

LALOMAUGA REHABILITATION.
Request from Pacific Engineering.

Please provide following information –

Questions

1. Only Electronic Governor system need to change or we have to change Hydraulic system also including Hydraulic valves, Nitrogen Accumulators.
2. Please provide detailed technical requirement of Electronic Governor system, such as which PLC make, for communication with SCADA what communication protocol to be used.
3. If Hydraulic System to be changed, please provide operating pressure rating of the system .
4. Whether Servomotors need to be changed ?
5. Please provide the previous control system drawings, for reference.
6. Please confirm which signals are to be sent to SCADA system.
7. Please confirm, Main Inlet Valve control is not thru Governor Control Panel and Hydraulic system of Governor.

Question1. Only Electronic Governor system need to change or we have to change Hydraulic system also including Hydraulic valves, Nitrogen Accumulators.

Answer

1. The governor system needs to be modernized thus the bidder shall provide a system that can deliver the necessary output and one which shall:
 - a) Minimize the number of components to be operated and maintained
 - b) A single power system shall operate both bypass and Main Inlet Valve (MIV) and the governor hydraulic requirements
 - c) The governor system, bypass and MIV systems shall safely bring the machine from any operating condition to a safe shutdown condition:
 - i. in the event of a fault isolating the machines and power station under the following conditions:
 1. Fault on the 33/22kV lines tripping isolating the station with no Mains power available.
 2. System black out
 3. Accidental tripping of the machines by local or remote operation

4. Turbine over-speed due to loss of load
5. Electrical tripping of the generator

Question 2. Please provide detailed technical requirement of Electronic Governor system, such as which PLC make, for communication with SCADA what communication protocol to be used.

Answer

1 There is no specific PLC make required but the EPC currently uses:

- a) Allan Bradley SLC 500 series
- b) Modicon PLC
- c) Siemens PLC
- d) Heinzman Governor systems
- e) Woodward Electronic governor

2. The existing SCADA is Clear SCADA which predominantly uses DNP3 for data transfer over the Ethernet network, alternatively MODBUS is used when DNP3 is not available.

- a) However Fiber Optic is available at the station for SCADA communications to the Main SCADA servers through a FO to Microwave network.
- b) It is recommended that FO is to be used between the SCADA RTU cubicle existing on site and the two Generator control panels.

Question 3. If Hydraulic System to be changed, please provide operating pressure rating of the system

Answer

1. Bidders shall recommend / proposed a system that can operate and supply all hydraulic requirements for the new governor and valves systems.

- a) System to be provided shall be designed to operate at 40C ambient at 90% humidity over 30 days as a minimum operating requirements

i. Spare filters and seals for each component to be used shall be provided for the first 5000 hours of operation

ii. ISO 46, 68 and other oil grades can be supplied locally through a number of outlets, the bidder shall check with EPC prior to finalizing oil selection oil to be used.

Question 4. **Whether Servomotors need to be changed ?**

Answer

1. Bidders shall proposed this option based on the hydraulic system proposed.

a) Operating pressure could alter the size of the servomotor shaft servomotor design

b) It is very important whatever is proposed the cost of using existing vs new is to be highlighted

i. Should existing servo motors be used then the bidder shall be responsible for warranty of the servomotors during its first 5 years of operation.

Question 5. **Please provide the previous control system drawings, for reference.**

Answer

1. Dropbox should have these.

Question 6. **Please confirm which signals are to be sent to SCADA system.**

Answer

1. All monitored parameters shall be available for SCADA viewing plus control functionality such as but not limited to:

a) All temperatures

b) All pressure reading from Turbine, Generator and Transformers (generator power transformers)

- c) All electrical parameters including excitation volts / current, including alarms, trips and status indications for all parameters monitored
- d) Commands : start, stop, preselect load setting, load mode kW and set points, load mode level control, power factor raise/lower set points

Question 7 Please confirm, Main Inlet Valve control is not thru Governor Control Panel and Hydraulic system of Governor.

Answer

1. It is not necessary but to simplify the setup we prefer a single Hydraulic Power Pack Unit is to be used.
 - a) If MIV or bypass valves don't work, the governor is not going to do anything likewise if governor system has a problem there won't be a need to open valves.
 - b) Further a single system mean a single item to operate and maintain.
2. The same is said of the controls, a manual options for testing valves shall be available but the controls for valve can be embedded as part of the start / stop sequence in the same control panel and sequence.