ABB LASER LEVEL MEASUREMENT APPLICATION

LLT100 Applications in the Oil and Gas Industry

Introduction

The LLT100 is specifically made for industrial applications and harsh environments. It provides continuous, non-contact level measurement capabilities for process automation and inventory management.

The distinct capabilities of laser level measurement, when tailored for industrial applications, lead to benefits for the oil and gas industry.

High reliability
- Tightly focused laser beam not affected by nearby structures, local changes, and buildup on vessel walls
- Any solid or liquid detected without recalibration, even if its dielectric constant is low

Easy setup
- Fast on-site setup, no need for local calibration or echo mapping
- Flexible installation; device can be close to wall or aimed at solids at an angle

LLT100 uses laser time-of-flight to measure levels of solids or liquids. By using advanced laser pulse control, efficient pulse detection, and powerful algorithms, the LLT100 can reliably measure any liquid, even transparent liquids.

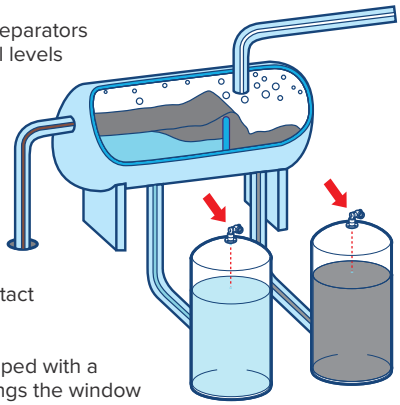
The LLT100 also comes in pressure rated models. It is approved for use in explosive atmospheres, and is powered from the 2-wire current loop. This combination of features makes this instrument very relevant to the oil and gas industry.

Typical applications
- Floating roof level measurement
- API separators
- Storage tanks for water, oils, drilling mud
- Offshore platforms positioning and collision avoidance

API Separators

API oil-water separators are used to separate oil and suspended solids from refinery wastewater effluents. Oil and water are then stored in tanks, which need monitoring.

LLT100 are used in API separators to measure water and oil levels in storage tanks. Measurements are independent of the dielectric constant of the material, and the LLT100 is not affected by droplets of water on its window. It provides reliable, simple, non-contact level measurement.

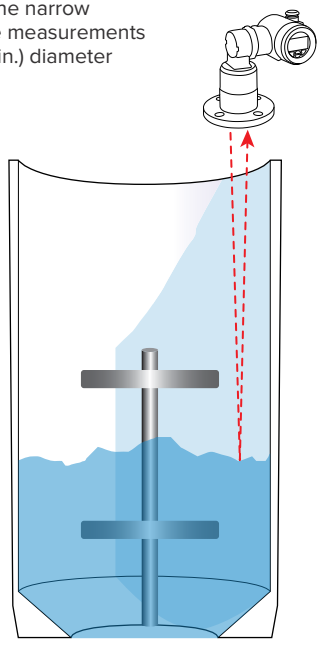


The LLT100 is also equipped with a heated window. This brings the window temperature above ambient temperature, thus preventing condensation from forming on the window surface.

Storage Tanks

Tanks of all sorts need monitoring. Tanks can contain a wide variety of materials. Laser level measurement provides efficient measurement of any liquid. Should the liquid in the tank change, no recalibration is required with LLT100, as accuracy will not be affected.

With a < 0.3° beam divergence, the narrow laser beam allows LLT100 to take measurements in tight spaces such as a 5cm (2 in.) diameter pipe over 5m (15ft) in length.



It is also very convenient when a tank contains an agitator, as it is often possible to shoot the beam between the tank wall and the edge of the agitator.

In this case, measurements are not affected at all by the agitator. In cases where it is necessary to shoot the laser beam in the path of an agitator, filtering functions can be used to reliably track the real liquid surface.

The LLT100 finally allows for accurate laser level measurement of all liquids. It opens up a vast array of possibilities.

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Offshore Applications

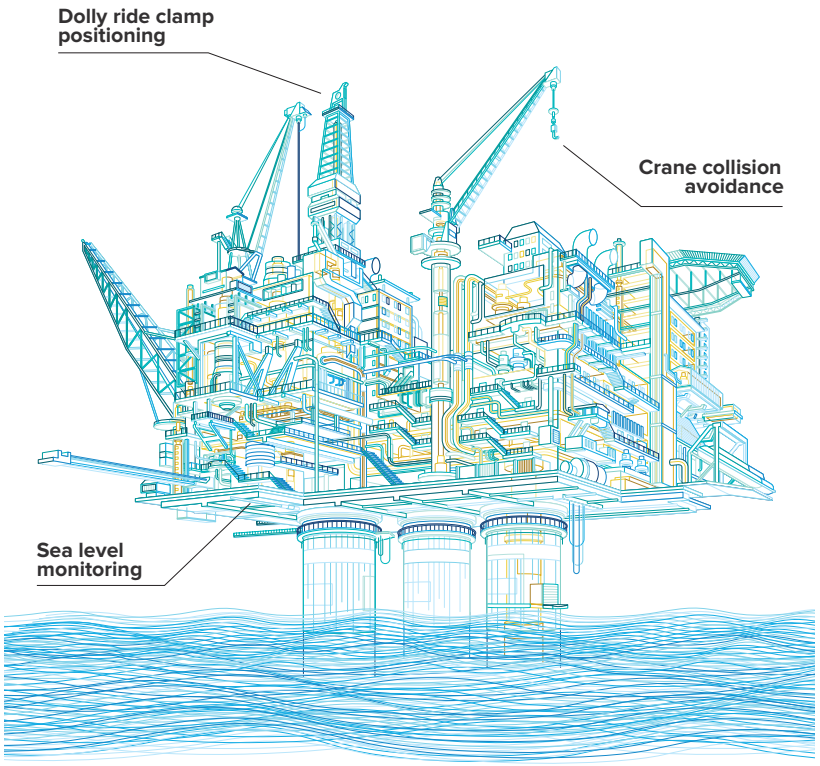
The ABB laser level measurement line of products can perform a number of applications on offshore platforms.

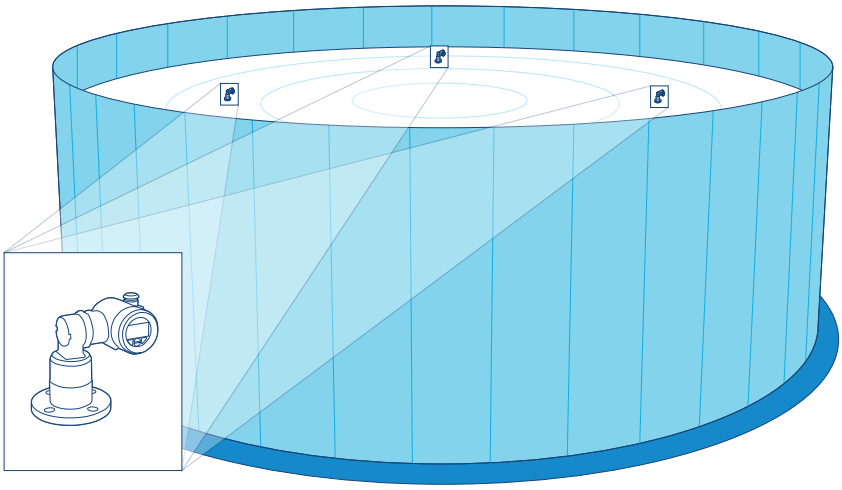
Sea level monitoring
Laser level measurement provides reliable measurement even in agitated waters. The fast rate of measurement and ability to measure fast step changes make it very convenient for measuring the sea level under the platform.

Precise positioning
ABB laser level measurement products are specifically made for harsh industrial environments, which make them appropriate for offshore applications. They are often used for the precise distance measurement of moving objects, such as drilling pipe handling equipment.

Using laser measurement for positioning results in reduced maintenance costs compared to using oft damaged mechanical devices such as limit switches. Laser level measurement products are placed away from moving objects and therefore have very long lifetimes.

Collision avoidance
Laser level measurement can also be used for crane collision avoidance, by measuring the distance to nearby objects in order to automate safety procedures.





Floating Roofs

LLT100 provides a very reliable way of measuring the height of a floating roof. LLT100 can be placed very close to the wall if necessary. Since the instrument's beam is very narrow, measurements are not affected by local structures. This provides reliable measurements that do not require reconfiguration over time.

The roof angle can also be measured by using several units. Using several LLT100 on the same site is perfectly safe: units will not interfere with each other and no special setting is required.

Used inside or outside, LLT100 is not affected by rain or snow. When used outside, using the dust tube protects it from the environment, reducing maintenance to a minimum. LLT100 makes floating roof measurement easy.