

Optical Level Switch - Common Applications and What are they used for?

The Optical Liquid Level Switch is a solid-state technology which uses an infra-red LED and phototransistor to detect the presence or absence of liquid. In this article, we will cover what the level switch is used for and the types of applications they are commonly used in.

What is an optical liquid level switch used for?

An [optical liquid level switch](#) is used to detect the presence or absence of almost any type of liquid, oil or water based. The main purpose for these level switches fall into two main categories; leak detection and single point level control (maximum or minimum).

For a relatively low-cost solution, the purpose of these switches can prevent many disastrous and expensive situations. In leak detection applications they can detect the smallest amounts of liquid to prevent loss of valuable fluids, run dry situations, expensive damage, loss of service and downtime. In level control applications they are used for automated refilling for low and high-level liquid level processes. The switches can prevent overspill or run dry situations.

Common Applications

As mentioned above, the type of applications falls into two main categories; leak detection and level control. The number of leak detection and level control applications SST are confronted with each day is endless, however we have detailed below the most common types we are asked about. If your application is not listed below, please contact us and we will be happy to discuss your requirements.

Leak Detection

Telecommunications

Detecting rainwater leaks at an early stage in outdoor telecommunication units and so preventing loss of service or potentially expensive damage is an application SST is very familiar with. The increased use of small and [metrocell](#) technology has resulted in a growing number of telecommunication enclosures being deployed in locations which are difficult to access and not subject to regular inspection.

With the level switch being able to detect very small amounts of liquid, it is an ideal solution for this application as it is mounted at the bottom of the enclosure in a small sump, if there is rainwater present, a signal is sent to advise action to be taken.



Robotic Automation Systems

Industrial robotic systems is another application in which SST has a lot of experience with. Industrial robots are hugely expensive to install to is crucial that they are operated and maintained correctly – any “down-time” can be costly.

Oil within the system is used to lubricate the joints and gears and prevent overheating, misalignment, and bearing wear. If this oil leaks during operation, it could contaminate the surrounding environment, damage production and affect machine performance. Immediate detection of when an oil level is low is therefore critical to avoid costly expense.



Peristaltic Pumps

Peristaltic pumps are suitable for dispensing, metering and general transfer of liquid media. They confine the media to the tubing, so that the pump cannot contaminate the fluid and the fluid cannot contaminate the pump. The contamination-free pumping makes peristaltic pumps particularly suitable for use in high purity applications, including the transfer or dosing of chemicals and additives in the food, pharmaceutical and semiconductor industries.

The level switches are mounted at the bottom of the pump in a sump to capture any leaking fluid from the tubing which then alerts the system to stop the pump from running. The installation of the level switch provides two key benefits; the first is it protects against the loss of high value fluid, and prevents costly damage to the pump.



Single Point Level Control

In level control and detection applications, the liquid level of a tank or vessel will vary at a continuous pace over a period. In order to know when failure occurs or when the level goes dangerously high or low, it is critical to have a level control monitoring solution in place to prevent expensive damage, flooding or run dry situations.

The level switch is used by various industries as a level indicator. Industries include industrial, domestic, medical, marine, aviation and transportation. Common level detection and level control applications that SST have had experience with over the years are;

For high/low level indication;

- Hydraulic fluid
- Water storage tanks
- Transmission fluid
- Off-road vehicles and machinery
- Submarine torpedo tubes and water separators

- Dialysis machines
- Testing machinery for electrical protective gloves
- Water level in neonatal incubator

For automated refilling, low/high level processes in;

- Medical
- Process control
- Domestic products
- Food and beverage applications
- Fluid levels in off-road vehicles, aircrafts and static equipment

For more information on SST's optical liquid level switches, please contact us below.