



PS SPEC™ Power System Sizing and Specification

xyz sample



A Rolls-Royce solution

Model: mtu 10V1600 DS500 (Qty 1) Sizing: Meets requirements

9/8/2021

Sizing Prepared By:

For:

Vern Booth
United States of America

Project Overview

Table with 4 columns: Parameter, Value, Parameter, Value. Includes Voltage (277/480V), Frequency (60 Hz), Phase (Three Phase), Product Type (Standard), Fuel Type (Diesel), Rating Type (Standby), Site Elevation (152 m), Ambient Temperature (40°C), and Permitted Back Pressure (50 mbar).

Load Analysis Summary

Table with 4 columns: Parameter, Value, Parameter, Value. Includes Peak kVA (746.1), Running kVA (357.1), Load Factor % (65.6), Peak kW (327.9), Running kW (327.9), and Running PF (0.92).

Generator Set Details

Table with 4 columns: Parameter, Value, Parameter, Value. Includes Generator Set Model (mtu 10V1600 DS500), Nameplate kW Rating (500), Alternator Model (572RSL4027), Rated P.F. (0.8), Temperature Rise (130°C), Site kW Rating (500), and Engine Model (3D 10V1600G80S).

Block Load Transient Response

Alternator Motor Starting

Table with 6 columns: Load Change, FDip, VDip, Recovery Times, VDip, SKVA. Shows data for 0-25%, 0-50%, 0-75%, and 0-100% load changes.

Technical Data at 100% Nameplate Rated Load

Table with 4 columns: Parameter, Value, Parameter, Value. Includes Make (MTU), Governor (Electronic Isochronous), Model (mtu 10V1600 DS500), Cooling Pkg Ambient Rating (50°C), Aspiration (TurboCharged), Cooling Pkg Airflow (642 m³/min), Cylinder Configuration (10-V), Heat Rejection to Coolant (235 kW), Displacement (17.5 L), Heat Rejection to CAC (118 kW), Rated RPM (1,800), Heat Rejection to Fuel (4.6 kW), Fuel Consumption (125.3 L/hr), Heat Radiated to Ambient (59 kW), Aspiration Airflow (35 m³/min), Exhaust Stack Temperature (461°C), Emissions Rating (EPA Tier 2), and Exhaust Flow Rate (103 m³/min).

- 1. Based on standard conditions of 77 °F, 1000 ft. elevation, 0.5" H2O intake restriction. Exhaust Flow Rate is evaluated using Stack Temperature.
2. Based on instantaneous voltage dip as defined per NEMA MG-1.
3. Recovery time is based on steady state recovery of voltage. This information is based on average performance, and should not be considered a guarantee. Results may vary based on production tolerances and site conditions. Consult Rolls-Royce Solutions America Inc. for further information regarding transients.
4. NA = Not Applicable 5. CF = Consult Factory 6. The average running load on diesel engines should not be less than 30% of rated power.
7. Site kW Rating is the maximum sustainable kW at the project site conditions. Note that the Starting kW can be higher.
8. Engine intake air temperature is based on ambient temperature. Additional installation preheat is not considered for calculated derate performance.

Disclaimer/Explanation: All information provided in this program is provided for information purposes only and does not constitute a legal contract between Rolls-Royce Solutions America Inc. and any person(s) or entity unless otherwise specified.



PS SPEC™ Power System Sizing and Specification

xyz sample



A Rolls-Royce solution

Model: mtu 10V1600 DS500 (Qty 1) Sizing: Meets requirements

9/8/2021

Project Overview

Voltage	277/480V	Fuel Type	Diesel
Frequency	60 Hz	Rating Type	Standby
Phase	Three Phase	Site Elevation	152 m (500 ft)
Temperature Rise	130°C	Ambient Temperature	40°C (104°F)
External Static Pressure	N/A	Permitted Back Pressure	50 mbar (20.1 in. H ₂ O)

Step	Load Description	Qty	SkW	SkVA	SPF	RkW	RkVA	RPF	VDIP ^[3]	FDIP ^[3]
1 - Legally Required									9.8%	3.1%
	LR - Miscellaneous Permitted V-Dip: 30% Nonlinear: No	1	53.2	53.2	1	53.2	53.2	1		
	Supply Fan Permitted V-Dip: 30% Nonlinear: No Starting Method: Across the line 100% HP: 10	2	59.5	119	0.5	16.8	19.5	0.86		
	Elevator Permitted V-Dip: 30% Nonlinear: No Starting Method: Across the line 100% HP: 35	1	72.89	208.25	0.35	29	33.3	0.87		
	Elevator Permitted V-Dip: 30% Nonlinear: No Starting Method: Across the line 100% HP: 25.3	1	63.22	150.54	0.42	21.2	24.4	0.87		
	1 - Legally Required Loads Total		248.81	500.91	0.5	120.2	126.1	0.95		
	Project Total at 1 - Legally Required		248.81	500.91		120.2	126.1	0.95		
2 - Optional									1.9%	0.6%
	Sewer Ejection Permitted V-Dip: 30% Nonlinear: No Starting Method: Across the line 100% HP: 1	2	12.35	19	0.65	2	2.7	0.72		
	Sump pump Permitted V-Dip: 30% Nonlinear: No Starting Method: Across the line 100% HP: 3	2	31.35	57	0.55	5.3	6.7	0.8		
	2 - Optional Loads Total		43.7	75.89	0.58	7.3	9.4	0.78		
	Project Total at 2 - Optional		163.85	192.19		127.4	134.9	0.94		
3 - Fire Pump									11.1%	1.7%
	Three Phase Fire Pump Permitted V-Dip: 15% Nonlinear: No Starting Method: Solid State Starter (SSS) HP: 250	1	133.64	668.19	0.2	200.5	222.7	0.9		



PS SPEC™ Power System Sizing and Specification

xyz sample



A Rolls-Royce solution

Model: mtu 10V1600 DS500 (Qty 1) Sizing: Meets requirements

9/8/2021

Project Overview

Voltage	277/480V	Fuel Type	Diesel
Frequency	60 Hz	Rating Type	Standby
Phase	Three Phase	Site Elevation	152 m (500 ft)
Temperature Rise	130°C	Ambient Temperature	40°C (104°F)
External Static Pressure	N/A	Permitted Back Pressure	50 mbar (20.1 in. H ₂ O)

Step	Load Description	Qty	SkW	SkVA	SPF	RkW	RkVA	RPF	VDIP ^[3]	FDIP ^[3]
	3 - Fire Pump Loads Total		133.64	668.19	0.2	200.5	222.7	0.9		
	Project Total at 3 - Fire Pump		261.08	746.14		327.9	357.1	0.92		



REVIEW

Sizing of the generator is the responsibility of the “engineer of record.” Data input is based on limited information provided by others. This report is accurate based on that input. Input data and the results of this report must be reviewed and approved by the responsible engineering firm. Collicutt Energy is not an engineering firm and takes no responsibility for the results provided.

Create Date:03:32 PM 08 September 2021
Last Modified Date:03:32 PM 08 September 2021
Last Modified By:Vern Booth