For more information about Sunjray Infosystems Pvt Ltd, please call +91-674-2562506 or email on jay.rath@sunjray.com

AUTOMATED RESERVOIR / RIVER WATER LEVEL STATIONS

Typical applications of radar water level sensor include non-contact measurement of river, lake and reservoir water level. The sensor makes multiple distance measurements, averages the results and converts the measurement data into Stage in units of Feet, Meters or other engineering units.

Figure 1

The RADAR water level sensor measures accurately and determines the height of waters in real time. The standalone Water Level Monitoring System is equipped with solar panel and makes use of a RADAR sensor to measure the rate of change of water level using the principle similar to radar and sonar. The sensor calculates the time interval between sending the signal and receiving the echo to determine the water level. The RADAR water level sensor consists of an integrated microwave *transmitter* and *sensor* together with a horn antenna. The horn antenna serves to focus the transmitted signal as well as to receive the reflected echo. A built-in interface provides low power operation, data processing and communications with the data logger.

A RADAR water level sensor measures the water level by propagating electromagnetic energy with a horn antenna. Because radar energy reflects and similarly to light, objects in the propagation path reradiate the microwave energy back to the radar antenna. The time it takes for the energy to return back to the radar (travel time) is determined with the radar's integral digital signal processing units and software. The resulting travel time is used to determine the distance to the water level.

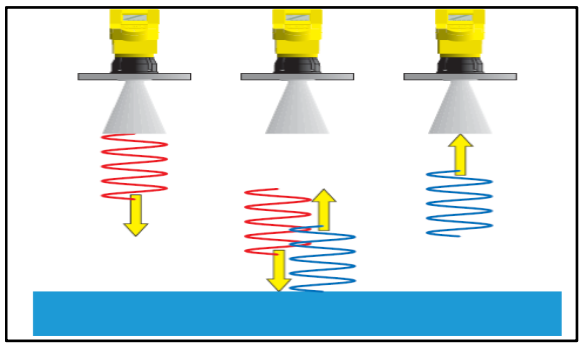

Figure 2

As already understood, the running time for a distance of a few meters is measured in nanoseconds. For this reason, a special time

transformation procedure is required to enable these short time periods to be measured accurately. The requirement is for a 'slow motion' picture of the transit time of the microwave pulses with an expanded time axis.

By slow motion it means milliseconds instead of nanoseconds. Pulse radar has a regular and periodically repeating signal with a high pulse repetition frequency (PRF). Using a method of sequential sampling, the extremely fast and regular transit times can be readily transformed into an expanded time signal. Pulsed radar has several advantages including increased range, lower power consumption, and it does not rely on the Doppler Effect to determine range. Pulse radar operates purely within the time domain. Millions of pulses are transmitted every second and a special sampling technique is used to produce a 'time expanded' output signal.

Ambient Temperature	-20°C to +60°C
Humidity	0 to 100 %
Altitude	0 to 2500 meter
Sensor Type	Microwave non-contact sensor
Range	0.5M to 35M
Resolution	3 mm or better
Accuracy (linearity, repeatability and hysteresis)	0.02 % better adjustable measuring interval
Beam Angle	≤ 16 °
Output Interface	RS485, 4-20 mA
Power Supply	10 -15 V DC
Operating temperature	-40^0 C to 65^0 C

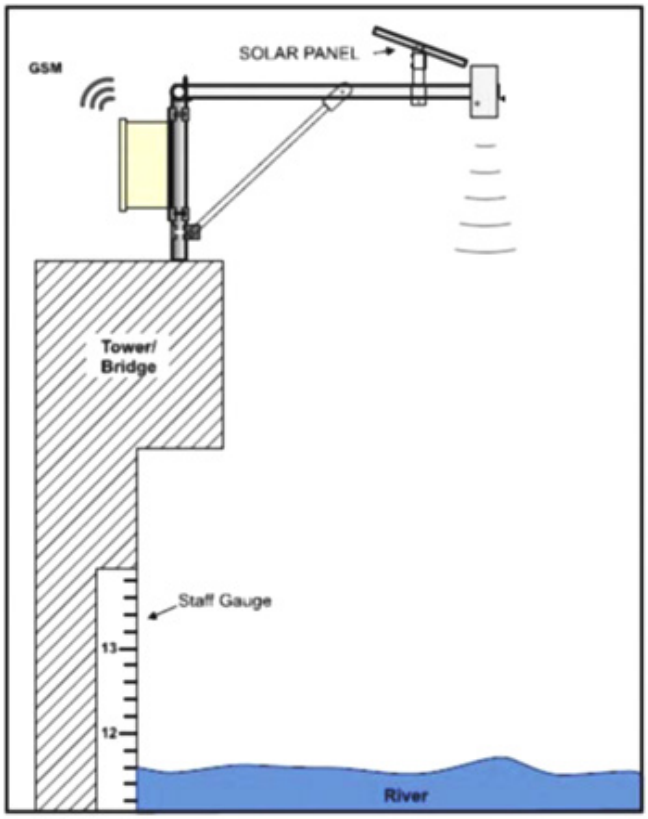

Figure 3