Lift Station Maintenance

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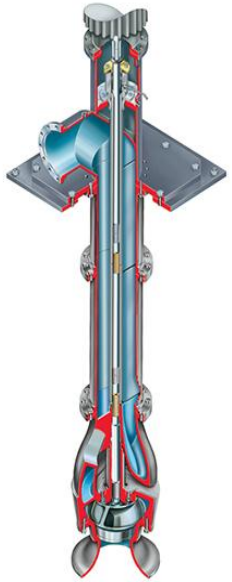
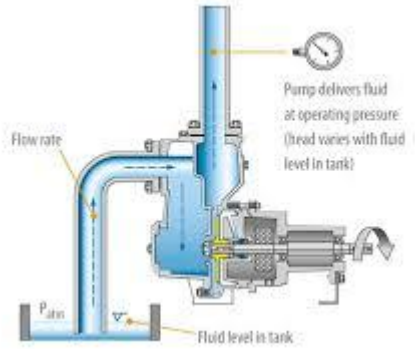
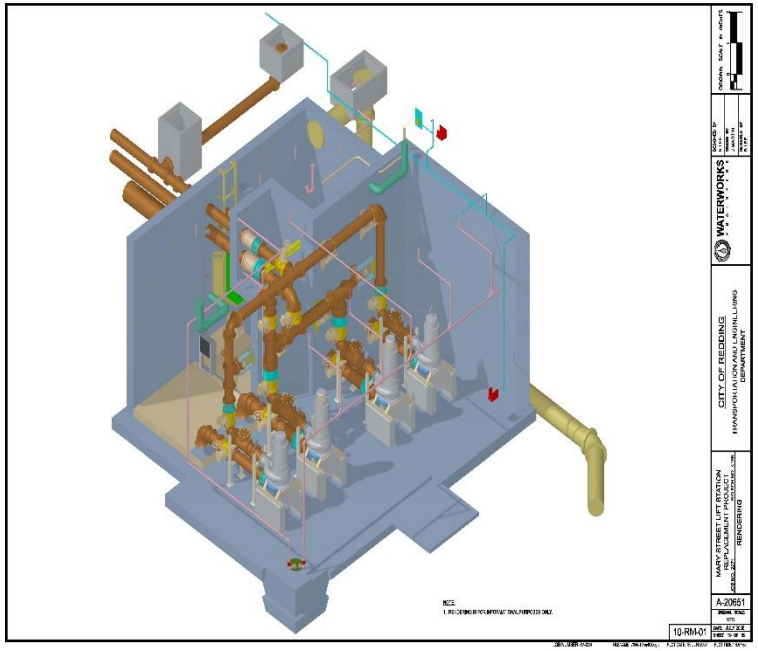




Lift stations
Pumps, Controls, and Maintenance

- Types of lift stations that we deal with.
  - Submersible
  - Dry pit
  - Suction lift
  - Vertical solid handling.
  - Simplex, duplex, triplex…. etc.

Types of Lift stations



Operating Sewage lift stations

- Setting in a low spot in sewage collections systems, a lift station will take the waste stream from residential areas, business, agriculture…. The list goes on. All lift stations have their obstacles to overcome.
- How far to pump (Friction losses)
- Elevation Change (Static head)
- How much to pump
- Type of Waste
- Power
- Break Downs
- Customers

What Happened

- You get the dreaded call from the auto dialer.
  - You show up to the lift station and the alarm light is going off. What is your first move?
  - **Silence the audible alarm so you can think.**
  - **Check the control panel display or alarm indicator to determine the nature of the alarm (e.g., high water level, pump failure, or power outage).**
  - **The pumps are running but not moving any water?**
  - **??**
  - **The station pumps are moving water but not enough to stop it from backing up and tripping won't won't alarm.**
  - **??**
  - **The pumps are running continuously and won't shut off.**
  - **??**
  - **The pumps are running but making allot of noise and the flow is non existent or reduced in half.**
  - **??**

Troubleshooting Common Issues

- 1. Pumps Not Running
- - Verify incoming power.
- - Check for blown fuses or tripped breakers.
- - Confirm control panel settings and HOA switch position.
- - Inspect floats or sensors for debris preventing activation.

- 2. Pump Running Continuously
- - Check if the level control floats are stuck.
- - Ensure the discharge line isn’t blocked.
- - Inspect check valves for leakage causing recirculation.

- 3. Pump Overheating
- - Verify ventilation and cooling systems.
- - Check for excessive debris or blockages in the pump.
- - Inspect bearings and motor for signs of wear.

What is Preventive Maintenance?

Preventive Maintenance

Preventative Maintenance- maintenance that is regularly performed on a piece of equipment to lessen the likelihood of it failing. It is performed while the equipment is still working so it minimizes the untimely downtime

Benefits of Preventive and Predictive Maintenance

- Less likely to pollute the environment
- Reduces the chances of complete machine breakdowns.
- Longer asset life.
- Improved efficiency (assets in good repair tend to operate better and saves money on utilities)
- Increased safety
- Reduces the chance of emergency repair calls.
- Helps the owner make educated decisions on what spare parts to keep on the shelf
- Saves on man hours (overtime) & stress on personnel

Importance of Maintenance

- Environmental Safety Costs
- The term ‘if it’s not broken, don’t fix it’ still applies to many industries. However in the sewage business, broken means more then just down time and lost revenue. It means ….OH SH!! Houston we have a problem!

Let’s look at the station itself

Fats, Oil & Grease (FOG)

What can FOG do to a station?

- Induce additional amounts of H2S
- Premature wear on equipment
- Prevents floats & other level control devices from functioning properly
- Can eventually cause clogging/suction restriction on pumps

How to resolve

- Vac Trucks
- Chemicals
- Mechanical Piece of Equipment such as an aerator or mixer

Pumps

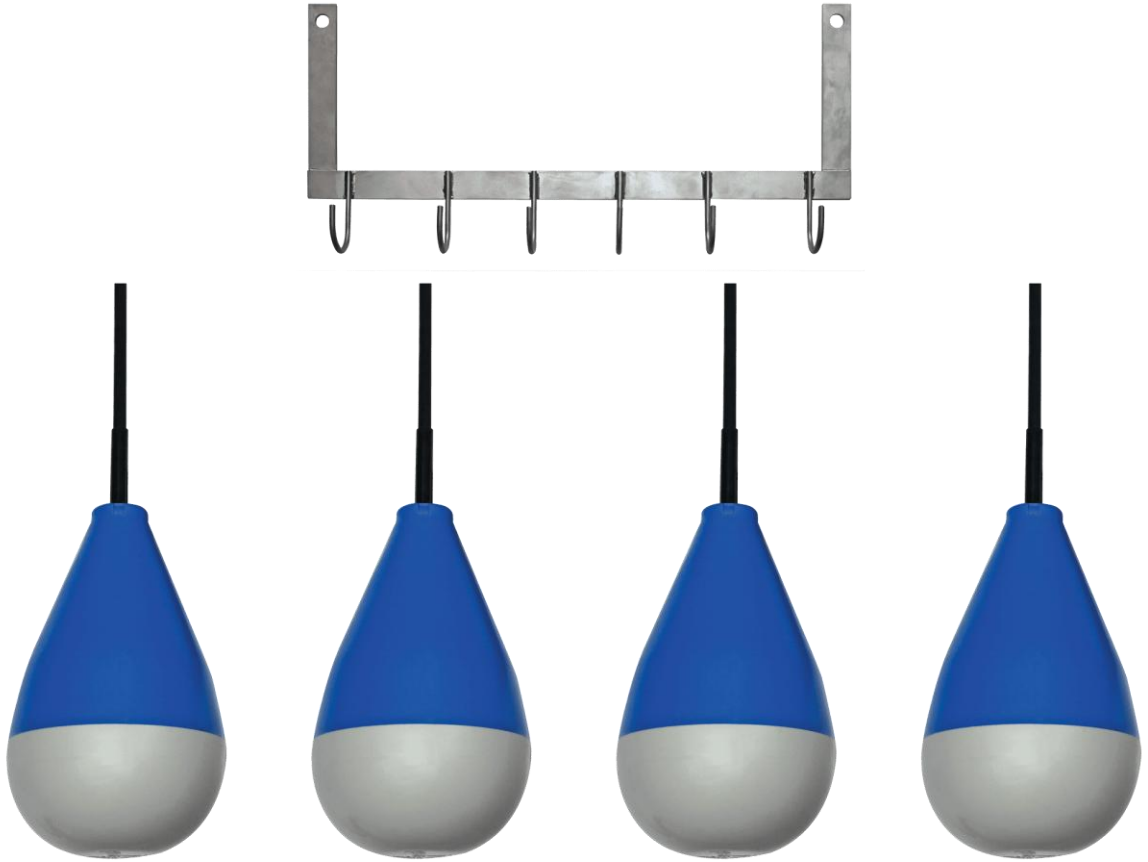
What to check for

- Check amp draw (done by qualified trained personnel)
- Check voltage (incoming & load voltage)
- Check oil for contamination
- Check impeller clearance for excessive wear
- Check pump casing for excessive wear & corrosion

- **Always consult your equipment’s O&M manual regarding periodic and overhaul recommendations.

What to check for

Controls



Clean Level Control Devices

- Floats – Wash & Wipe them down
- Probes – Wipe them down
- Transducers – Wipe them down
- Ultrasonic – Clean the sensor face

**Always check your equipment's O&M manual for proper cleaning instructions

Check Control Panels

- Check for loose wires, burnt wires or moisture in the control panel (With the power off)
- Check for corrosion in the panel due to Lift Station Gases
- Ensure run lights are working properly by turning the HOA switch in to hand
- Flip all of the floats over to ensure the alarm or backup system is working properly.
- Check Junction Boxes to ensure they are dry
- Insulation Resistance Testing, also known as Meggering the motor, tests the integrity of the motor windings, which gradually break down.

Piping

Things to check

- Run the station down to the bottom to expose all flanged connections and check for leaks
- Disassemble & Clean Check Valves – If you can
- Clean Air Release Valves

Generators

What to check for

- Fresh Fuel – is it gasoline, diesel, or propane/natural gas
- Oil
- Filters
- Battery

- **Consult your O&M Manual for operational checks. Most generators associated with Lift Stations have a timer that automatically exercises the generator. If not, the generator should be manually operated on a schedule.

Choosing the Right Pump

How Critical is the Station?

- Stations with high flow rates that see a lot of debris will most likely require a premium Pump.
- The risk of using an economical pump may be practical on stations with low flows and low use.

What’s the difference?

- Mechanical Seal Material – Silicon vs Tungsten
- Motor Insulation – Class H vs Class F
- Impeller Material – Bronze, Stainless, Cast Iron, Hard Iron
- Construction of the pump

Come see us in action.

- Take a video tour of our service capabilities

https://youtu.be/erjEIfTsvpA

Let us customize a PM program for your system or plant.