

Let's Give Operators a Chance for Input on Upgrades to Lift Stations and Other Equipment

Wastewater operators know that lift stations are a vital part of a wastewater collection system and equipment failures can have serious consequences, especially if the failure results in wastewater backup in customers' homes. Most people in town probably drive by a lift station and don't know what it is or what it does, even if they notice it at all. That's not all bad, meaning that it is operating properly and not causing a problem.

It is important though that someone such as the superintendent or operator become very familiar with both the operation and maintenance as well as the control system of the lift station. For more information on operation and maintenance, please refer to my previous article "Preventative Maintenance on Wastewater Lift Stations" on page 110 of the July 2022 issue of *The Kansas Lifeline*, <https://www.krwa.net/portals/krwa/lifeline/2207/PreventativeMaintenance.pdf>.

One of the issues to consider is the type of control equipment already being used in the system. For example, superintendents and operators can benefit immensely if they are allowed to have input whenever upgrades are being planned to the system. It can be small or large things, but having input allows for the city to be consistent with replacement parts throughout the system. As an example, in my experience at a city that I once worked for, new pumps and controls were being planned. After reviewing the engineer's proposal, it was discovered that a certain brand of motor starter contactors and relays were being specified. Since that brand was not consistent with the brand already in use, a request was made to change brands. It was not that the brand specified by the engineer was not a good product but that the requested brand was more readily available and was already in use throughout many other area wastewater systems.

Regarding lift station controls, one of the most frequent issues that wastewater operators in Kansas ask KRWA staff for help with is to gain a better understanding of the operation/controls of a lift station. Knowing some of the important points will help any operator, especially when system controls fail.

KRWA has recently invested in a trailer arrangement and donated lift station to allow for hands-on training on lift station controls. The training will include troubleshooting electrical issues, vacuum pumps, float switches, control relays, motor starters, solenoids, and many other aspects. Overall, training with this equipment will allow for a complete evaluation of an entire lift station so the operator will understand how to operate and get to know the equipment better. It will be showing up at regional training sessions, and if appropriate, with operators from systems in close proximity.



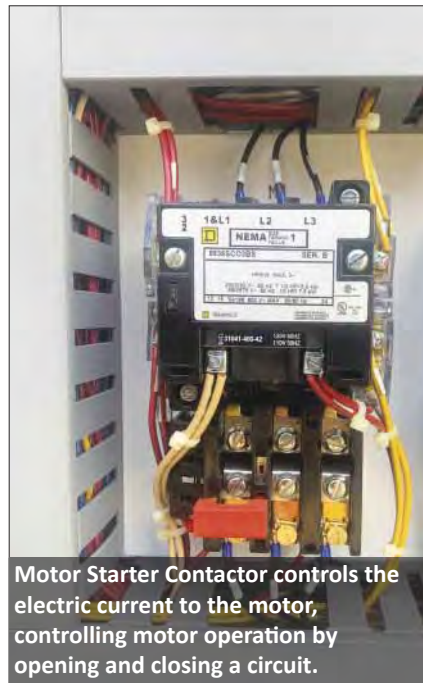


Liquid Control Relay controls the level of liquid in a vessel so that submerged pumps do not run dry.

Control Relay is an electromagnetic switch to control electrical circuits. Allows electrical current to flow through a conducting coil that opens or closes a switch. Used to control various components such as electric motors.



As a system employee, adding input during the design phase will be beneficial to allow for more effective troubleshooting and operation at the end of the day. For example, if an upgrade is in the works, any input from an operator on how the system has been operating and what changes would be desirable would be important. These suggestions could save the system money, either on parts or man hours based on plant operations. The more information that can be provided to the design engineer, the better the understanding of what changes are needed to make the system operate more efficiently for a longer period.



Motor Starter Contactor controls the electric current to the motor, controlling motor operation by opening and closing a circuit.

The more information that can be provided to the design engineer, the better the understanding of what changes are needed to make the system operate more efficiently for a longer period.

Certain changes such as adding variable frequency drives (VFDs) to electric motors to control blower operation and installing dissolved oxygen (DO) sensors in critical locations would allow for a more constant DO across the plant. Another possible change that could benefit the system is to convert a discharging waste stabilization pond effluent to an irrigation system. For more information on irrigation of wastewater, please refer to my previous article “Water Reuse – Let Your Effluent Work For You” on page 16 of the November 2022 issue of *The Kansas Lifeline*, www.krwa.net/portals/krwa/lifeline/2211/WaterReuse.pdf.

Finally, please note, it is not a sure thing that any recommendation offered by staff will be included in the final plan. It is important though that operators should stay engaged to learn the features of the new system early on rather than when it starts giving trouble. This will provide critical knowledge of what to carry in inventory and allow

for effective troubleshooting in the future. This advice is being provided in part, because of personal experience. During my time as a plant operator in another city, the staff was not involved in a project that was completed without local input. Originally, another department was designated to perform equipment maintenance, however after the equipment started to fail, my department was asked to assist with repairs and finally, after a few times of providing assistance, it became a full-time maintenance responsibility for our department.

KRWA has three staff members who work strictly with wastewater systems. KRWA encourages anyone interested in learning more about their lift station controls to contact me at brian@krwa.net or you can call the KRWA office at 785-336-3760. KRWA staff members are a team – someone will answer the phone or reply to emails.

Brian Bowles joined the KRWA staff in November 2021 as a Wastewater Tech. Brian has 30 years of work experience in a lead or supervisory role in construction, technical and management positions.

He most recently was the Public Works Superintendent at the city of Minneapolis, Kan.

