EER Power Generation System

Common Questions & Answers

1. What is EMF radiation level of these Units at 1 foot, 10 foot & 20 foot?

Ans: The EMF radiation of the unit at 1 foot distance from the reactor is at 0.5 microtesla. This lower than the EMF of a convenient outlet of the house or office.

2. Which electrical parameter is being used for close loop System? Voltage or Frequency?

Ans: The electrical parameter use for close loop system being utilize by the EER-SPG for its continuous source of excitation after an initial excitation by a battery bank with super capacitor manage by an inverter system is voltage.

3. Specify Ramp up & Ramp Down rate of 1 MW EER-Unit?

Ans: The ramp up and ramp down rate of the EER are programmable from 10 seconds and upwards

4. Can we regulate the frequency of unit between +-3% than 0.25%? Please indicate the limitations if any.

Ans: Frequency is programmable from 45 to 65 Hz. The default regulation is +/- 0.01 % which can be adjusted and program as well.

5. What is Fault level of EER-Unit?

Ans: The EER-SPG unit is managed by an inverter system including it protection system. The unit is allowed to have an overload of for an hour. Beyond 20% the unit will trip off within 10 seconds to protect the IGBT switching modules of the inverter.

6. Can we operate the Unit 24X7 365 Days.to cater the consumer demand.

Ans: Yes, It can be operated 24/7, 365 days a year literally. We require at least 14 days shutdown a year for the mandatory maintenance check-up which can programmed and plan without shutting down the whole capacity if it involves 10Mw and above. It can cater the consumer demand as long as the maximum demand is within its rated capacity rating.

7. Can we use EER for varying load profile? Typically, in a day, at Substation level, we are experiencing peak power requirement 4 times higher than off peak power requirement

Ans: Definitely yes as long as the peak power requirements does exceed the maximum rating of the EER-SPG. Having to comply the capacity requirements for peak power requirements will be a very inefficient and costly operations on the side of the power developer. But the system can design according to the load profile of the 24 hour load.

8. How much capacity EER Generator required to meet 500KW peak load of Consumer? What is overload capacity of EER UNIT.?

Ans: The 500Kw rated capacity may handle this requirements as long as there are no electric motors being started at reduced voltage starting or with soft starters that may cause the current to rise beyond the 20% allowable current overload. Electric motors runs with variable speed drive will be fine if program correctly.

9. How to measure efficiency of EER Generator? What is efficiency of EER Generator?

Ans: Guaranteed minimum efficiency is 96% base on the nameplate rating of the unit.

10. How to monitor the performance of Unit? Is there any Computer system to monitor the performance indicators of the Unit? What indicator you can monitor while Unit is in operation?

Ans: The unit can be operated remotely and on site. The unit itself is being controlled by Human Machine Interface (HMI) were kW, voltage, current, frequency are being displayed and set and program.

11. Can you control Unit Operation in terms of supplying active and reactive Power?

Ans: Yes, we can program a maximum 50% reactive power for voltage support. But this will be a very inefficient operations since reactive power are not metered only the active power.

12. Please elaborate on Power Curve of EER-Unit.

Ans: If the units are synchronize with the grid and the grid can take 90% or 100% of the power output capacity of the EER-SPG then the Power Curve will be almost a straight line. If the EER-SPG independently use to power a specific building, factories or industries the power curve will be almost the same as the load profile of the factory.

13. What is weight, Vibration and noise level of 1 MW Unit? Can we stack these units vertically and how much vertically stacking do your recommend..?

Ans: The EER-SPG has minimal noise level since it has no moving parts except for the fans and small pumps for the water cooling system. Only the noise of the inverter are audible at 60 dbA

14. Does these units required confined space (No people around) during operation?

Ans: The units does not need a confine space. It can installed outdoor and indoor. In fact we our own people station within the units 24/7, 365 days a year to operate the system and respond to eventualities. The O&M is mandatory to be handle by us and non-negotiable for the protection of IP.

15. What is Frequency & Voltage at which the power is generated by these resonating & reactive coils which is further normalized at 50Hz, 440V?

Ans: It is dependent on the frequency of the source of excitation at the moment. But future design and upgrade which will be available 2 years from will be at the frequency of 15 kHz using special magnetic materials to enable to increase its capacity output with a smaller footprint

16. Please indicate the Availability of unit in %. What type of component breakdown normally you have experienced during continuous operation of Unit.

Ans: As of the moment we can assemble 300Mw per month. But the first order will be within six (6) months to allow us to prepare the logistics and materials needed. For confirmed and irrevocable order the succeeding delivery will be on a monthly basis.

17. Please indicate environmental impact of Unit Operation if any...?

Ans: There is NO environmental impact of the unit during operation

18. Does unit has grid synchronization facility?

Ans: Yes and in-fact we have model that has seamless ON/OFF/ON capability. Meaning when the grid is off it will automatically switch to an off grid mode without power interruption and when the grid is back the it will seamlessly switch to on grid mode without interruption as well. This ideal for imbedded application where the excess power is being feed and sold to the grid.

19. Pls specify capacity of High Frequency, High Voltage oscillator / excitation required.

Ans: Sorry we can't divulge this

20. Does Unit consist of Modular racks of Resonating & reactive coils? How many rack one unit (1 MW outdoor) consist of? Can we operate unit with lower number of racks (Less Capacity) depending upon withdrawal of racks for maintenance purpose?

Ans: 1Mw is consist of 6 Main Reactors, 6 resonating and reactive reactors with 6 isolation transformers. It is 3 reactors per rack

21. Is it possible to run different Capacity units parallel? Does units experience load sharing constraints?

Ans: Yes and no load sharing constraints. In our software management system we can run a maximum of 200 units in parallel. But we limit per system cluster to only to 50% meaning 100 units. If the capacity is beyond the limit of one system cluster then we can just additional system cluster and run them in parallel.

22. Ramp up & Ramp Down rate of 1 MW EER-Unit – This will help to understand the type of load profile unit will can meet without any grid disturbance.

Ans: The ramp up and ramp down rate of 1 Mw is fully adjustable and programmable. It can be adjusted as fast as 10 sec and upwards. It can be also be adjusted and program to feed its power output less than the rated capacity if the grid dictates so.

23. Fault level of EER-Unit – to understand grid stability.

Ans: EER is manage by an inverter similar to solar and wind. The unit at 115% overload will trip in 4 hrs. Beyond 115% it will trip in less than 10 seconds to protect the IGBT switching module. It is dictated by the load current and Voltage.

24. Overload capacity of 1 MW EER-Unit EER Unit – Understand steady state and dynamic load disturbance unit can handle

Ans: Each unit can handle a maximum overload of 15% of the rated capacity for 4 hours.

25. Weight and vibration level of 1 MW EER-Unit. Can we stack these units vertically and how much vertically stacking do you recommend..?

Ans: 1 Mw unit weighs roughly about 12 tons including the container van enclosure. The units can be stack vertically up to 4 containers without steel structure support. But if there's some steel structure support it can be designed to handle as many units the structural steel foundation capable of. The vibration is almost zero since no moving parts. Only small pumps, fans and blower for the liquid cooling system.

26. Can we operate a unit with a lower number of racks (Less Capacity) depending upon withdrawal of racks for maintenance purpose

Ans: Maintenance and operation of the system is exclusively handle by the manufacturer .It is nonnegotiable to ascertain the guaranteed efficiency of the units is delivered within the entire life. It has a corresponding fee in our OPEX offer which includes manpower cost for 24/7, 365 days a year operation, replacement parts both for inverters, reactors and miscellaneous. Practically the client has nothing to do and spent in operation and maintenance of the unit the entire lifespan.

The 1 Mw may operate at 500kw during annual periodic maintenance which may last for 4 hours or a little bit more if there are some major parts to be replaced.

27. What is the startup Power requirement in KW for 500KW/1000KW generator?

Ans: the start power of the EER-SPG requirements in terms of Kw is always 10% of its rated output capacity. For a 500Kw it needs 50kw and for 1000kw is 100kw.

28. What is the minimum Load requirement in KW for having stable output from system for 500KW/1000KW generator?

Ans: There is no minimum load requirements for EER-SPG. The EER-SPG is a power generation system on demand. This means the unit will deliver the power output as per the requirements of the load or the grid within its maximum rated capacity output.

29. Can this system show output at No Load? (No Load generation capacity value under ideal condition)

Ans: Like conventional generator it will register a voltage at no load. The no load voltage will be 400volts at 50 Hz and 480volts at 60Hz. At no load only the parasitic load of the system will be the burden equivalent to more or less 5% of the rated net output capacity which doesn't show up on the metering instrument. The rated output is net capacity of the unit and the gross output is plus 15%.

30. What is the response ratio of generation output for load variation?

Ans: The respond of the EER-SPG against load variations is less than 3 seconds.

31. What is the Ramp up and ramp down rate in terms of Kw/Secs?

Ans: Ramp up/Ramp down time is programmable. The unit is capable of ramping up from zero to maximum rated capacity in less than 10 secs. Response time to any load variations ramp up ramp down is less than 3 secs.

32. What is the system fault level for which it is designed? Generally, it is 40KA for 0.12 secs.

Ans: EER-SPG is being controlled by an inverter which is a semiconductor base like solar and wind. The life is dependent on the switching module particularly the IGBT always rated in current. The maximum fault level it can handle without causing a tripping of the system is 150% of its rated current for 10 seconds to protect the IGBT module.

33. What is the performance of system in case of sudden Full load throw off/addition condition?

Ans: EER-SPG has no revolving mechanism to generate electricity. It is an electromagnetic induction system relying its feedback from the current drawn by the output load. Any sudden loss of load or increase of load, voltage is stable at plus or minus 5 percent regulation and frequency at plus or minus 0.01 regulation.

34. Whether this system is tested in any accredited international Lab? If yes, then would request for authenticated test reports.

Ans: The unit has been tested by our National Power Corporation in actual field of operation. This include a ramp up/ramp down of load, sudden increase of load to maximum rated output and sudden loss of load at full load.

35. Can we get DC output from this system instead/along with of AC output?

Ans: In theories it can be done but we can't allow the extraction of DC power from the DC bus of the smart inverter. It will affect the regulation of voltage and frequency output. Our suggestion if you have dc load, just install a DC converter to power up the dc load requirements.

36. What is the maximum ambient temperature allowed for 100% output for this system?

Ans: the maximum ambient is 55 degrees C

37. Whether output of system is dependent on ambient temperature?

Ans: Output is not dependent on ambient temperature

38. Does it have auto synchroniser for synchronising with grid?

Ans: yes and seamless On/Off/On grid operation without power interruption.

39. Does it get automatically adjusted to grid parameters in case of grid fluctuations like voltage, frequency, reactive load requirements etc?

Ans: Voltage and frequency automatically adjust with the grid. Reactive power support is programmable incase required. It is all dependent on the capacity ratio of the EER-SPG against all other type of power generators connected to the grid. If its combine output capacity is minimal compare to the rest of power generation in the system then reactive power support will not do much to help stabilise voltage fluctuations.

40. What is output Voltage of the Unit.?

Ans: EER-SPG rated output are 400volts, 3phase, 50Hz and 480volts, 3phase, 60Hz.

41. As per your catalogue it shows unit derives energy from ambient sources- what is that Ambient Source. We need details to understand process of generation.

Ans: The ambient source is the electromagnetic spectrum of the planet Earth which is full of energetic electrons. Like solar panel that harvest and harness energy from sunlight which is also an ambient source or electromagnetic energy radiation in nature. The theory and principle behind its operation is based on the Faraday's Law of Induction like any conventional generator without a revolving electromagnet as source of varying magnetic field.

42. What is the O&M Arrangement?

Ans: O&M will be handle by us during the entire life of the license to assure the clients of 96% capacity factor for 25 years. It is nonnegotiable presently at a rate of $ 0.025 cents (1.8287 Indian Rupee). It includes labor, manpower, all replacement spare parts for a 24/7, and 365 days a year of operation. On economies of scale and local production, we'd aim to reduce this cost.

43. What is life cycle of the Project?

Ans: the life cycle of the license is 25 years and renewable.

44. What are all spares required

Ans: Please refer to answer in item 42

45. What is warranty Guarantee for the Unit?

Ans: Since we do O&M technically the unit is guaranteed to perform at 96% of its rated capacity for 25 years. Just for a clarification, we don't sell the unit, it's available only for a license to use the technology. The licensee will have the exclusive right and ownership over the capacity output for 25 years. The EER-SPG equipment remains to be the property of the holding company.