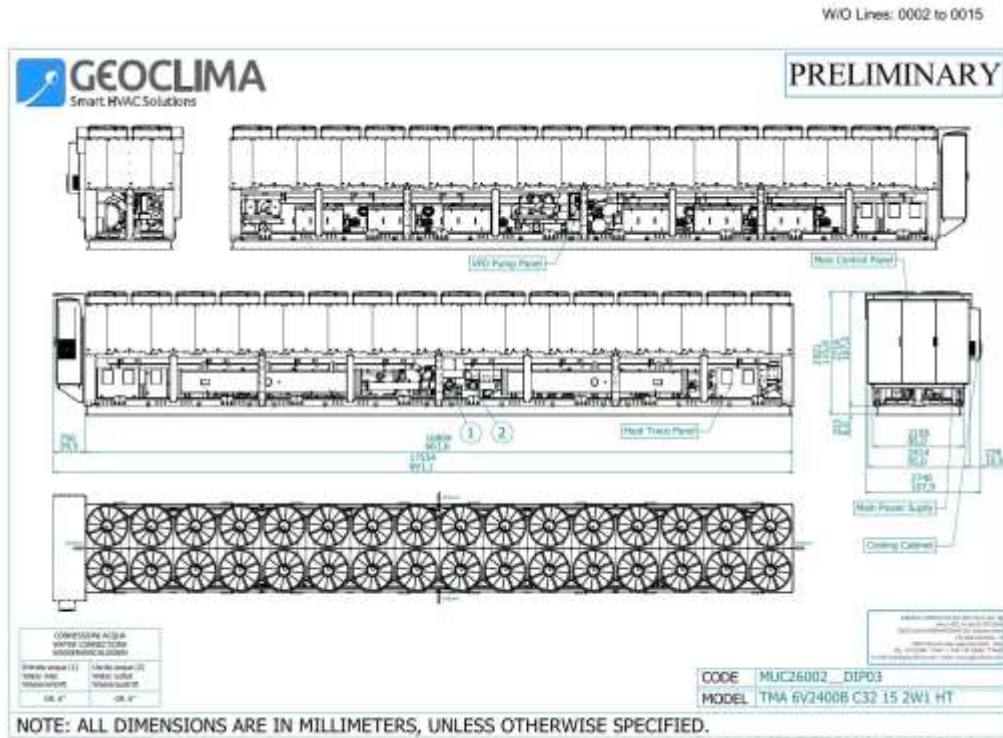
** Manufacturer-stated overall level; the specification is 75 dB, with levels up to approximately 79 dB reported in the field. Octave-band data and the measurement basis (weighting/distance) are to be confirmed, but it should be noted that most transformer noise is concentrated in the 125 Hz octave band.

Rooftop units / DOAS and the SCR system are not included above: no equipment sound submittal was available for the rooftop units at the time of issue, and the SCR data provides insertion loss (attenuation) rather than a source level.

2.0 Appendix I – Equipment Cut-Sheets (Sound data)

Manufacturer cut-sheets for the equipment summarized in Table 1 are attached on the following pages.

Munters TMA Geoclima 2.0MW HA Chiller – Sales Submittal (Sound)



Submittal 22673753 Aligned 2MW HA Chillers, Rev -

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Munters TMA Geoclima 2.0MW HA Chiller – Sales Submittal (Sound)

Confidential for Aligned DC

W/O Lines: 0002 to 0015

SOUND DATA-OCTAVE BAND	Hz	63	125	250	500	1000	2000	4000	8000
Unit global sound power	dB(A)	70.9	88.0	90.1	96.6	100.7	98.1	93.4	87.4

(A0) Technical data shown are not binding. The Company shall have the right to introduce at any time whatever modifications necessary to the improvement of the product.

(A1) Dimensional data shown are not binding.

(A2) According to standard: ANSI-AHRJ 550-590 (I-P)

(A3) Relative to the most loaded installed compressor at the selected operating conditions.

(A4) Minimum Cooling Capacity at design conditions.

(C0) Noise pressure is calculated according to the following sound propagation method: Hemispherical ISO EN 3744 source

67: Expert users source temperature upper limit enabled

sound power level
exceeds required for
octave band levels
>500Hz per spec.

Caterpillar 3516E HPD Diesel Generator Set

Cat® 3516E High Power Density (HPD) Diesel Generator Sets



Image shown may not reflect actual configuration

Bore – mm (in)	170 (6.69)
Stroke – mm (in)	215 (8.46)
Displacement – L (in³)	78.1 (4766)
Compression Ratio	13.9:1
Aspiration	TA
Fuel System	MEUI
Governor Type	ADEM™ A5

Standby 60 Hz kW (kVA)	Mission Critical 60 Hz kW (kVA)	Prime 60 Hz kW (kVA)	Emissions Performance
3000 (3750)	3000 (3750)	2725 (3406)	U.S. EPA Certified for Emergency Stationary Applications (Tier 2) and meets Northern Virginia NO _x requirements

Features

Cat® Diesel Engine

- Meets U.S. EPA Stationary Emergency (Tier 2) and Northern Virginia NO_x requirements
- Reliable performance proven in thousands of applications worldwide
- Certified alternative fuels including Hydrotreated Vegetable Oil (HVO), Renewable Diesel (RD) and Hydrotreated Renewable Diesel (HRD) which meet EN 15940 or ASTM D975 can be used or blended with EN 590 diesel

Generator Set Package

- Accepts 100% block load in one step
- Meets NFPA 110 loading requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements
- Reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

Alternators

- Superior motor starting capability minimizes need for oversizing generator
- Designed to match performance and output characteristics of Cat diesel engines

Cooling System

- Cooling systems available to operate in ambient temperatures up to 50°C (122°F)
- Tested to ensure proper generator set cooling

Cat Energy Control System (ECS)

- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements
- Graphical touchscreen display
- Easily upgradeable

Warranty

- 24 months/1000-hour warranty for standby and mission critical ratings
- Extended service protection is available to provide extended coverage options

Worldwide Product Support

- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

Financing

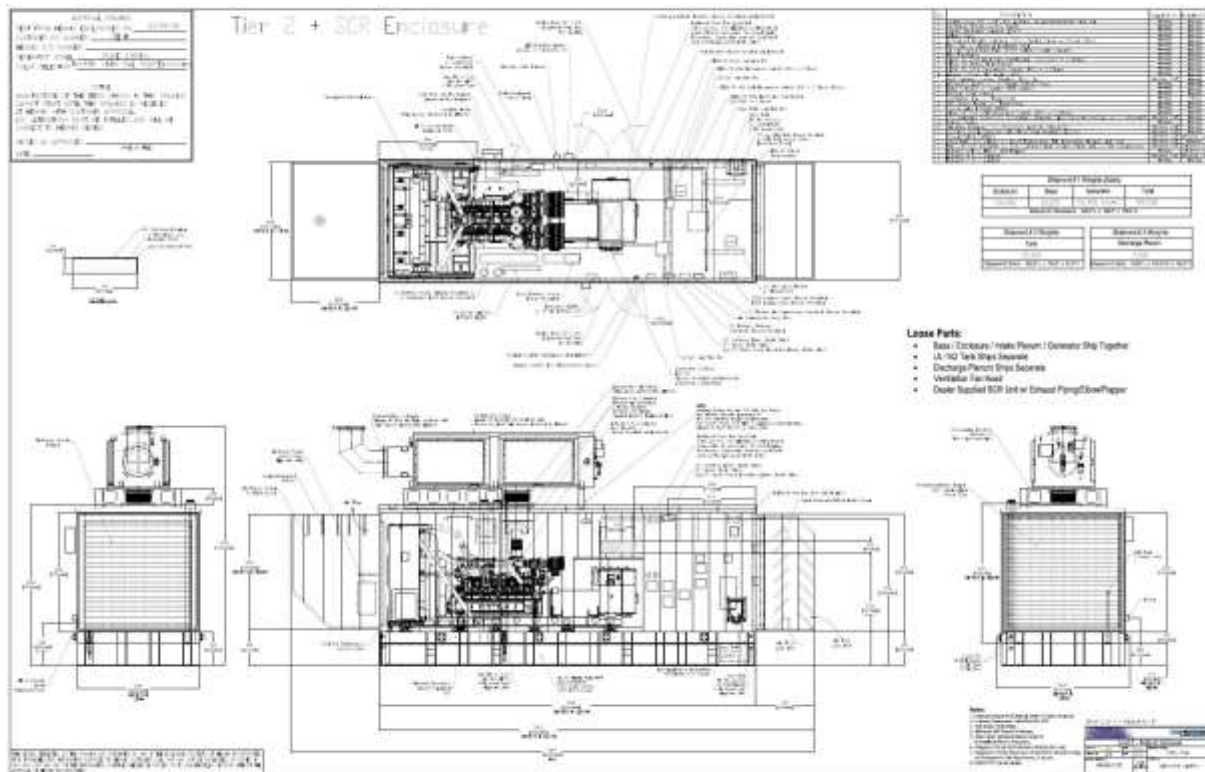
- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

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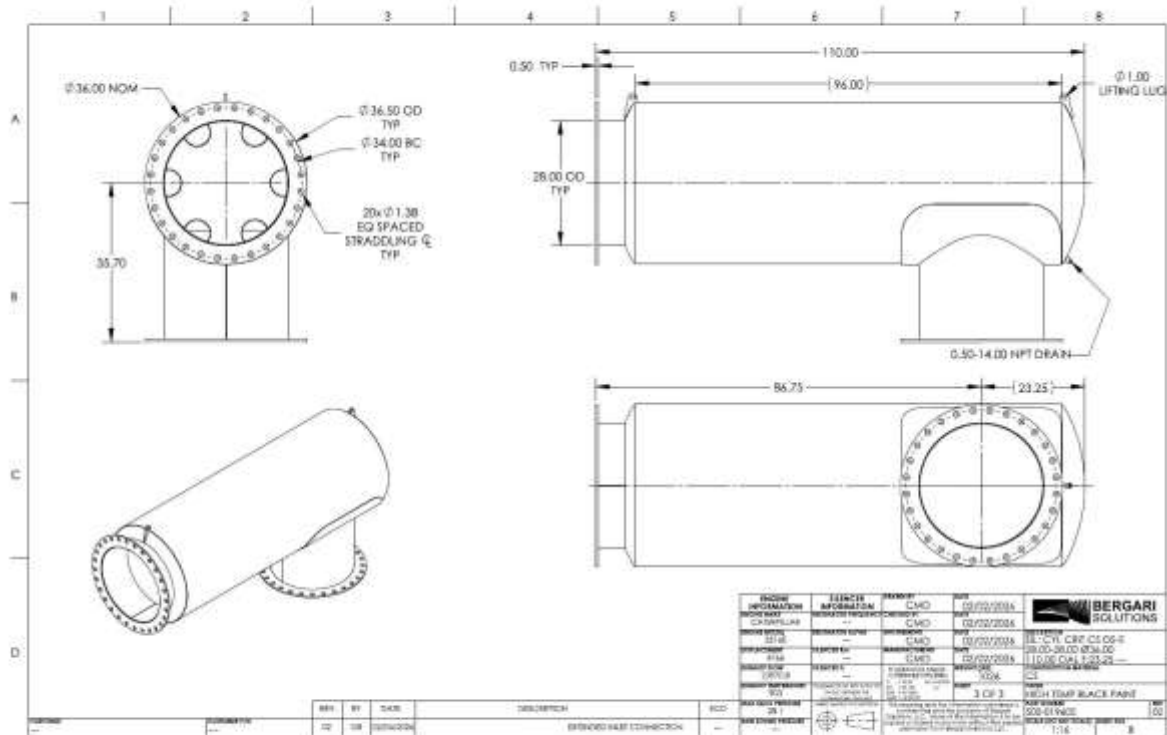
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Generator Acoustic Enclosure (Tier 2 + SCR)



Exhaust Silencer



Exhaust Silencer – Expected Performance (Bergari)

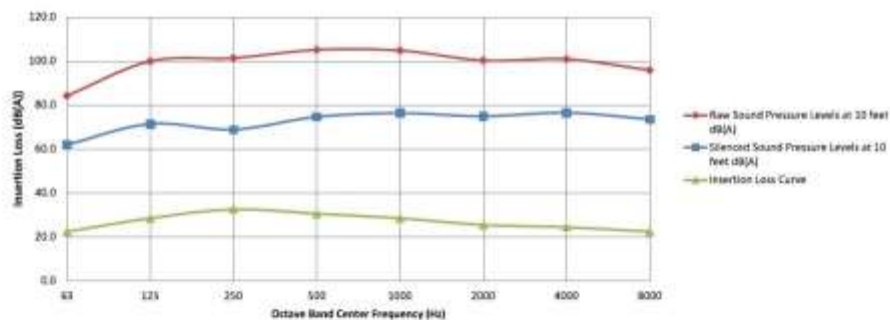


Application Data		Customer Data	
Engine Manufacturer	Caterpillar	Project Name	Silencer and Piping RFO, GET-1708
Engine Model	3516E	Customer	Hennig
Engine Rating	3000 kW	Contact	Cory Jones
Engine Displacement	4756 in ³	Phone Number	815-316-9900 Ext 329
Maximum Exhaust Flow	23970.8 CFM	Street	10901 North 2nd St
Maximum Exhaust Temperature	903 °F	City	Machesney Park
Maximum Silencer Back Pressure	28.1 in H ₂ O	State	IL 61115

Engine Exhaust Acoustics		Approximate Divergence Loss 9 dB(14)								
Unsilenced distance from source (ft)	3.3									
Silenced distance from source (ft)	10									
Frequency	63	125	250	500	1000	2000	4000	8000	Overall	
Raw Sound Pressure Levels: dB(Lv)	120.0	125.5	119.5	117.8	114.3	108.6	109.4	106.5	128.1	
Raw Sound Pressure Levels at 3.3 feet dB(A)	93.8	109.4	110.9	114.8	114.3	109.8	110.4	109.4	120.0	
Raw Sound Pressure Levels at 10 feet dB(A)	84.2	99.8	101.3	105.0	104.7	100.2	100.8	99.8	110.4	
Silenced Sound Pressure Levels at 10 feet dB(A)	61.8	71.4	68.8	78.5	76.3	74.8	76.4	71.4	82.8	
Insertion Loss dB(A)	22.3	28.4	32.5	30.5	28.4	25.4	24.4	22.3	27.6	
KHz SOUND DATA NOT PROVIDED										
Silencer Backpressure in H ₂ O										28.1

Silencer Sizing				
Part Number	Nominal Diameter	Shell Length	Inlet Size	Outlet Size
500-019605	36"	96"	28" Pipe	28" Pipe

Expected Silencer Performance



The above performance curve represents the theoretical sound reduction expected from the silencer specified based on the provided raw engine noise data. Ambient conditions, pre and post silencer piping and other contributing factors beyond our control may affect the actual resulting sound performance of the silencer.

GREENHECK
Building Value in Air.

Printed Date: 11/22/2017
Job: Vent Fan
Mark: Mark 1
Model: SE1-12-432-A4

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Mr r r id

Graph showing Static Pressure (in. wg) versus Volume (CFM) x 100. The curve represents the fan's performance, labeled "1750 CFM". The shaded area indicates the operating range. A note states: "Do not operate in shaded area". The system curve is labeled "System". The graph also shows Brake Power (hp) on the right Y-axis.

Operating Bhp point	0.00	0.00
Operating point at Total External SP	0.09	0.00
Operating point at External SP	0.033	0.00
Fan curve	0.069	0.00
System curve	0.192	0.00
Brake horsepower curve		

Sound Power of Source Data											
	62.5	125	250	500	1000	2000	4000	8000		d	
	66	66	69	62	64	63	56	50	69	67	8.3

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Journal of Internal Medicine 247: 391–395



	A	B	C	D	E	F	G	H	I	J																																									
1	TABLE 1: Key Performance Indicators <table border="1"> <thead> <tr> <th>Metric</th> <th>Target</th> <th>Actual</th> <th>Variance</th> </tr> </thead> <tbody> <tr> <td>Efficiency (%)</td> <td>95</td> <td>92</td> <td>-3</td> </tr> <tr> <td>Cost Reduction (%)</td> <td>10</td> <td>15</td> <td>+5</td> </tr> </tbody> </table> TABLE 2: Resource Allocation <table border="1"> <thead> <tr> <th>Resource</th> <th>Allocated</th> <th>Used</th> <th>Remaining</th> </tr> </thead> <tbody> <tr> <td>Personnel</td> <td>100</td> <td>85</td> <td>15</td> </tr> <tr> <td>Equipment</td> <td>50</td> <td>40</td> <td>10</td> </tr> </tbody> </table> TABLE 3: Risk Assessment <table border="1"> <thead> <tr> <th>Risk Level</th> <th>Frequency</th> <th>Impact</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>10</td> <td>100</td> <td>1000</td> </tr> <tr> <td>Medium</td> <td>20</td> <td>50</td> <td>1000</td> </tr> <tr> <td>Low</td> <td>30</td> <td>10</td> <td>300</td> </tr> </tbody> </table>											Metric	Target	Actual	Variance	Efficiency (%)	95	92	-3	Cost Reduction (%)	10	15	+5	Resource	Allocated	Used	Remaining	Personnel	100	85	15	Equipment	50	40	10	Risk Level	Frequency	Impact	Score	High	10	100	1000	Medium	20	50	1000	Low	30	10	300
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