

# **BGES**

## **Application Information**

### **FAQ - Gas Engine & Genset**

Reference : BAI #3

Model : Peako-500-COMPACT

## Frequently Asked Questions (FAQ)

<b>1</b>	<b>What kind of engine and alternator are used in Peako BGES?</b>
	Peako BGES deploy 12V150ZD gas engine with Siemens brushless Alternator; Genset model : ACCESS-250BG;
<b>2</b>	<b>Is the gas engine turbo charged? What's the difference with diesel engine?</b>
	ACCESS-250BG is a turbo charged engine, retrofitted from 12V150ZD-4A military diesel engine; The essential difference with equivalent diesel engine is the ACCESS-250BG is tailored for Producer gas application, with retrofitted Compression ratio, additional gas inlet mixing device, and a high power ignition system; Other technical specifications are listed in the engine O&M manual for your reference;
<b>3</b>	<b>What's the engine output kW?</b>
	The rated output is 250 kW;
<b>4</b>	<b>What's the gas quality requirement? Can Peako BGES fulfill such requirement?</b>
	The Tar content in the gas stream <math><50\text{mg}/\text{Nm}^3</math>, Fuel gas temperature <math><50\text{ }^\circ\text{C}</math>; The gas scrubber and cooling devices in Peako BGES can fulfill such requirement;
<b>5</b>	<b>What's the lube oil requirement? What's the control ranges of lube temp. &amp; press?</b>
	Lubricating oil should be of Grade CD, or equivalent to Q/SY8014-66 #16 oil; <ul style="list-style-type: none"> <li>♦ Lubricating oil temperature : 60 ~ 80 °C;</li> <li>♦ Lubricating oil pressure : 0.49 ~ 0.9MPa;</li> </ul>
<b>6</b>	<b>Is it Air or Water cooled? How to control cooling water temperature? What's the purpose of the cooling water tank? How many coolers are used?</b>
	ACCESS-250BG deploy Open Loop cooling system whose temp. is maintained at about 75 °C; The external cooling water temperature is governed by the external Cooling tower, while the internal cooling water temperature is controlled by the Build-in Thermostat valve; The designed purposes of the water tank are :- <ol style="list-style-type: none"> <li>a. An easy monitoring of the amount of cooling water in the system;</li> <li>b. Automatically compensate the volumetric change in the cooling water;</li> <li>b. Vent any vapor during operation to avoid overpressure in the cooling chambers;</li> <li>c. Act as a water buffer to store the water when engine stopped;</li> </ol>

<b>7</b>	<b>What are the functions of the engine monitor panel? What are the protections?</b>
	<p>Peako Engine monitoring panel serves:</p> <ol style="list-style-type: none"> <li>a. Monitor and display engine running condition and data;</li> <li>b. Generate alarm and siren whenever there is any engine abnormality;</li> <li>c. Shut off the Gas inlet valve when the alarm reaches the trip level;</li> </ol> <p>Essential cutoff trips :</p> <ol style="list-style-type: none"> <li>a. Low lubricating oil pressure;</li> <li>b. High lubricating oil temperature;</li> <li>c. High cooling water temperature;</li> <li>d. Overspeed;</li> </ol>
<b>8</b>	<b>What's the foundation requirement? Do you need large plinth with cast in anchors?</b>
	<p>Due to minimal engine vibration, the engine foundation requirement is pretty general;</p> <p>It should be a concrete plinth of &gt;200mm thick RC and leveled;</p> <p>During our T&amp;C in our factory, we simply put Neoprene underneath the engine base frame;</p> <p>However, we recommended to have 4 nos. of anchor bolts (M20) installed on site to keep the engine base frame in position;</p>
<b>9</b>	<b>What's exhaust temperature? Can we use this hot gas?</b>
	<p>The exhaust gas temperature at the main exhaust manifold is about 500°C;</p> <p>In order to improve the overall system thermal efficiency, Peako can provide (optional) Exhaust water heater or boiler to generate heat source for heating purposes;</p> <p>Alternatively, the exhaust gas can be used for direct heating or drying purposes;</p>
<b>10</b>	<b>What's the total weight of the genset? What's the size?</b>
	<p>Each ACCESS-250BG weighs about 3500kg, outside dimension is about 3260 x 1200 x 2200;</p>
<b>11</b>	<b>Can you provide 50 or 60Hz gensets? How about their speed?</b>
	<p>We can offer 50 or 60Hz generators with different rated speed;</p> <p>50Hz engine runs at 1500rpm, 60Hz engine runs at 1800 rpm;</p>
<b>12</b>	<b>Can we run the generators in parallel? Any Synchronizer? If so, how to operate?</b>
	<p>All the generators can be run in parallel, and we are using Heinzmann Synchronization modules;</p> <p>The operation is simple;</p> <p>Once the generators are running steadily, we can put the synchronization into Auto mode to let the generators to synchronized automatically;</p>

13	<b>Can you offer generator training? How long does it take? Where to conduct the training?</b>
	<p>Peako offers Technical training in our Jiangxi Pingxiang factory, which includes system operation, maintenance, and theoretic studies; The training last for 2 weeks;</p> <p>Client is responsible for all transportation to and from Pingxiang factory, while Peako offers free lodging (if they stay in our dormitory in Pingxiang factory) and two weeks free training;</p>
14	<b>What's the gas engine compression ratio?</b>
	<p>About 10.5:1</p>
15	<b>What is the composition of exhaust gas? Is it harmful?</b>
	<p>The composition of the gas emission from the gas engine shall likely affected by the type of biomass feedstock, the different brand of gas engines, the loading of the gas engine, the loading of the gasifier, etc. As a general guideline are :</p> <ul style="list-style-type: none"> <li>• CO : 0.15 - 0.45 %</li> <li>• HC : 10 - 30 ppm</li> <li>• NO<sub>x</sub> : 140 - 280 ppm</li> <li>• N<sub>2</sub> : 70 - 80 %</li> <li>• CO<sub>2</sub> : 15 - 20 %</li> <li>• O<sub>2</sub> : 0 - 2 %</li> </ul> <p>It is harmful to human being because there is a small amount of CO and NO<sub>x</sub></p>
16	<b>We worry about spare supply, what sort of spare part service that Peako provides?</b>
	<p>Don't worry;</p> <p>Peako has spare parts ware house in China and Hong Kong that can deliver spare parts quickly and efficiently to anywhere in the world;</p>
17	<b>What's intercooler? What's their purpose? What's the required maintenance? How do you deal with Tar in the gas?</b>
	<p>Intercooler is a cooling device to cool down the Producer gas after turbocharger in order to enhance the Producer Gas energy density;</p> <p>During normal operation, the intercooler must be periodically cleaned to avoid excessive accumulation of Tar to adversely affect the cooling;</p>

18	<p><b>What kind of igniter control used? Is it reliable? What's the required maintenance? How can we setup data?</b></p>
	<p>ACCESS-250BG uses electronic ignition control from Heinzmann;</p> <p>This high power electronic ignition is very reliable with minimum maintenance;</p> <p>The ignition process can be programmed via a communication port to adjust the ignition timing, energy level, and other parameters easily;</p>
19	<p><b>Since there is Tar in the gas stream, how can you deal with it?</b></p>
	<p>The Tar in the gas stream shall likely affect the turbo charger and the intercooler;</p> <p>Operators must periodically maintain and clean the turbocharger and intercoolers;</p> <p>Additionally, Peako provides one more Turbocharger and Intercooler in Ex-factory shipment;</p> <p>Operator should base on the running condition or every 500 hrs to replace the turbocharger and intercooler, and then clean the dismantled parts ready for the next replacement;</p>
20	<p><b>How does engine stop when tripped? How does it differ with diesel engines?</b></p>
	<p>If there is any engine failure (e.g. engine overspeed) during operation, the ignition module senses the overspeed signal and immediately cut off the electrical power supply to the igniters to stop the engine;</p> <p>In diesel, the engine is stopped by cutting off the diesel fuel solenoid valve;</p> <p>In our gas engine, the engine is stopped by cutting off the electrical control power which shall immediately cut off the igniters;</p>
21	<p><b>How to control the engine speed? What is the speed governor? What's the required maintenance?</b></p>
	<p>The logic of the speed control :</p> <ol style="list-style-type: none"> <li>a. At the set rated speed, the engine speed pickup sensor shall provide a pulse signal to the Speed Governor Module to generate a magnified signal to the Actuator to adjust the opening of the Gas Inlet Butterfly Valve; Thus the flow of gas into the engine is controlled which shall govern the engine revolution;</li> <li>b. The entire speed control comprises of Pickup sensor, Speed governor module, Actuator, and interconnection signal cables; During normal operation, there is not much maintenance needed;</li> </ol>

22	<p><b>What can we do if there's engine vibration? Can you provide raw vibration record or vibration meter?</b></p>
	<p>Whenever there is any engine vibration, the operator should identify the fault whether there is any cylinder not working or other reasons;</p> <p>During our factory T&amp;C, we take vibration data that can be shared;</p> <p>Peako can offer vibration meter at an agreed price;</p>
23	<p><b>Do you need air filter as diesel engines? How's Peako air filter?</b></p>
	<p>In order to provide clean air to the engine to mitigate unnecessary wearing to the engine, Peako deploy similar air filters as diesel engines;</p>
24	<p><b>How to start the gas engine? Does it take extensive training?</b></p>
	<p>There are detail engine starting procedures stated in the O&amp;M manual;</p> <p>It is not necessary to have extensive training before you can start the engine;</p> <p>Practice the engine starting for a few times should be sufficient to master the technique;</p>
25	<p><b>How to stop the engine? What's the procedure? What are the check points?</b></p>
	<p>The engine is isolated via the Manual Inlet Gas Shutoff Valve;</p> <p>There are detail Engine Shutdown procedure in the O&amp;M manual for reference;</p>
26	<p><b>Why do you need safety valves? How many are there?</b></p>
	<p>Since it is a gas engine using Producer gas , Safety valves are installed to protect the engine from damage when there is a blow back of combustible gas in the inlet gas manifold and passage;</p> <p>There are totally three safety valves installed along the gas passage in the engine;</p>
27	<p><b>Can we see all the exhaust temperatures? Can we see them all at one time?</b></p>
	<p>We can see the continuous display of all exhaust temperatures in the Engine monitoring panel;</p> <p>There are 12 temperature displays, so that we can easily observe the trend of the temperatures;</p>