



VFD & Energy Analytics

NETWORK CONTROL AND MONITORING FOR PUMP STATION VARIABLE FREQUENCY DRIVES



As an example, the History Chart below illustrates a Pump Station operating with an optimized GPK profile.



Optimized GPK History Chart

Before optimization, the average GPK was measured to be 1328. Optimization increased average GPK to over 5000. The monthly pump electricity cost was reduced from \$345 to \$94. Note: All situations are unique, and savings vary depending upon many factors.

Navionics Research Inc. Is Pleased to Introduce VFD & Energy Analytics!...

VFD & Energy Analytics is a new software system that provides water utilities with advanced capabilities to control & monitor pump station VFDs. By leveraging networked two-way communications, the system delivers energy consumption, temperature, and electronic health information to the water operator. Consequently, when the energy consumption data is combined with measured pump flow rates, overall pump station efficiency is calculated and presented in realtime. And with overall pump efficiency readily available, utility bill optimization can commence.

GPK Measurements...

The new gold standard for representing pump station energy efficiency is a figure we recently introduced called "gallorage", presented in units of gallons per kilowatt-hour – or GPK for short. This figure represents the number of gallons pumped per kilowatt-hour energy unit. It is based on the work-to-energy ratio, much like miles-per-gallons for an automobile. The RTU continuously refreshes this figure, which is calculated as:

$$GPK = 60 \times \text{Flow Rate (gpm)} / \text{Pump Power (kw)}$$

Minimization of Electricity Consumption...

Once an optimal reduced pump speed is calculated based upon our optimization procedure, the RTUs at the pump station and the water tower work together in concert to run at this reduced speed whenever possible. And during periods of higher usage, the control system automatically increases the pump speed to exceed water demand, although at a lower energy efficiency.

Remote Monitoring and Reset of VFD Faults...

An added valuable benefit is the ability to monitor the health of the VFD for faults and temperature anomalies. If the VFD shuts down due to a detected fault, the fault code is transmitted to the Telemetry system as an alarm code, and the operator may then issue a reset command remotely using his smartphone's remote access client – alleviating the need for a costly, time-consuming trip to the pump station to perform a manual reset. And monitoring the internal temperature of the VFD allows the operator to set high and low temperature alarms, providing early detection of problems with the VFD's cooling fan and/or heater.



Turnkey Pricing: Software and Installation...

1-Pump Station	\$3,322
2-Pump Station	\$3,624
3-Pump Station	\$3,926

Interested?...

Are you interested in adding this capability to your Telemetry Control system? If so, give us a call, and we'll be glad to discuss the details!

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