



Hydrostatic Level Sensing

Side/Bottom Mounted for Liquids in Unpressurised Vessels

Principle

Hydrostatic level sensing is an easy way to measure liquid levels in a tank. Unlike some other solutions, it simply doesn't matter what type of liquid you use it on, as long as it has no suspended solids.

You attach a pressure transmitter to the lowest point on your tank. The weight of the water above the tank creates a head pressure which is measured by the transmitter - this translates to an exact measurement of the liquid level.

Advantages

- Easy to install in an above-ground tank or vessel.
- Side mounting is very accessible for maintenance
- Extremely accurate in most situations
- Able to deal with a wide variety of fluids

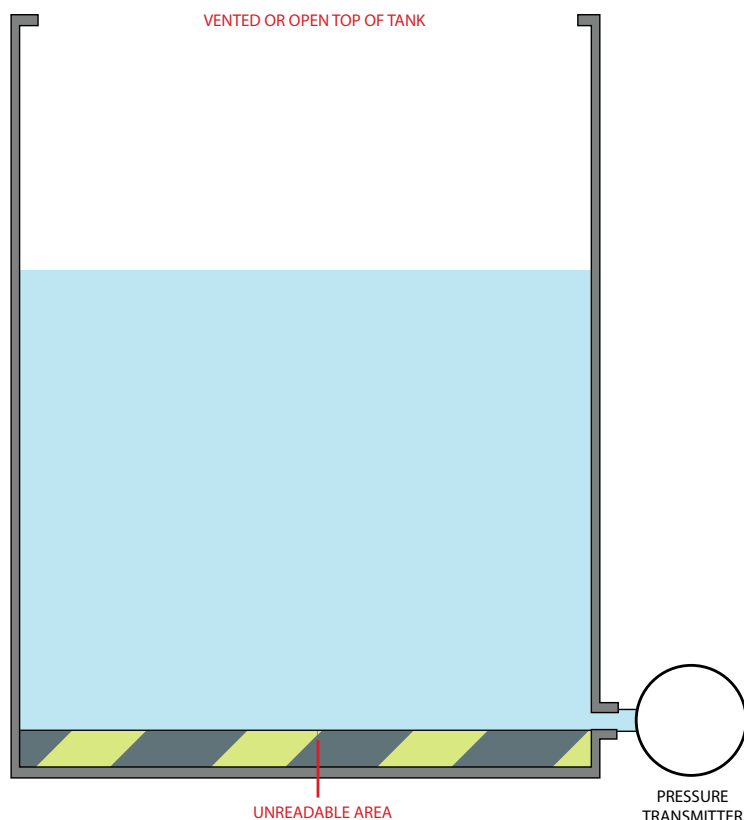
Disadvantages

- Not suitable for solids, or liquids with suspended solids.
- Not suitable for pressurised vessels.

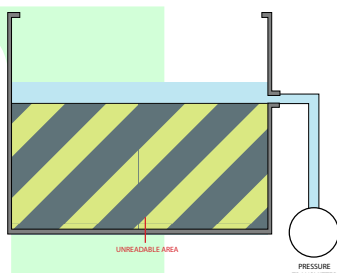
Considerations

It is important to remember that you can only read the tank level above the transmitter - so you must install this as low as possible in your vessel.

You must also know the specific gravity (SG) of your liquid . For example, diesel fuel is lighter than water, having an SG of 0.7 rather than 1. This means that for every meter of diesel, you read 30% less pressure than you would if there was water in your tank.

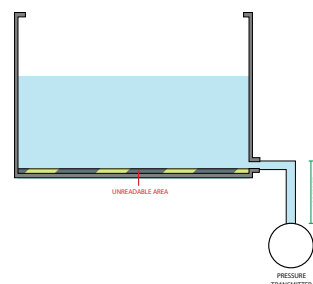


Yokogawa EJX-Series transmitters are ideal for level solutions, with a clear local display and outstanding accuracy and performance



Bad Installation

Because the tapping point is so high, most of the liquid can not be seen by the transmitter



Good Installation

The column of liquid between the tank and the transmitter can be zeroed out and ignored.



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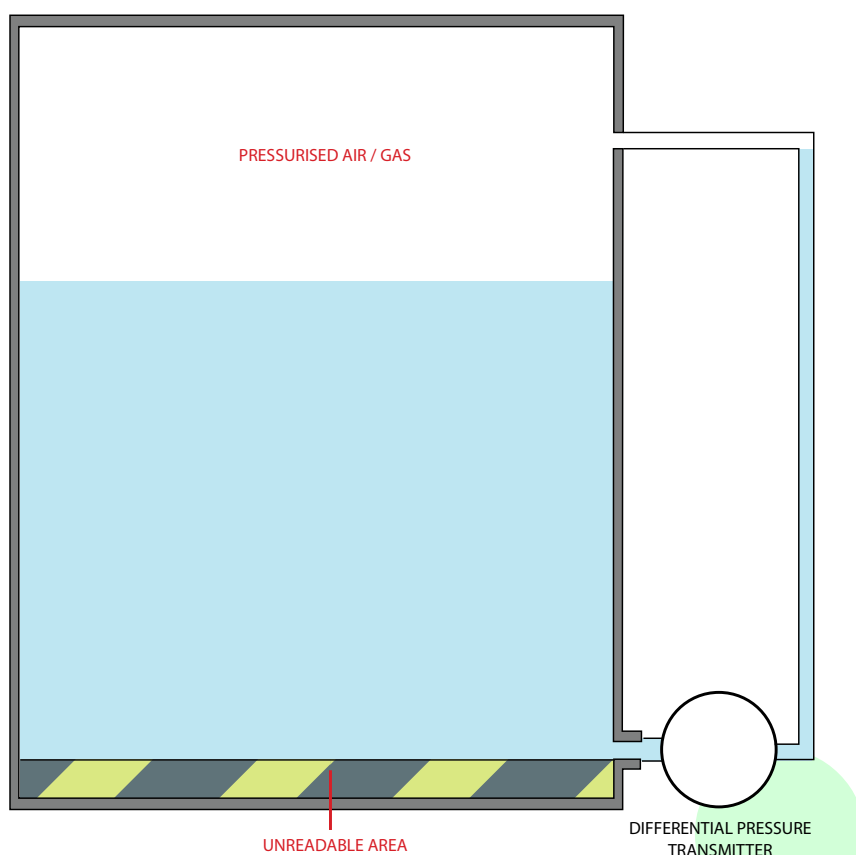
Side/Bottom Mounted for Liquids in Pressurised Vessels

Principle

Sometimes your vessel is pressurised. Using a regular pressure transmitter on the bottom or side of your tank to sense your level is impossible.

This is because the force of the pressure pushing down on your liquid adds to the pressure your sensor reads - the higher the pressure in the tank, the higher your reading gets even though your level remains the same.

But there is a simple solution - using a differential pressure transmitter rather than a gauge pressure transmitter allows you to read the difference between tank and liquid pressure, giving you an extremely accurate indication.



Piping

You will need to run a second connection to the top of your tank - the transmitter compares both pressures to calculate the real level in your vessel.

You should ensure some type of relief valve is installed under the high tapping point, otherwise it is possible that you would flood the leg of pipework that leads to your transmitter, making it read a 'zero' level.

By installing the relief, you can ensure that your tank never over-fills.

Wet Leg

If there is any moisture in your air or gas, you may want to consider a 'wet leg' (shown in the example).

Over time, condensation may form in your pipework and slowly drip down the empty pipe that leads from the top of your tank. This would make your reading incorrect.

By filling the link to the top of the tank with liquid when you first install your transmitter, you make sure your transmitter will always read accurately, as no extra liquid or condensation will ever occur.



Hydrostatic Level Sensing

Drop-In Sensing for Liquids

Principle

Hydrostatic level sensing effectively 'weighs' the column of water directly above the sensor.

By using a drop-in sensor that dangles from the top of the tank from a waterproof electrical cable, you can sense depth in vessels such as pits and rivers, or any other body of liquid that can not be easily accessed from the sides.

Advantages

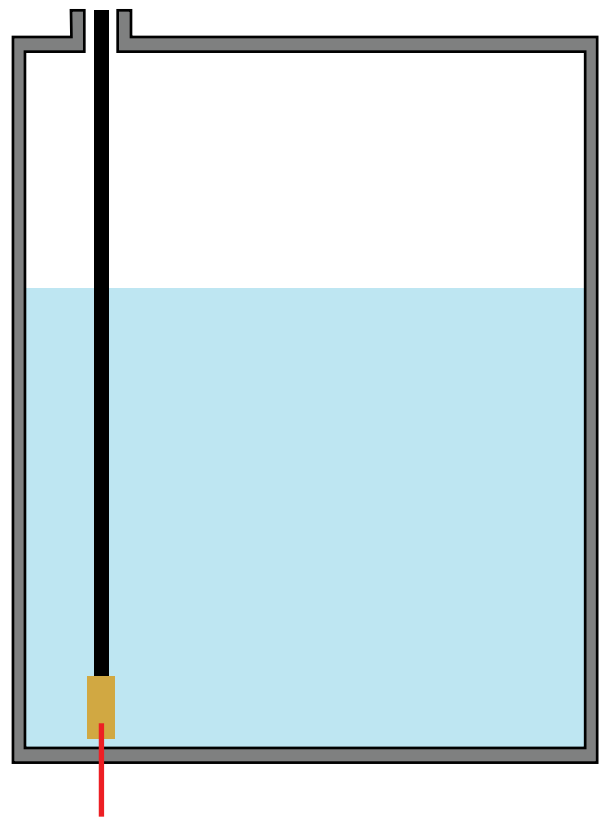
- Easy to install in any tank or body of water.
- Extremely accurate in most situations
- Able to deal with a wide variety of fluids
- Can be suspended above solids or silt

Disadvantages

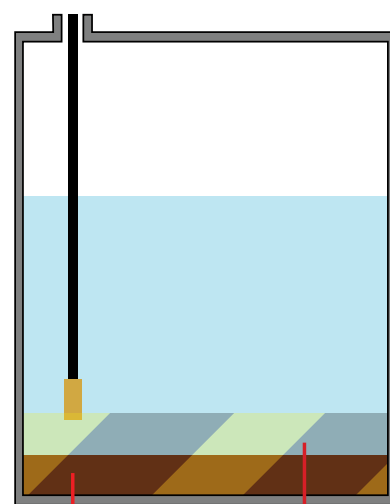
- Not suitable for solids.
- Not suitable for pressurised vessels.

Installation

These are often installed with a weight attached near the sensor head, or the cable is placed within a long plastic pipe to ensure that the transmitter itself stays in a predictable place - this is extremely important when you are placing the sensor in running water.



SUBMERSIBLE HYDROSTATIC
LEVEL TRANSMITTER



SILT / SOLIDS

UNREADABLE AREA

Acceptable Installation

Dangle the sensor from its cable using a suitable weight to hold it above any silt or sediment.