

Tank Monitoring Manufacturers & Tank Construction Contractors Working Together to Provide SPCC Overfill Compliance

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National Institute for Storage Tank Management
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Outline

- Larry Taylor (OMNTEC) – Introduction
- Robert Arias (CAPE):
 - API 2350 update
 - Tank Modifications needed for installation of tanks monitoring systems
 - How we're addressing the “wireless objections”



Our Wireless Tank Monitoring Solutions

FillCheck®

overflow protection

DataStik™

Inventory monitoring



Our Wireless Products

- Completely battery-powered (including sensor)
- Agency approved for hazardous areas





INTELLIGENT
SPREAD SPECTRUM
WIRELESS



HIGH CAPACITY
LITHIUM PRIMARY
BATTERIES



DIGITAL
MAGNETOSTRICTIVE
SENSING

INTRINSICALLY-SAFE, BATTERY-POWERED, WIRELESS

TANK OVERFILL PROTECTION

TANK INVENTORY MONITORING



FillCheck



FillCheck®

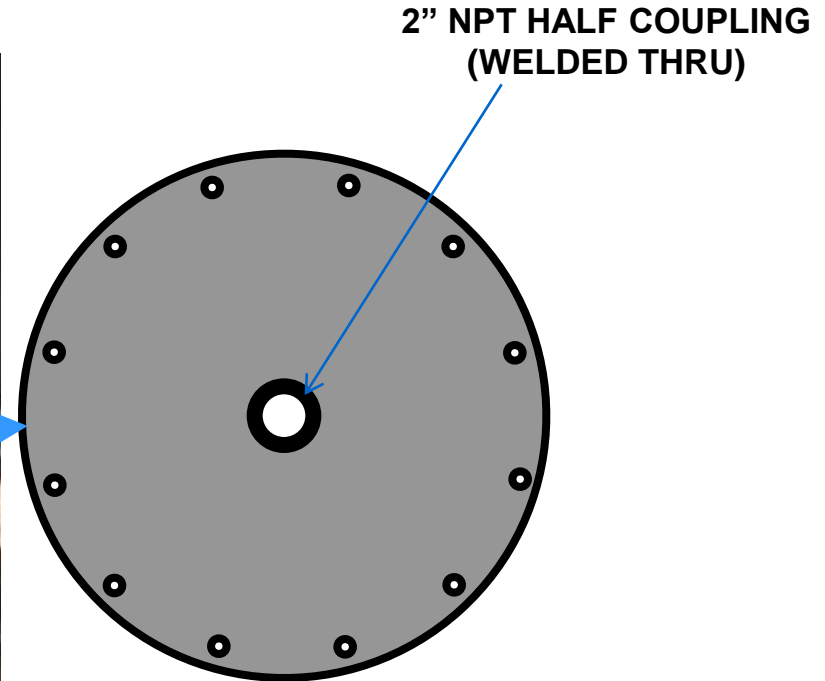
- FillCheck® is a fully supervised wireless telemetry system used to transmit alarms from remote locations
- FillCheck® Transmitters are battery powered and intrinsically safe (can be used in hazardous areas)
- FillCheck® Transmitter can monitor 2 level switches
- FillCheck® Repeaters can be used to boost multiple transmitters around obstructions or over great distances
- FillCheck® Receivers are available in 3 models to suit virtually any alarm monitoring application



Mounting the *FillCheck*® Transmitter and Level Switch



**LOCATE ON SIDE OF TANK
CLOSEST TO RECEIVER (IF POSSIBLE)**



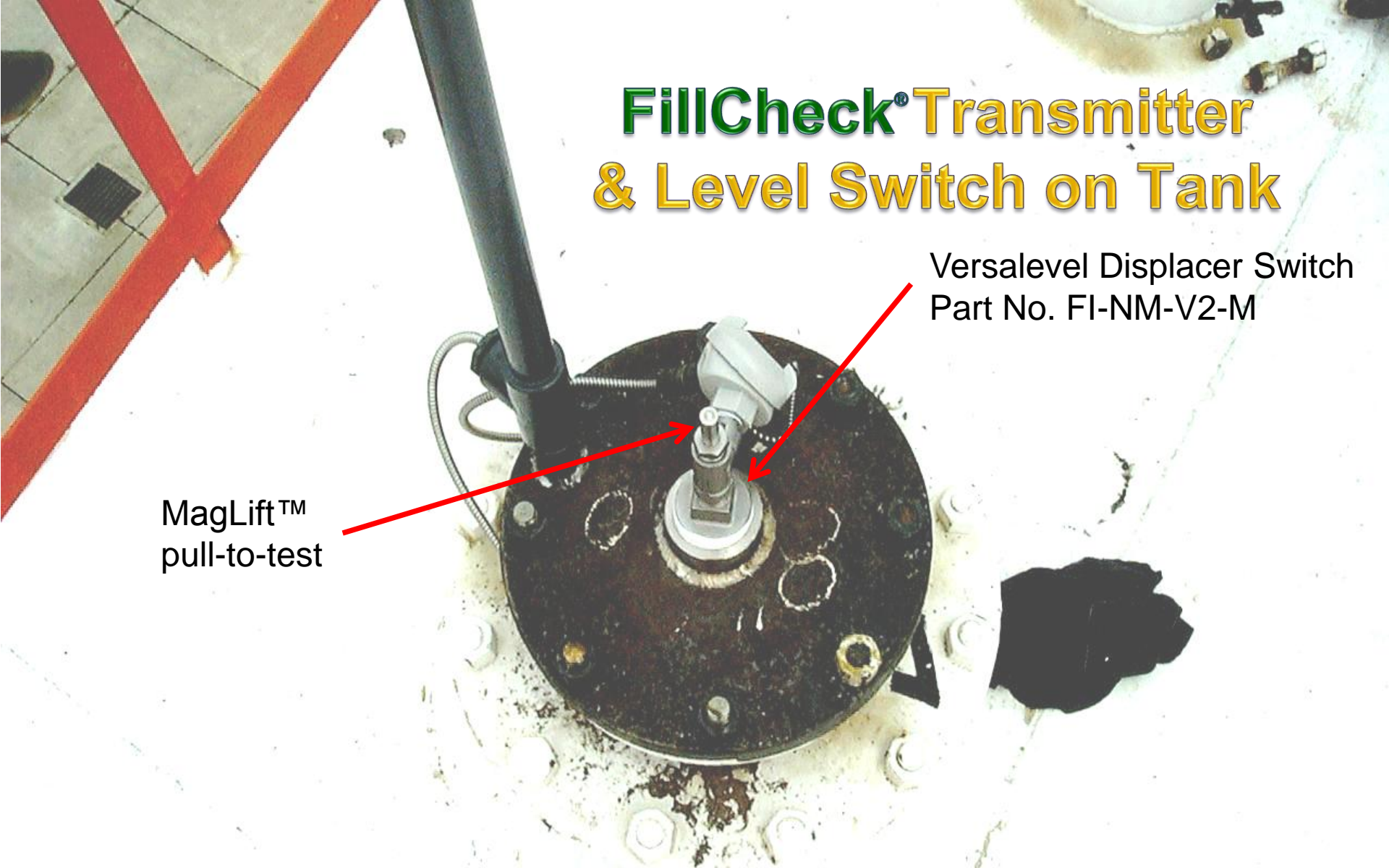
**USE 4" DIAMETER OR LARGER
BLIND OR MANWAY COVER**



FillCheck[®] Transmitter & Level Switch on Tank

Versalevel Displacer Switch
Part No. FI-NM-V2-M

MagLift[™]
pull-to-test





FillCheck[®] Transmitter

(DC-TX-D1) and

Versalevel[™] Sensor

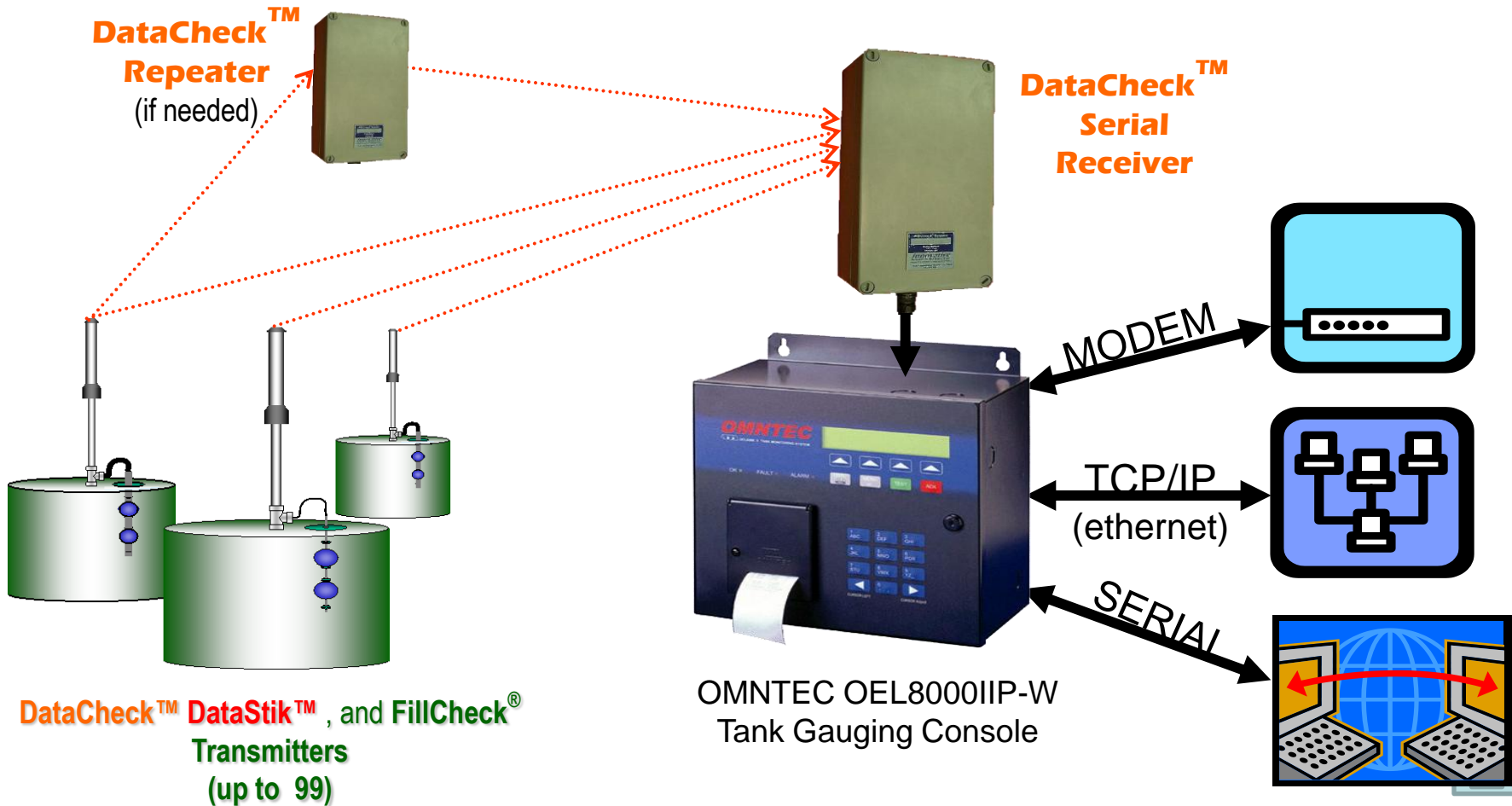
(FI-NM-V2-M)

Installed on IFR tank



OMNTEC OEL8000II-W

PROVIDING GLOBAL SCADA ACCESS TO ALL INNOVATIVE WIRELESS PRODUCTS



FillCheck[®] Alarm Manager

Configuration Diagram

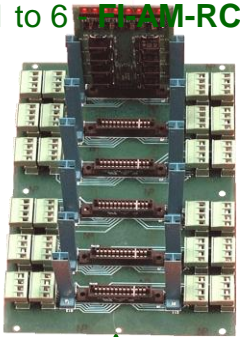
DataCheck[®]
Serial Receiver
DC-RX-SR-O

900 MHz Digital Spread Spectrum

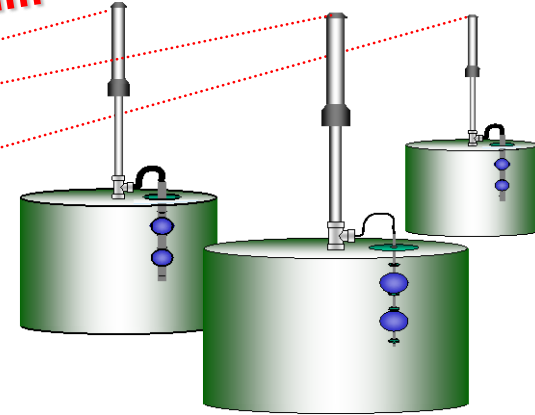
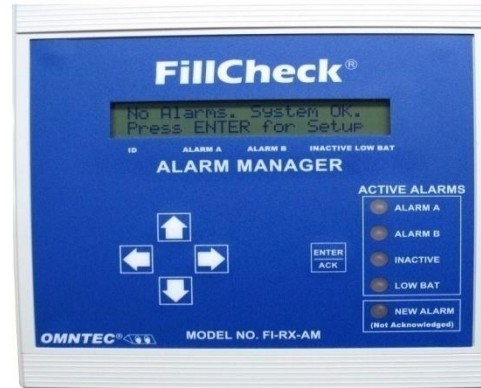
REPEATER
DC-RP-12
(if needed)

Alarm Manager
Relay Bus
Backplane

1 - FI-AM-RB plus
1 to 6 - FI-AM-RC



Alarm Manager[™]
FI-RX-AM



FillCheck[®] Transmitters
FI-TX-D1
(up to 24)

I²E bus out to optional Relay Module

provides separate ALARM A and ALARM B
Relay outputs for up to 24 FillCheck[®] Transmitters

Transmitter programming port

ACTIVE ALARMS & NEW ALARM relays out

12 VDC

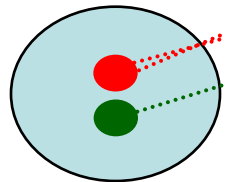
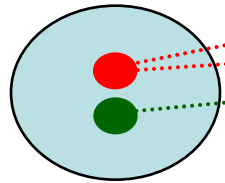
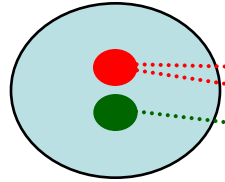
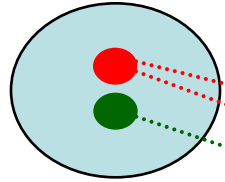
AC adapter
(included)

AC LINE



WIRELESS OVERFILL PROTECTION AND INVENTORY MANAGEMENT

TANK FARM



 **OVERFILL TRANSMITTER**
 **INVENTORY TRANSMITTER**

WIRELESS
RECEIVERS

R

R



**TERMINAL
ALARM
SYSTEM**



NETWORK



OVERFILL DATA

INVENTORY DATA

**“SOFT” ALARMS FROM
INVENTORY DATA**



Redundant Receivers

for independent tank overfill protection system



Installation with a mast
which can be lowered for maintenance



NOTE: Receivers and repeaters should
not be mounted on metal fixtures



portable wireless overfill protection

- 900 Mhz digital spread spectrum
- operates on lithium ion battery up to 5 years
- CSA certified intrinsically safe
- dual point (HI and HI-HI) level switch
- adjustable insertion length
- all wetted parts 316SS
- weighs less than 7 lb (<3 kg)
- works with existing **FillCheck®** Receivers
- **RUGGED** and **DURABLE!**



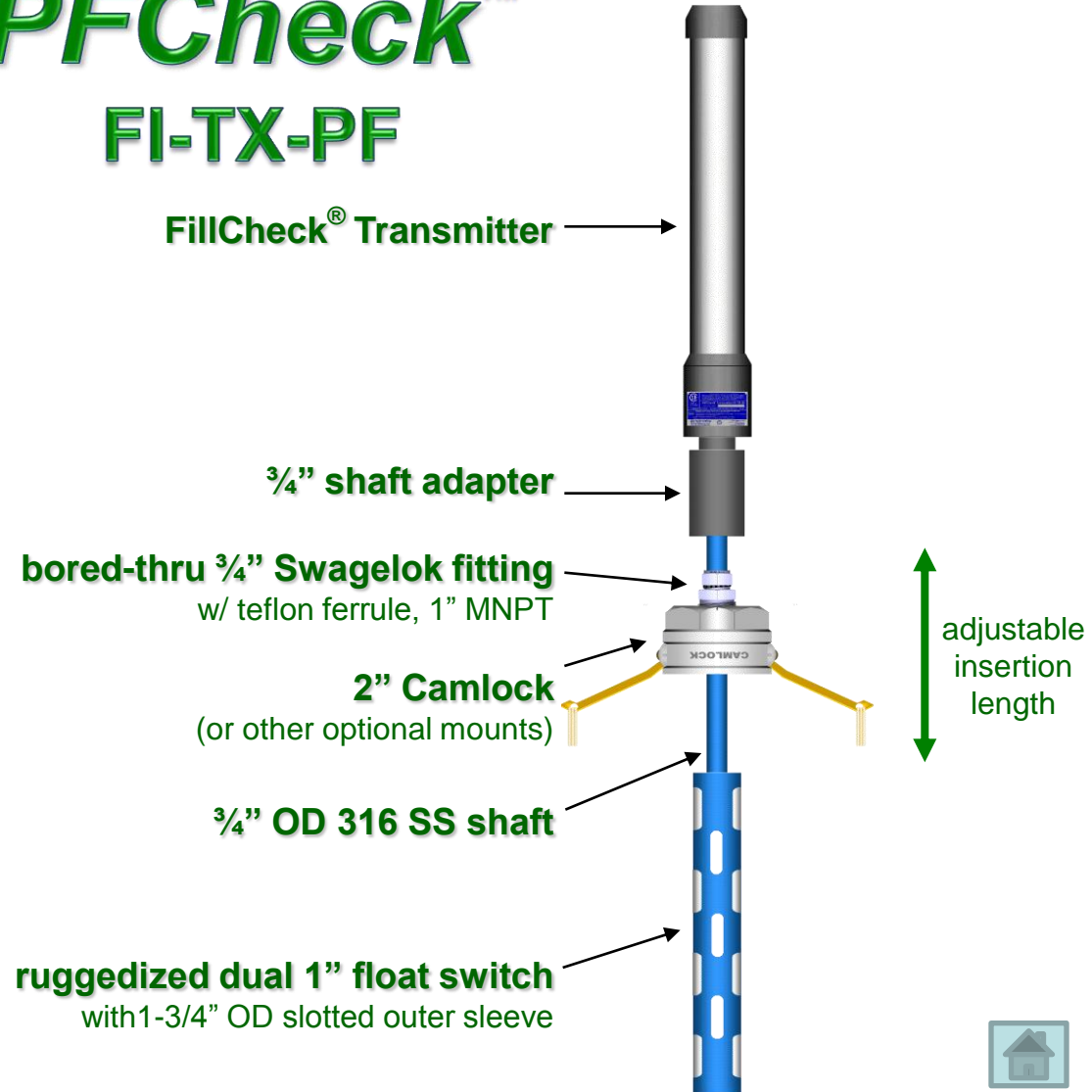


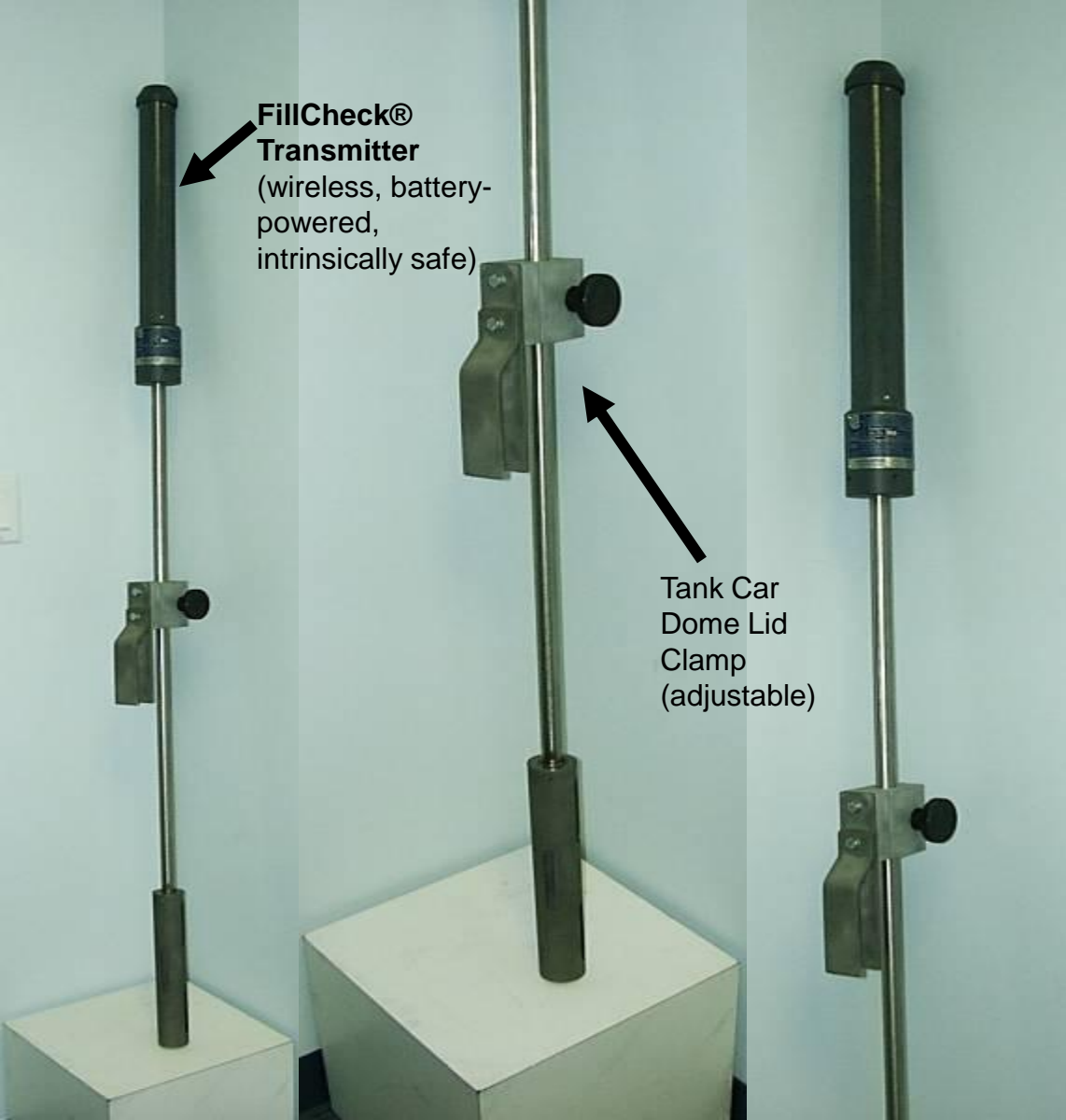
PFCheckTM consists of a **FillCheck[®] Transmitter** coupled with a ruggedized 1" dual point level switch.

This portable, battery-powered, intrinsically-safe system is designed to provide overflow protection while filling rail cars, barges, tank trucks, or any vessel.

PFCheckTM

FI-TX-PF

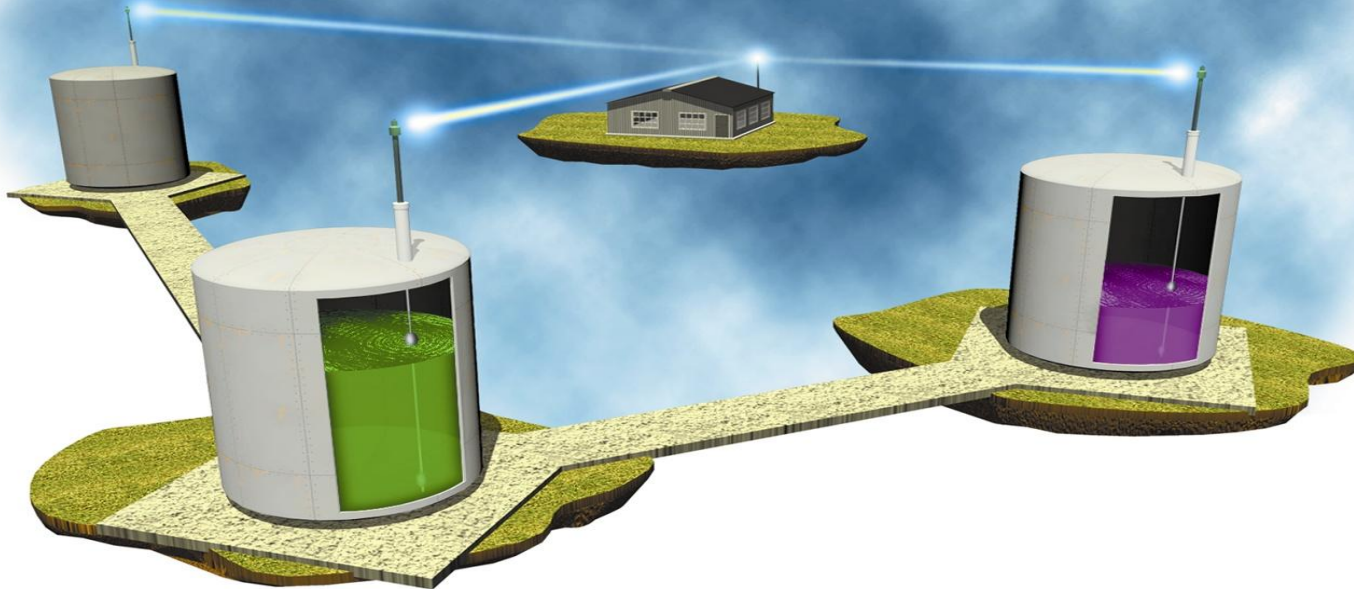




DataStik™

Wireless, Battery Powered, Intrinsically Safe

Tank Inventory Monitoring

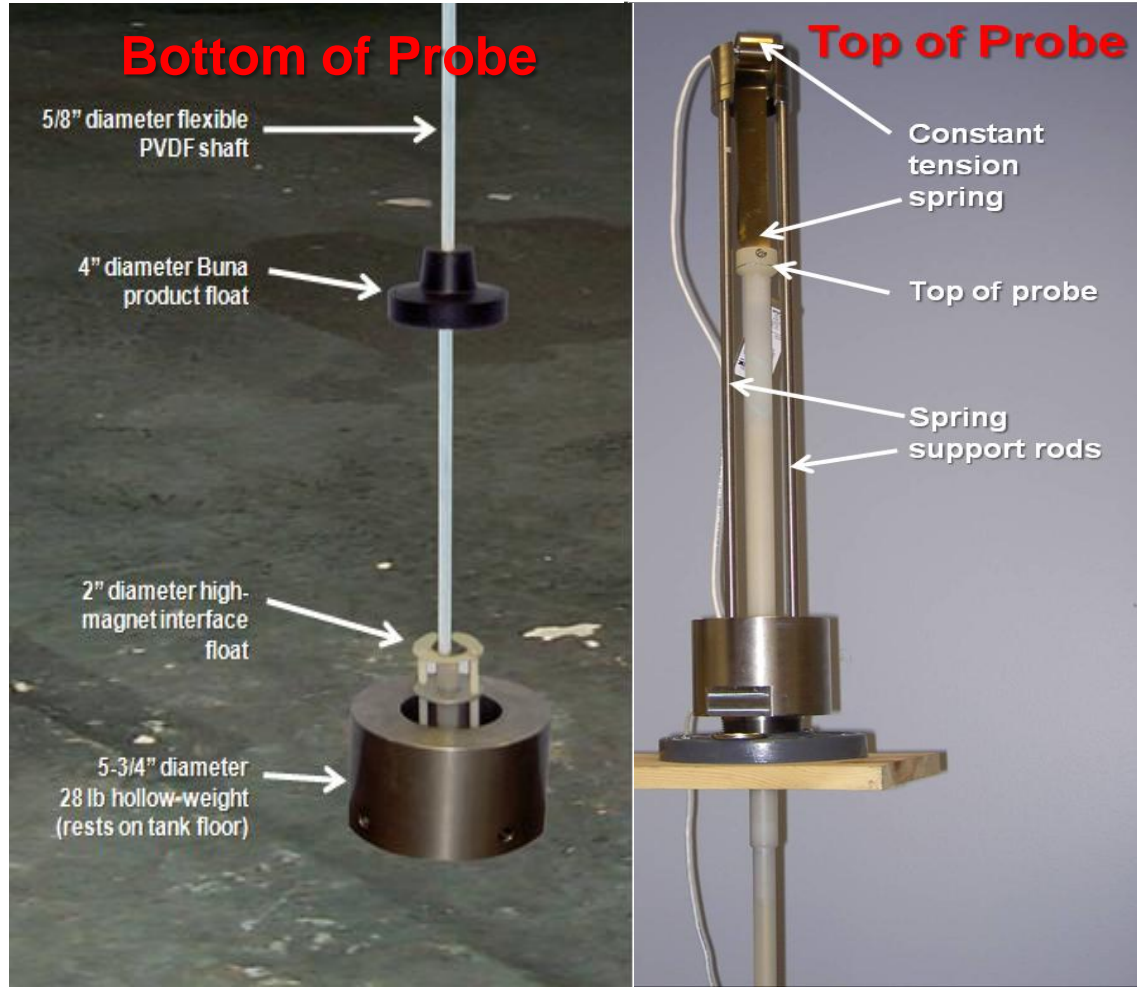


Assemble Probe, Floats and Weight Kit



Bottom Mounted Flexible **DataStik™** Probe

- can measure as little as 1" water in bottom of tank
- unaffected by movement of roof or shell
- requires $\geq 6"$ opening for installation
- Wired and intrinsically-safe battery-powered wireless versions available



Solutions for Overfill Prevention Program

- The API 2350 Working Group is looking at wireless solutions for overfill protection on aboveground storage tanks (such as Omntec)
- Installer of Overfill Protection systems there are many things to consider
 - Availability of Nozzles
 - Calibration of Devices
 - Pin Point location of switching mechanism



Solutions for Overfill Prevention Program

- Location of Nozzles
- Access to device for subsequent testing
- Integration to new and existing control systems
- Integrate into operations
- Integrate into maintenance
- Integrate into Safety Program



How Do We Start – API 2350 Working Group

- Use of API RP2350 Overfill Protection for Storage Tanks in Petroleum Facilities
- API PR2350 provides guidance to implementing an overfill prevention program
- Do not rush out and purchase this document
- Major revisions to this document is currently being done and is in its ballot stages



API 2350 Working Group – Major Revisions

- Major revision is converting this document from a Recommended Practice to an API Standards Document
- Terms and Definitions
 - Implementing new terms to incorporate new technology
 - Clear definition of some terms such as Alarms vs. Alerts



API 2350 Working Group – Major Revisions

- Implement a section for Acronyms that are used throughout the new document
- Complete structure of document changes to incorporate the Standards Look and Feel
- Incorporates ISA-S84, IEC-61508/61511
 - Risk Assessments/Risk Mitigation/Risk Management
- Implements Tank Levels of Concern



API 2350 Working Group – Major Revisions

- Implements Tank Levels of Concern
- Implements requirements for Procedures
 - Selection and Specification
 - Testing
 - Operations
- Emergency Procedures and Planning



API 2350 Working Group – Major Revisions

- Site Design and Configuration
- Use of Alarms and Various Levels of Alarms
- Distinct Difference of Alerts vs. Alarms
- Integration of Visual and Audible Systems
- Integration of Automated Shutdown Systems
- Equipment Selection Process



API 2350 Working Group – Major Revisions

- Full of Annexes that provide good sound advise
- Annex of technology, such as Wireless
- Document is full of revisions
- Group has taken a more technical approach
- Giving good guidance and understanding
- Questions????

