



# DUHVA POWER STATION

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Prior to the end of last year we were approached by this power station to make a recommendation where 2 existing pumps needed to be replaced.

A visit to site revealed that the installed pumps were extremely old so much so that they featured tangential discharge connections which in fact ceased in the pump industry round about 1969.

The installed pumps also operated in an application where the suction conditions were negative, to the point where we had to lift the water at least 5 meters.

This needless to say this negative suction was an inherent problem during the installed pumps life as required non-return valves or foot valves to ensure that the suction pipe line remained full of water at all times.

However foot valves have this nasty habit of leaking when not in use, resulting in all the water in the suction line draining out leaving the pump with an empty suction line.

On start up one would not be aware of this situation and would assume that the pump would prime its' self, and start to move the liquid.

This did not happen and the pump would run in a dry configuration destroying the mechanical seal, and if not attended to the wear rings, and bearings would follow in the destruction.

Our recommendation to Duvha, for the application in mind was two-fold.

1. SELF-PRIMING PUMPS
2. VERTICAL TURBINE PUMPS

Let's consider the Vertical option first.

Vertical turbine pumps are considered acceptable for this type of application where a liquid has to be removed from a sump or a negative suction condition.

These pumps are available in sizes from 50mm to 2400mm and with the ability to fit numerous impeller stage very high heads can be achieved.

The only drawback is the fact that the entire rotating assembly is suspended from a thrust bearing arrangement which supports the impellers shaft sleeves etc, and needless to say any foreign matter entering the pump suction will come into contact with these components, resulting in premature wear and failure.

The pumps are also hideously expensive, but good.

Maintenance is also a nightmare as in order to carry out any repairs etc, the whole pump complete with the electric motor must be removed from the sump, then transported to the workshop for the necessary repair.

## **The self-priming pump**

The self-Priming pump principal was developed especially for applications' where negative suction are encounter.



Gorman-Rupp was probably a trend setter in the 1800 when this technology was developed.

In fact the Gorman-Rupp Self-Primer was developed especially for negative suction, but more importantly for sewage, or out house sewage removal, lovely!

The principal is simple, as it is a single stage end suction pump which has the ability to remove air from the suction pipe, and pump volute and then replace it with the pumped media!!!! the pump is primed, and will do this every time it is started, so one does not have to be present when the pump is started.

Furthermore due to the fact that the pump can achieve this feat, it does not require a foot valve or a non-return valve to hold the liquid in the suction pipe or pump volute, very clever...

The self-Primer Pump in terms of maintenance is streets ahead of its vertical Turbine rival, as the entire unit is mounted at ground level, with a suction pipe into the liquid to be pumped.

The Self-Primer also features what is known as a back pull out facility, which allows the entire rotating assemble to be removed from the pump with disturbing the suction or discharge pipe work or the electric motor, provided a spacer type coupling is fitted.

Remember the Vertical Turbine pump, we would have to remove the pump from both the suction and discharge pipe work, messy.

## Conclusion

Dhuva Power Station, approved of our presentation and, yes they placed an order for 2 x 300mm the biggest in our range Self-Priming pumps, order value R600K.

The pumps will be installed to achieve a flow rate of 720m<sup>3</sup>/hr at a total head of 40 meters, to drive the pumps we have fitted 132kW 4 pole WEG electric motors, and have mounted the pumps on fabricated steel base plates.

And yes these pumps are less expensive than the VT pumps.

This remarkable pump was selection for an application in one of our coal fired power-stations.

The client need a pump that could replace their old D-shape (ancient) end suction pump and to draw portable water from a 5m deep sump.

The water would flow in to the sump from the reservoir, the pump would have to pump into the sand filters.

The reason the RA-OT was a great pump for the Job, was the NPSH required to pump from this 5m deep sump.

Self-priming capabilities coming in handy to ensure that there isn't any dry running, making the pump an operators dream. The external pump (on dry land), helping maintenance personal maintain the pump easier. All-round great pump selected for the right application making it the perfect solution.

Rapid pumps – we don't sell pumps, we sell solutions.



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