



## GSM Automatic Control for Booster Pumping and Reservoir.

### INTRODUCTION

The system consists of 2 GSM RTUs, one at Reservoir, one at Booster Pump House. The reservoir preset level will control for auto pumping. The communication medium used can be GSM, GPRS, ASDL depending on the client objectives

### The Reservoir GSM-RTU

The GSM RTU at Reservoir consists of Solar Panel, Sealed Lead Acid Battery, GSM RTU, 4-20mA Hydrostatic level sensor and stainless steel cabinet. This RTU will log water level every 15 minutes, this data will be collected until it reached 160 bytes (that's equivalent of 32 data of water level or 8 hours), then it will automatically send back to Central Database server.

This GSM-RTU has preset water level alarm, HH level for overflow, H level for stopping of pump(s), L level for starting of pump(s), LL level for suction tank critically low. This GSM-RTU will wake up to immediately send SMS to the server as an alarm event as well as directly to the GSM-RTU in the pump house.

Under normal working condition, HH or LL should not occur. Only H and L will be send to Pump RTU to stop and start the pump(s).

### The Pump House GSM-RTU

#### This GSM-RTU consists of the following

- 230V to DC 24V Battery Charger
- Intelligent GSM-RTU
- Analogue 4-20mA Input module
- Digital input module
- Isolation Relays
- 24V SLA rechargeable battery
- Modbus interface reader
- Analogue 4-20mA output module
- Digital output module

### The Pump GSM-RTU will have intelligent as follow:

- When water level at suction tanks reaches HH, H, L, LL it will send data back to server for dispatching according to specific condition.
- The water level at suction tank will be logged every 15 min and send back to server for historical trending.
- When this Pump RTU received data from Reservoir RTU either H or HH, it will check whether the system is set to "GSM" or "LOCAL", if the selector switch is "GSM", it will check if a "sequence selected" pump for "TRIP" status, if the pump is not "Trip", it will then momentarily closed the selected pump "Start Relay" for 1 second, it will then check the pump "Run" light. When it detected the run light, this pump start sequence is considered completed and it will send data back to server indicating a pump has been started and run.
- After this successful starting of pump by detecting the "run" light, it will select the second pump in sequence to "start the pump using the above method".
- This intelligent is set to run for example 2 pumps out of 3 pumps, in a rotating manner so that all pumps will have equal running hours.
- When the Pump RTU received a "L" or "LL" data from the Reservoir RTU, it will stop the pump that's in operation by momentarily closed the selected pump "Stop Relay" for 1 second, it will then check the pump "Stop" light. After the "stop" light is detected, it will send data back to update the server. It will check until all the pumps has "stop".
- The Pump RTU will not check the suction tank level, sequence the valves as these is already incorporated in the Pump motor starter panel.
- The status of a which will depend on customer requirement "delivery pressure", "flow rate", "suction level", Pump(s) Status, kWh, Current (A), Voltage (V) will be updated each time as well.
- The Pump RTU will also accept instruction from Server to start and stop the selected pump(s)
- The Pump RTU has the capability will also send data back to Server when it is "Polled"
- The GUI/HMI is currently under construction, but a proposed layout is as per attached.