



GREENFUSION TECHNOLOGIES LIMITED

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PROJECT COMPLETION REPORT

TWO-PHASE SOLARISATION, PUMP INSTALLATION AND PLUMBING WORKS

MUGUR WATER SUPPLY

A. Introductions

The Mugur Water Supply System was designed by NRT Water Engineers to pump water from a sump constructed alongside the sand dam wall to a 100m³ masonry storage tank located 210 m away. From this tank, a secondary surface pumping system was designed to convey water to a 50m³ masonry tank situated 7.8 km from the main pumping station. The project was constructed by SAIMN Ltd on behalf of NRT and later subcontracted to Green Fusion Technologies to undertake solarisation, pump installation, and plumbing works essential for the full operationalisation of the system .

B. SCOPE DESCRIPTIONS

❖ Solarisations works

Purchase and supplied solar mounting structures, solar panels to site, fabricated solar support structure supporting 21 solar panels @620 Watts, Mounted the panels firmly to withstand strong winds and minimise theft or cases of vandalism.

❖ Electrical works.

A 210-metre cable trench was excavated to lay 210 m of 6.0 mm² 4-core and 1.5 mm² 2-core copper armoured cables for power supply and wellbore sensor connection from the powerhouse to the submersible pump in the sump. Two additional 20-metre sections of 10 mm² 4-core copper armoured cables were laid in parallel to support the two-phase pumping system. Both pumps were wired through hybrid control panels, which were tested and confirmed to be functioning properly.

❖ Pump installations

Our Services: Borehole Services, Water Pumps, Solar Solutions, Generators, Swimming Pools and General Construction

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Spliced the 1.5 kW submersible motor and coupled it with a DS 3-18 pump end delivering 8 m³/h at a head of 20 m. This was later replaced with a DSD 3/13 pump end, providing 5 m³/h at the same head. A cooling sleeve was installed, and the assembly was lowered on the hypotenuse side of the sump to maximize water extraction from the sump to the tank.

A concrete slab was constructed as the pump basement, onto which the DI-N 5-36 surface pump with a 5.5 kW motor was mounted. The surface pump delivers 8 m³/h at a head of 140 m. All piping and electrical connections were completed, and the pump was tested and confirmed to be functioning properly.

❖ Plumbing works

Piped the 210-metre pipeline from the sump to the 100 m³ masonry tank and tested it successfully. An additional 70 meters of pipeline was installed from the 100 m³ tank to the two adjacent water troughs. The 7.8 km transmission pipeline from the 100 m³ tank to the 50 m³ community storage tank was also completed successfully, with the first 2 km upgraded from PN 12.5 to PN 16 for improved pressure handling. Pipeline works from the 50 m³ masonry tank to the water kiosk were completed and tested successfully. The two 10,000-litre UPVC tanks were piped and tested, and finally, a 40-metre suction line using GI pipes was installed and confirmed to be functioning properly.

C. Recommendations.

- We recommend one/two plumbers/operators for operating the system.

D. Conclusion.

Solarization, wiring, pump installation and plumbing works for mugur water supply system was Successfully installed, tested ok and commissioned.

PHOTO EVIDENCE

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Solarisation works in progress



Photo of complete solarisation



floodlights okay.



Plumbing in progress



Photo of complete plumbing works



Installed air valves



Set up for hybrid control systems



Priming of the surface pumping



Installed water meter

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Installing submersible pumps in the sump.



Specs of installed 21 solar panels



Photo of Greenfusion technologies team mobilised for the job.

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