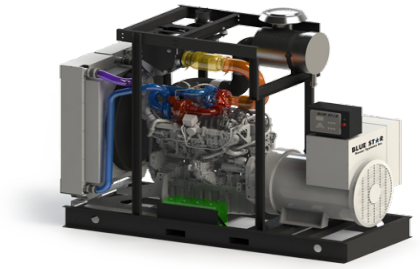
Prototype Test Certification (PTC)

Blue Star Power Systems, Inc has been producing high-quality engine generator sets for over 10 years. We understand the importance of reliable cost-effective products, and have developed industry-leading test procedures to ensure we exceed this criteria. Our PTC testing program confirms that our customers will receive products of the highest quality. Before a design goes into production, it is subjected to exhaustive prototype testing to evaluate every aspect of construction and performance. Our standard ensures that Blue Star Power Systems, Inc gen sets operate properly and provide years of reliable service.



Prototype Test Procedures

Rated Load (NFPA 110)
Blue Star Power Systems, Inc certifies that all engine generator set models will produce the name-plate rated load in all conditions within the design tolerance of the gen set.

Extended Run Testing
Blue Star Power Systems, Inc certifies that all new gen set models have undergone transient response analysis per ISO 8528-5. Engine/alternator must have the ability to accept application of the full load in a single step and recover fully to the rated voltage and frequency.

Maximum Motor Starting
Motor starting or instantaneous voltage dip curves are developed with an inductive load bank at 0.3 power factor. Individual loads are applied to the alternator and voltage dip is determined from a high-speed graph recorder. The load is incrementally increased until the voltage dip exceeds 35%

Endurance Test
The unit is tested to meet or exceed endurance requirements of MIL-STD-705C. At the end of endurance testing, key components are inspected and evaluated to ensure that any wear is within acceptable levels.

Mechanical Soundness
The unit must be structurally sound and not have any resonant vibration in either rotating components or structural parts.

Engine Cooling System
Blue Star Power Systems, Inc certifies that all gen set models will cool sufficiently within the ambient design conditions per each model. Verification of the engine cooling system is performed by operating the gen set with a sound attenuated enclosure at full rated load in a 110˚F ambient.

Anticipatory Alarms & Shutdowns
Blue Star Power Systems, Inc certifies that the pre-alarms and alarms function appropriately to protect the engine generator set from any unforeseen unnecessary failures.

Torsional Analysis
Blue Star Power Systems, Inc certifies that all engine generator set models have undergone torsional stress analysis. While torsional vibration calculations are performed with the participation of both the engine manufacturer and alternator manufacturer, all new products undergo prototype fatigue testing to confirm compatibility. A spectrum analysis was conducted over the speed range of 1750 to 1850 RPM.

Vibrational Analysis (ISO 8528-9)
Blue Star Power Systems, Inc certifies that all new engine gen set models have undergone vibration analysis to ensure that each engine generator coupling is balanced and that there is no destructive resonant vibration.

Test Codes & Standards

Blue Star Power Systems, Inc engine generator sets are compliant with many different codes and standards. Blue Star Power Systems, Inc's philosophy and performance are regularly reviewed to ensure continuity with these codes and standards: UL 2200, CSA, EPA, NFPA 99—Health Care Facilities, NFPA 70—National Electrical Code, NFPA 110—Standard for Emergency and Standby Power Systems, Department of Labor and Industry, ISO 8528-5—Generating Sets, and ISO 8528-9 Measurement and Evaluation of Mechanical Vibrations. In addition: ISO 8528-10 Measurement of airborne noise by the enveloping surface method, IEEE 115--Test Procedures for Synchronous Machines. NEMA MG 1--Motors and Generators, MIL-STD-705C

MIL-STD-705C Methods

Method	Description
301.1c	Insulation Resistance Test*
302.1b	High Potential Test*
401.1b	Winding Resistance Test
503.1c	Start and Stop Test
505.2b	Over Speed Protective Device Test
507.1d	Phase Sequence Test (Rotation)
508.1d	Phase Balance Test (Voltage)
510.1d	Voltage Adjust Range Test (as applicable)

Method	Description
511.1d	Regulator Range Test
511.2c	Frequency Adjustment Range Test (as applicable)
513.2a	Indicating Instrument Test (Electrical)
515.1b	Low Oil Pressure Protective Device Test
515.2b	Over Temperature Protective Device Test
640.1d	Maximum Power Test

**Performed by Alternator OEM*