

# Efficiency at its best – Saving money whilst delivering more...

**Franklin Electric developed a unique water monitoring & management system for advanced water pump installations. Borehole water levels and flow rates can be monitored using this system.**

The general water table in the area can be kept within set levels or the total water supply can be monitored. If a borehole runs low, the system will switch off the pump until the water level recovers to a set level. It can also be programmed to supply water from alternative boreholes to ensure that the local area ground water is managed responsibly. This ensures reliable long term operations, protecting pumps from running dry and reducing equipment replacement and installation cost.

When a frequency drive is used with the pump, the speed can be varied to manage the water at a specific level. Data for the water management system is stored on a cloud server and a graphical user interface provides an overview of the status of all pumps in the system. Data trending highlights problematic pumps to allow maintenance crews to focus where attention is required. Data trending provides valuable information regarding ground water levels, cyclic trends of water levels, pump operational

time and variability of water wells. The water management system also provides energy cost information for operating the well field.

Data is sent to a cloud server and can be accessed anywhere by any party registered to do so, including management. Franklin Electric clients are finding it more cost effective to monitor pumps remotely compared to an operator driving to different locations to verify whether individual pumps are operating correctly. Operators are only sent to problematic wells when the water management system alerts them. SMS and/or email alerts are also available.

## Mine dewatering

Effective mine dewatering is the key to efficient mining operation. Modern technology and experience available from Franklin Electric, utilising their commitment to, and understanding of complex dewatering applications together with cutting edge scientific methodologies, offer

specialised solutions in South Africa. Franklin Electric's water monitoring & management system is between 40% and 60% more cost effective.

Franklin Electric's specialised mine dewatering solutions are based on a highly functional data collection, control and communication system to ensure smooth flowing operations. This includes the necessary protection mechanisms and ability to set operating points to deal with submersible pumping conditions, as well as data accumulation and control. Additionally, the highest efficiency borehole motors available today compliment the offer which deliver the most cost-effective solutions.

## So how can Franklin Electric make a difference?

We believe in reducing operating cost. Mine life and resource extensions are a reality because of buoyant natural resource prices. Under such conditions, mines and mine sites will benefit from a timeous review of their dewatering & operating systems.

An automation approach as part of the dewatering system design criteria ensures accurate tracking and trending of the system performance, as well as allowing for automated redundancy operations. Operational down time due to pump failures, flooding and other unforeseen conditions can be reduced, leading to overall savings for the mine.

## Intelligence at your fingertips – convenient and available 24/7

Franklin Electric's specialised dewatering solutions are based on the

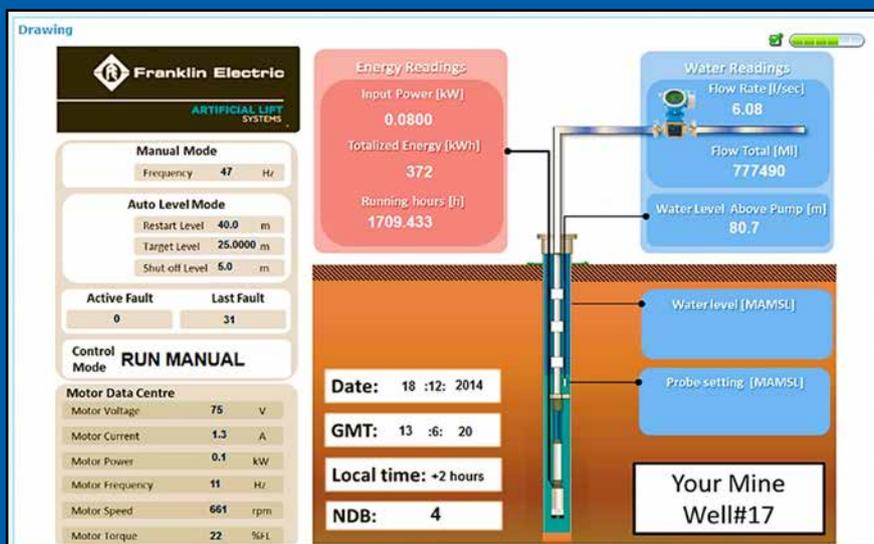


Fig. 1: Simple remote monitoring and control anywhere.

latest technologies available in the required fields of application including motors, pumps, controls, field instrumentation and communication - an integrated approach that offers durability, user-friendly interfacing and ease of operations and maintenance, resulting in increased uptime and an overall reduction in cost of ownership by providing the correct pumps, motors, monitoring equipment and accessories to increase product lifespan and reduce problems which result in downtime.

Franklin Electric is a leading manufacturer of world-class borehole pumping and other systems since 1944, providing innovative products for a multitude of applications across the globe. The very first patents, products and technologies applied to submerged motor borehole and deep-well pumping were produced by Franklin Electric Inc. Franklin Electric's specialised dewatering solutions have been available in South Africa since 2014 and are used primarily in the mining industry to control water levels to ensure that mining operations are safe and secure.

Pumps that are used for mine dewatering must be able to operate in extremely hostile conditions and are often situated deep underground which can adversely affect the operation of the pumps and make servicing difficult and time consuming, negatively affecting the viability of the mine.

Franklin Electric incorporates specially developed and patented technology in their pumps, motors, and control systems to ensure that maintenance can be planned cost effectively. State-of-the-art monitoring and control equipment, using a Variable Frequency Drive (VFD) system to integrate water flow and water level as well as other measurements compliment the integrated and robust solution. All parameters are recorded, logged and made available for operational and management purposes. Data and operational information are accessed remotely via satellite (BGAN), cellular (GSM), WiFi or radio systems.

The VFD system is pre-programmed to manage and protect the motor and pump, accept transducer signals to ensure that the operation is controlled as well as collecting all information, linked to the Remote Terminal Unit (RTU).

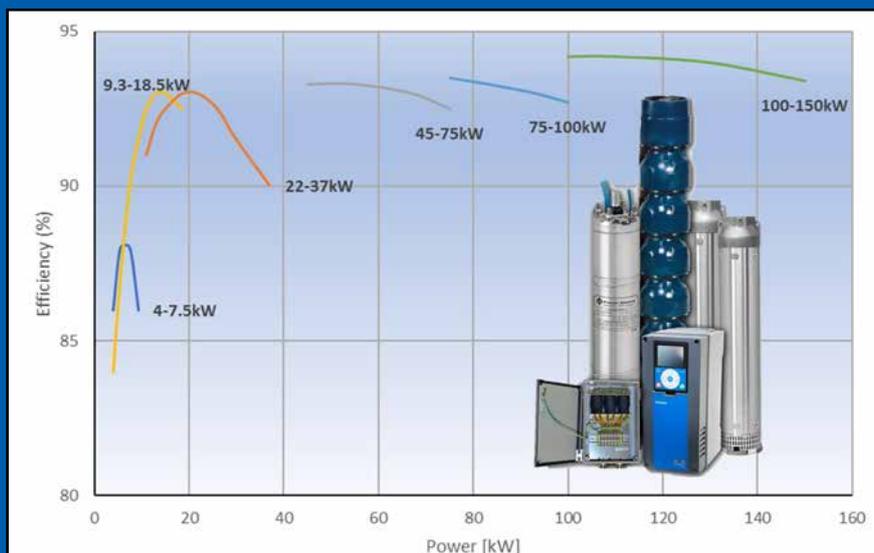


Fig. 2: HES Motor efficiencies.

The web based supervisory control and data acquisition (SCADA) system developed by Franklin Electric for dewatering, monitoring and control applications collect VFD data such as voltage, current, frequency, torque, consumed power, operating time, pressure, and flow rates. See Fig. 1.

Franklin Electric manufactures the motors and pumps and designs and supervises the assembly of the control panels, has expert knowledge in selecting the correct pumps and motors, programming the controls and drives for successful operation. Franklin Electric can also monitor the servicing of installed equipment, log site data and manage sites using the Franklin Electric SCADA control system, when necessary.

The specialised dewatering solutions that Franklin Electric offers also addresses the challenge of integrating sensor networks with current SCADA systems. The Franklin Electric SCADA system utilises real-time interaction between boreholes, sensor data and users in the field, allowing the embedded RTU to detect and report a problem without delay.

Dewatering in the complex and harsh mining environment is tough but crucial and requires a combination of expert performance together with minimal operating expenses. Franklin Electric's broad range of pumping solutions coupled with full control, monitoring and remote SCADA systems deliver complete specialised dewatering solutions that ensure durability, reliability, and performance.

## Franklin Electric develops new borehole motor technology

Franklin Electric is pleased to announce the High Efficiency Borehole System range extension up to 150 kW to complement its already successful 6" High Efficiency Submersible Borehole Systems (HES). The system extension consists of an 8" synchronous submersible NEMA motor with associated variable frequency drive and matching output filter.

Ever since its introduction, the 6" HES have proven its world-class efficiency in more than 400 applications to date, saving up to 20 % of electrical energy when compared to standard asynchronous motor system. See Fig. 2.

With environmental considerations and energy savings in mind, Franklin Electric developed the High Efficiency Submersible Borehole System, consisting of a synchronous submersible NEMA motor, associated variable frequency drive and output filter, thereby creating a one-stop shopping experience with the added benefit of perfectly matched components, guaranteeing first-class performance. Energy savings possible can result in payback under 2 years. This is all made possible by up to 13 % improved motor efficiency and system efficiency up to 11 % with excellent partial load behaviour.

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