Safety when using Electric Submersible Pumps

MP1

The Grundfos MP1 is an important product for sampling purging and monitoring wells for environmental research. However, it has a number of material disadvantages and it is important to recognise its shortcomings:

1. It uses high Voltage: even though we have tried to minimise risks by only supplying and renting controllers from a 110V AC supply, the converter does split and ramp the voltage to the three strands on the pump, each carrying 220V.
2. The MP1 is a powerful pump capable of impressive flow rates but in order to do this the impellers need to turn at very high revolutions. This can have 2 further consequences:
   a. the pump must not be allowed to run dry; even for very short periods.
   b. the pump is more or less completely intolerant of suspended sediments.

Using this pump dry or in water which has suspended sediments can result in very expensive repairs.

Nonetheless this pump system remains the most efficient method for sampling wells with a head of water (distance between the water & the top of the well) greater than 40 metres bearing in mind the following rules:

- TAKE CARE WITH THE ELECTRICS. This means you must make sure that all (cable) connectors remain clean and dry. Also, protect the cable from sharp well edges and inspect regularly for cuts or abrasions.
- DO NOT LET THE PUMP RUN DRY. This means you must be sure that it remains immersed in water at all times. This is very important when sampling wells with a slow recharge time.
- DO NOT USE IF WATER CONTAINS SUSPENDED SEDIMENT. This means that you must check water quality before using the pump.

STAINLESS STEEL GEOSUB

After years of research and testing by our partners Geotech Environmental Equipment Inc, Denver Colorado and now with substantial experience of this new pump system from our rental fleet in the UK we are very pleased to let you know that, in many cases, it performs as an excellent substitute for the Grundfos MP1. It has several advantages:

- The frequency converter is powered by the lower 110V AC but EVERYTHING downhill of the converter is LOW VOLTAGE DC. This system therefore produces very MUCH LOWER RISKS than the MP1 system.
- THE SS GEOSUB IS NOT DAMAGED BY RUNNING DRY and is
- VERY TOLERANT OF SUSPENDED SEDIMENTS
- The SS GEOSUB is a modular system so REPAIRS ARE EASIER AND CHEAPER
- The SS Geosub system is now considerably CHEAPER THAN THE MP1.

There are some disadvantages:

- The SS Geosub is limited to a head of water (distance between the water and the top of the well) smaller than 45 metres
- Flow rate is less than that of the Grundfos MP1 (see flow rate charts).

The Stainless Steel Geosub is available to rent and buy from Van Walt, including our straight from the box rental kit with 1000w economic generator.

Conclusion:

If you need a powerful pump capable of lifting up to 90 metres in clean water then use the MP1. If the headlift is less than 45 metres we recommend you chose the SS Geosub.

PLEASE BE AWARE. According to IEEE standards when using large three phase generators to power any equipment on site it is VITAL that the generator is grounded. Failure to do so can result in damage to the equipment and more importantly the operators.