

References are available

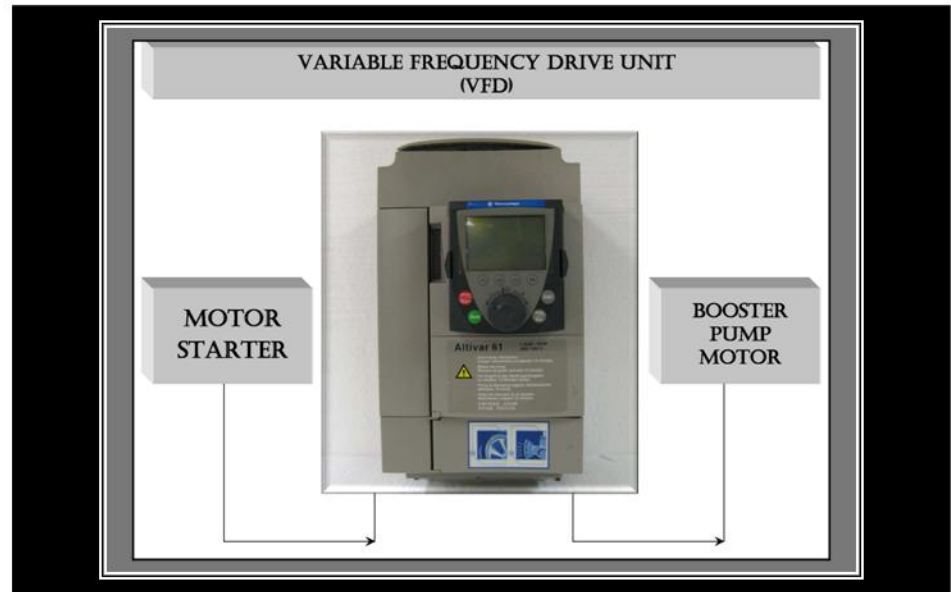
Drive units in stock and ready to connect.

Rates are reasonable

**O**ur emergency installations have performed well for as long as four months of continuous service.

**Get a good night's sleep!**

# Mercer Controls, Inc.



## Emergency Water Tank Substitution

### Variable Frequency Drive Unit Rental

Many public water systems often use only one hydropneumatic tank or elevated tank for maintenance of system pressure. The State now mandates periodic inspection of the inside of such tanks. Shutting down the tank for inspection, maintenance, repainting or recoating creates serious problems. So do tank failures or failure of the line connecting such a tank to the system. In either case the customers of the system are without water.

Fire protection becomes non-existent.

For emergency water service, a booster pump may be left running 24 hours a day to keep the system pressurized. A pressure relief valve helps regulate the system and prevents excess pressures.

A bypass line saves the water released through the pressure relief valve.

Mercer Controls of Edna can provide a different kind of answer for water systems experiencing a temporary loss of tank storage. By using an electronic Variable Frequency Drive unit, one pump in the system can be automatically operated to maintain system pressure 24 hours a day while inspections or repairs are being done to the tank. No relief valve or bypass valve is necessary.

Temporary use of a VFD can save having to run a booster pump at full capacity and save a huge electricity waste due to water pressure issues.

For more information, please call.

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To: Interested Engineers, Clients, and Painting Contractors

For the last fifteen years Mercer Controls has provided public utility systems a secure answer for providing water to customers when an elevated tank, hydropneumatic tank, or ground storage tank has been taken out of service.

Attached for your consideration is a set of literature describing the concept.

We invite your inquiries.

We will consider working anywhere within reason.

Up until now, all of the clients have been systems in South Texas.

References are available.

Can we help solve your problem?

Call us to discuss your needs.

Thanks for listening.

MERCER CONTROLS

S. A. Mercer P.E. Pres.

from MERCER CONTROLS INCORPORATED

## EMERGENCY WATER TANK SUBSTITUTION

Many public water systems often use only one hydropneumatic tank or elevated tank for maintenance of system pressure. The State now mandates periodic inspection of the inside of such tanks. Shutting down the tank for inspection, maintenance, repainting or recoating creates serious problems. So do tank failure or failure of the line connecting such a tank to the system. In either case the customers of the system are without water. Fire protection becomes non-existent.

For emergency water service, a booster pump may be left running 24 hours a day to keep the system pressurized. A pressure relief valve helps regulate the system and prevents excess pressures. A bypass line can save the water released through the pressure relief valve, if the pressure relief valve is physically near the source ground storage tank. Or, a standby tank may be piped to connect to the system in place of the tank being serviced.

Mercer Controls of Edna can provide a different kind of answer for water systems experiencing a temporary loss of tank storage. By using an electronic VARIABLE FREQUENCY DRIVE unit, one pump in the system can be automatically operated to maintain system pressure 24 hours a day while inspections or repairs are being done to the tank. No relief valve or bypass valve is necessary.

How is it done? The simplest way is to use the electronic drive unit to adjust the pump to run at a specific fixed speed. During the day, the water delivery pressure will be lowered slightly as delivery increases. During the night, lower usage will allow pressure to increase to the maximum pressure that the pump can deliver at the fixed pump speed chosen. So long as the pressure-delivery curve of the pump is not too steep, this method works well. System pressure variations from minimum flow to maximum flow may be wider than normal, but in most cases they are no greater than the usual differences observed when the pressure vessel or elevated tank is connected to the system. Most public water systems can successfully utilize this method.

Another method involving greater complexity and expense incorporates the use of an electronic pressure sensing device. The pressure sensing unit is connected to a point which presents the system pressure. The variable frequency drive is then programmed to adjust the speed of the pump motor up or down to maintain a constant pressure at all times in the system. This method is indicated if the pump pressure-delivery curve is steep or if the pump is greatly oversized for the application. This method may also be indicated if the water system includes such wide differences in ground elevation that wider-than-normal pressure swings cannot be allowed. With this method, there can be some "hunting" or minor variation in the speed of the pump and in the system pressure, but this variation is not harmful to the equipment nor to the system.

For systems with the most extreme hydraulic challenges, we install a Mercer Controls PRECISION VFD CONTROLLER to operate the variable frequency drive. Information about the drive, the pump, the motor, and the system are incorporated in the memory of a process controller which will work to manage the delivery pressure to a fine level of control. The PRECISION controller will

typically maintain the system pressure to within two psi at all times.

In either case, connecting the electronic drive unit often results in substantial labor savings. The cost of connecting a standby tank can be extreme. Relief valves have a short lifetime when used in continuous bypass service. In addition, the electrical savings compared to the cost of using a relief valve and bypass line can be great. A booster pump does its work when water is moved. The use of the electronic drive unit means that the minimum possible amount of water is always being moved by the pump. When the pump is spinning with no water delivery, the primary energy losses are due to cavitation within the pump bowl. The energy losses from cavitation are also minimized by reducing the pump speed with the electronic drive unit.

Other applications for the concept have included operating a booster pump in tandem with a well, allowing the well and booster pump to bypass a ground storage tank for maintenance. Some wells have enough capacity to deliver water directly to customers. The variable frequency drive will perform to control a well motor in those applications.

Our emergency installations have performed well for as long as four months of continuous service. References are available. We have drive units in stock ready to connect. Time required to connect a drive unit is usually less than an hour or two. Rates are reasonable.

Fire protection is maintained for the public with the drive unit. The system income base is maintained. The public does not suffer from an unstable water supply. The operator also gets to sleep at night!

To successfully accomplish all this, we start with a deep knowledge of pumps and hydraulics, we have a professional involvement with motors and their controls, and we possess a wealth of knowledge about the intricacies of Variable Frequency Drive units and their programming. Satisfactory performance cannot be obtained by simply connecting a VFD unit to a motor. The entire hardware, hydraulic, and electrical package must be understood and arranged together. If everything not properly connected together and programmed, unsatisfactory performance will result.

Please call us to discuss your needs.

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August 13, 2003  
Revised July 12, 2008  
Revised June 6, 2009  
Revised July 1, 2011