

PRIME
TECHNOLOGY

Tank Level Measuring in Sanitation Tanks Using Guided Wave Radar



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General Resistance • Shurite Meters •
Shurite Marine Systems

System Overview

- Innovative way to measure sanitation tank levels in Navy ships using guided wave radar.



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System Advantages

- **Reliable**
- **Accurate**
- **Cost Effective**
- MTTR is reduced by utilizing a modular design approach and by mounting the sensor electronics external to the tanks.
- The MTBF is increased by the use of a passive sensing element which is coated with Teflon (PFA).



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System Advantages

- Reliable
- Accurate
- Cost Effective
- Overall system accuracy of 1%.



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System Advantages

- **Reliable**
- **Accurate**
- **Cost Effective**
- Curves stored in the Tank Level Indicating equipment correct for different tank geometries.
- Eliminates need for unique meters for each tank.
- Drastically reduces on board spares.



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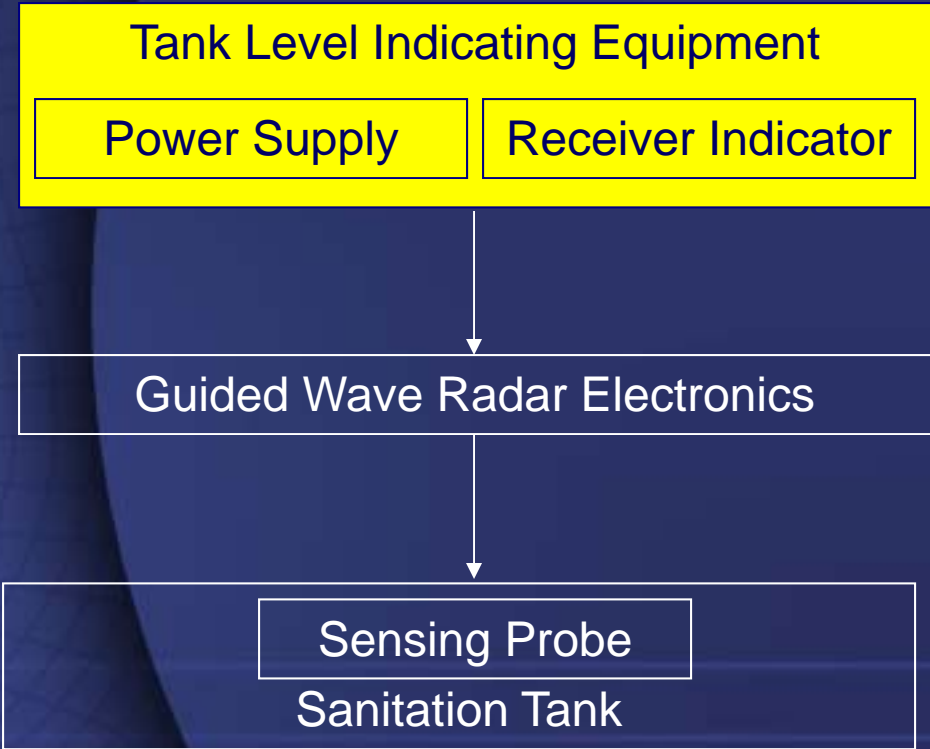
System Architecture

- Consists of three basic parts:
 - Tank Level indicating Equipment
 - Guided Wave Radar Electronics
 - Sensing Probe



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System Architecture

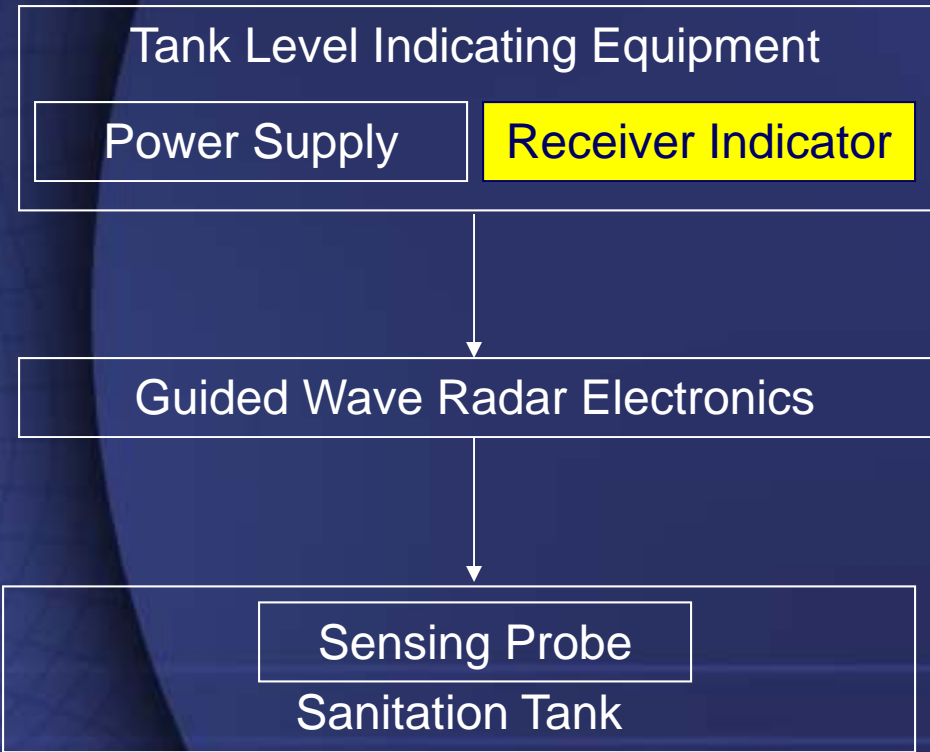


- Hull mounted single channel panel that consists of a Power Supply Module, and a Receiver/Indicator.
- Can be bulkhead mounted in a convenient place, remote from the CHT tank.
- Presently used on the Virginia Class and SSGN Submarines for tank level measuring.



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System Architecture

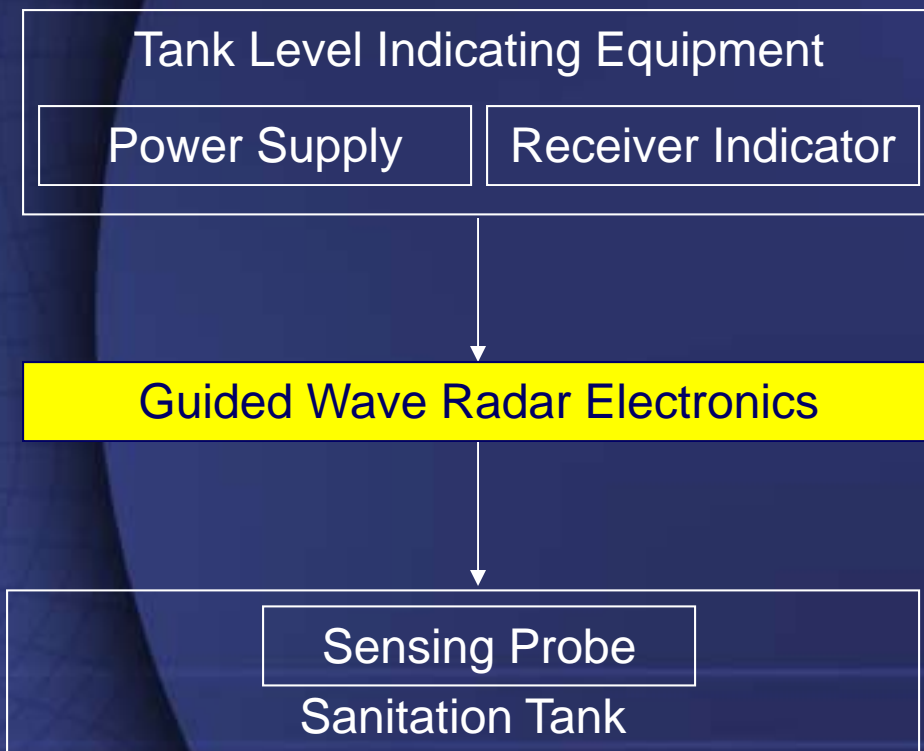


- Performs tank level curve corrections.
- Compensates for physical tank characteristic.
- Accuracy of 0.2 %.
- LED displayed tank information.
- Four alarm settings.
- Capable of retransmitting tank information to remote locations using serial RS422 or an analog signal.



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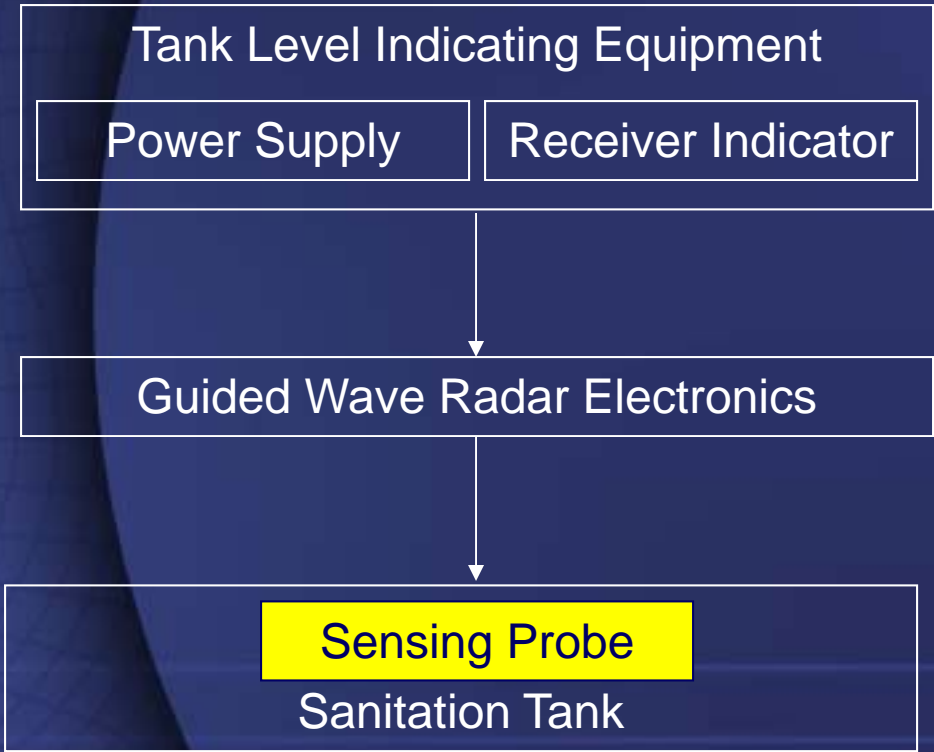


- Industrial grade assembly.
- Designed for harsh environments.
- Generates a gigahertz radar pulse.
- Converts the radar pulse return into a linear displacement.
- Emits displacement data to remotely located Tank Level Receiver/Indicator Equipment.
- Accuracy of +/- 1 inch.



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System Architecture

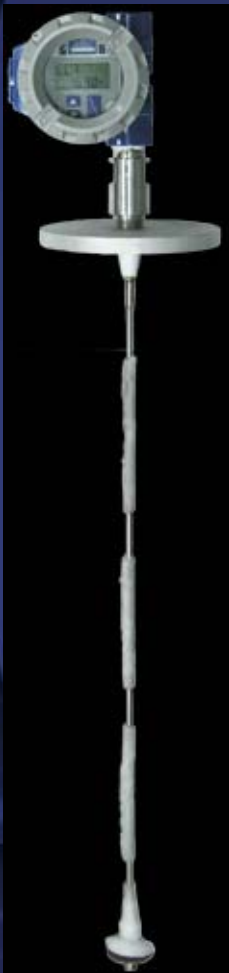


- The sensing cable is constructed of a stainless steel multi-stranded ¼ inch diameter cable.
- The sensing cable is coated with Teflon to help reduce waste materials from sticking to sensing probe.
- A spring is used to keep the probe tight and secured though temperature variations and shock extremes.



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Actual Applications



Still operating in hydrocarbon service with A discontinuous coating of paraffin



Still operating with A discontinuous coating of clay



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Actual Applications



Sensor after use in a cooling tower in South Africa

This sensor is still functioning properly, even with substantial buildup



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Actual Applications



Sensor after use in a cooling tower in South Africa

Note the 90 degree bend and the process coating



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Testimonials

Sheri Parent.

Exxon Mobil.

Knockout Drum

Tel: 409-860-1585

e-mail: sheri.l.parent@exxonmobil.com

- Replaced unreliable float systems with K-Tek sensors.
- Has two systems in operation and intends to acquire two more in 2006.
- Has not experience any issues with the electronics of the K-Tek sensor.



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Testimonials

Ted Judice

BP Mad Dog Platform

Crude Oil and Asphaltane Buildup

713-505-0573

- Installed 6 systems this past January 2005.
- Is very satisfied with this solution and is looking to install 4 more systems in 2005 to replace existing float sensors.
- Not a single failure in the electronics and no interruption in service due to debris growth in sensor surface.