BGES

Application Information

FAQ - Control

Reference : BAI #4

Model : Peako-500-COMPACT

Frequently Asked Questions (FAQ)

1	**What are the essential electrical control systems in BGES?**
	There are three essential systems : (1) Gasifier control console; (2) Gas engine monitoring panel; (3) Generators synchronization panels;
2	**What kind of Electrical control standard or specification used? What's the Export standard?**
	Peako electrical control complies with GB7251.1-2005; Peako BGES complies with CE legislations;
3	**What's PLC? What's the difference with electrical relays? What are the pros and cons in operation and maintenance?**
	PLC stands for Programmable Logic Controller; Comparing with traditional electrical relays: (1) Control system configuration is more flexible, and expansion is easy; (2) User friendly; (3) Can work in tough environment, anti-interference is good, reliable; Pros of PLC : User friendly, touch screen operation, occupied less space, steady operation; Cons of PLC : Expensive, requires more skillful technician for maintenance;
4	**What can we do when PLC fail? We have no experience of PLC, should we attend PLC training now before we can operate?**
	When PLC fails, we should identify the fault; Usually we can change the PLC module or re-install the PLC program to trace the fault; Don't worry if you haven't operated PLC before; When you have successfully gone through an introductory training session, then you should be able to operate the PLC in Peako BGES;

5	**How to input PLC settings? Any Password? Who can amend the settings?**
	You need a Laptop with RS232 connector and a special data input cable to access the PLC, such as amending the settings; There are Passwords installed into the Touch Screen, and Password access is designed to have different level of authority; A usual operator cannot access into the PLC to amend the setting; Supervisory Password is required to input data into the PLC;
6	**Does Peako provide electrical wiring and control drawings? As we cannot read Chinese, are there any English descriptions in the drawings?**
	Peako shall provide Electrical schematic and wiring diagram with English description;
7	**Do those electrical cabinets in the system waterproof?**
	Yes, all the electrical cabinets used in BGES are of IP56; The generator synchronization panels, which are installed indoor, are of IP54; However, they comply with CE requirements;
8	**What are the critical electrical control systems in Peako BGES?**
	Gasifier protection systems are : (1) Alarm protection : 6 circuits of E-stop; (2) Gasifier shutdown : 4 critical equipment with overload protection device; (3) Gasifier shutdown : Gasifier Middle high temperature device; (4) Alarms : 2 Bursting disc activation; Generator protection systems are : (1) Alarm & Shutdown : High lubricating oil temperature; (2) Alarm & Shutdown : Low lubricating oil pressure; (3) Alarm & Shutdown : High cooling water temperature; (4) Alarm & Shutdown : Overspeed; (5) Shutdown : Under voltage, Over voltage; (6) Shutdown : Over current; (7) Shutdown : Short circuit; (8) Shutdown : Reverse loading; Please refer to Peako's O&M manuals for the specific alarm or shutdown settings;

9	**How do you install and commission the wiring during site erection? Does Peako send over Commissioning engineer?**
	During site erection, each individual electrical wire linking between modules or towards the control room will be installed piece by piece; Peako shall provide Commissioning engineers to site;
10	**How many motors are there in Peako system**
	For a Peako-500-BGES, there are totally 15 motors; But it does not include the motors in the cooling towers;
11	**When there are defects of the electrical components, does Peako provide spares?**
	When we ship out the system, Peako shall provide reasonable spares for the warranty period; Upon request, Peako shall provide spares at a reasonable price;
12	**Does Peako provide electrical component list with quotation?**
	Peako shall provide electrical component list; As the cost of the components fluctuate significantly, Peako shall provide quotation upon request;
13	**What kind of electrical components used? Can we buy them aboard? If we cannot source it, what can we do?**
	For those common electrical components installed at Peako electrical panels, such as circuit breakers, contactors, PLC, Touch screen, etc. are of those famous international brands such as ABB or Siemens; These are commonly available aboard; In case you cannot buy it locally, Peako can provide spares at an agreed price;
14	**What sort of electrical control training is available?**
	Peako shall provide the following electrical control trainings: (1) System safety protection; (2) System control theory and schematics; (3) Electrical operation and maintenance;

15	**If the PLC program fails after running for a period, what can we do?**
	You can reinstall the PLC program; When we ship out the system, Peako shall provide a Memory stick with all the necessary software program; You can install the program yourself or alternatively we can assist to install via remote internet access;
16	**What are the possible reasons for abnormal ESP voltage?**
	The followings are the common faults: (1) Electrical component failure; (2) Humidity inside ESP is excessive; (3) Too much water or ash entrained in the insulation oil; (4) The electrode wire short circuited or grounded; (5) The insulator at the transformer is wetted; (6) The heavy electrode wire hanger fell off; (7) The ESP flushing water valve is left open or leaky;
17	**What can we do if the Frequency Inverter fails?**
	If the Frequency Inverter fail, you should try to locate the fault; If necessary, Peako can provide spare parts at cost; Alternatively, you can bring the Frequency Inverter to the local dealer for maintenance or replace with a new one;
18	**Sometime we cannot ignite the gas at the Flare Stack, why?**
	To enhance the gas ignition capability, Peako has installed two sets of Hi-volt igniters at the gas outlet inside the flare stack; Occasionally, the flare gas cannot be ignited, especially when the gasifier was newly flashed up with the gasifier temperature < 400^{o}C; There are various reasons that the flare gas cannot be ignited, maybe the gas Heat Value is too low, Gas pressure is too low, Gas is too concentrate or too lean, gas is too wet, the ambient wind is too strong, problem with the Hi-volt igniter, etc. Whenever the flare cannot be ignited, we must identify the fault; Anyway if it's not ignited after several trials, you must use a manual igniter to flare the gas to mitigate environmental impact;

19	**How to set the AVR?**
	Peako is using BASLER AVR (Automatic Voltage Regulator) which is stable, versatile, and user friendly; For AVR setting procedure, please refer to Peako O&M manual about【DECS-100】;
20	**When the electrical output voltage is unstable, what can we do?**
	When the electrical output voltage fluctuates widely, you can slightly adjust the KI and KP setting; Please refer to the detail procedure stated in Peako O&M manual about【DECS-100】;
21	**When the electrical frequency is unstable, what can we do?**
	The unstable output frequency might be caused by the fluctuating Quality of Producer gas or the Engine speed governor; If the gas quality is unstable, adjust the gasifier for a stable HV, pressure, temperature, etc. If the speed governor is unstable, check the actuator linkage, or slightly increase the Gain and Derivative of the Speed governor;
22	**What kind of Synchronization module is used in Peako BGES?**
	Peako is using the German Heinzmann "DGM-2" Synchronization module; It has the combined【Synchronization】and【Load sharing】functions;
23	**What are the essential functions of the generator control panels?**
	Peako's generator control panels are essentially monitoring all the individual generator performance with various meters on the panels; Another essential function is providing generator synchronization functionality, which can be in【Island】 or 【Grid】mode;
24	**How to operate the generator control panels?**
	Peako's generator electrical panels provide【Island】and 【Grid】synchronization functions; There are【Manual】or 【Auto】control selection; For details of the procedure, please refer to Peako O&M manual;

25	**After the generators were running in parallel, how can we adjust the Load Sharing?**
	Sometimes, there is some uneven load distribution after synchronization; Don't worry, you can adjust by fine tuning the Speed control knob at the panel; For the less loaded generator, you can slightly increase the speed adjustment; For the more loaded generator, you can slightly reduce the speed adjustment;
26	**Why are you using some Shielding cables in the control?**
	We prefer to eliminate the Signal interference for those equipment;
27	**How to adjust DGM-2 settings?**
	The settings at the DGM-2 were commissioned in Peako factory which is unlikely to lose, i.e. it is normally not necessary to readjust the settings; If it's necessary to adjust the settings, please refer to the DGM-2 User manual;
28	**There are much interference from the Frequency Inverter, what can we do?**
	Yes, the signal interference from Frequency Inverter to PLC or Touch screen is significant; We have successfully used specific signal filter to eliminate the interference;
29	**Why do you use 24 VDC in Peako BGES?**
	Before BGES export electrical power, there is a transient "Change Power" process in BGES when there is no power in the busbar; In order to maintain a continuous power supply to all electrical control components during this transient period, Peako uses 24 VDC battery to provide continuous power to the electrical controls;
30	**What are the electrical voltages of BGES?**
	BGES can be 50Hz or 60Hz; The output voltage can be made as per Client's requirement such as 110V，220V，380V，440V，480V, etc.

31	**Is there any certification for the Synchronization panel? What are the Standards?**
	All Synchronization panel were factory tested and fulfill GB7251.1-2005 ;
32	**Can we have digital display at the panels? What are the Pros and Cons?**
	We can provide Digital or Dial gauge display as per Client's request; Digital display is more specific, but more expensive;
33	**Have you calibrated the gauges in the panel? How do you calibrate? Any record?**
	Peako use specific electrical signal generator to calibrate each individual gauges before T&C of BGES ; and all the calibration records were kept in our factory;
34	**What kind of earthing system is used in BGES?**
	The earthing systems:- (1) Gasifier lightning arrester with independent earthing tape; (2) Generator bodies and motor casings earthing; (3) The N-connection of electrical supply; (4) The –ve connection of 24VDC;
35	**Our plant shall be installed in rural area without tall buildings nearby. But Peako BGES is pretty tall, how can it be protected against lightning?**
	There is a lightning arrester installed at the top of the flare stack with independent earthing tape to ground;
36	**Is there any cable numbers? Is it likely to drop off during transportation?**
	There are conspicuous cable labeling (at each end of the cables) which are unlikely to get lost;
37	**Are there any component labels in the electrical panels? Can we match those with drawings?**
	All essential electrical components were labeled that match the labels in the electrical drawings;

38	**How do you install cables to cabinets? Is there any special glands? Is it water or dust proof?**
	We are using cable glands at the cabinets to protect the cable as well as dust or water proof;
39	**There are so many cables, would Peako provide cable schedules, including volt-drop calculation?**
	Each cable in the system is selected with calculation and fulfill IEC requirement; Peako can provide cable schedule including volt-drop, cable specification, temperature rise factor, cable grouping, etc.;
40	**There are different electrical specifications between China and other countries, such as the N-cable cross section area, how do you deal with that?**
	We shall review the specific electrical specification/legislation at the relevant country or location; Then we shall design our electrical cable and components accordingly;
41	**What kind of electrical license is required for BGES operator? What kind of electrician certificate is required for electrical maintenance?**
	For BGES operators, there is no need to have Electrician Certificate; But for electricians involving in the maintenance of the electrical works, then valid【Electrician Certificate】is required;
42	**When we purchase BGES, what kind of electrical tools or meters should we prepare?**
	The client should consult their electrical engineers or electricians about the general electrical tools or meters required; In particular, the Client should have a Laptop with RS232 port for installation/downloading PLC program, setting Synchronization panel, and Gas engine ignition module.