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WirelessHART

Hydrocarbon Leak Detection Monitoring Well - Solution Sheet

HC-Tracker™ Safety System

Application Challenge

It is necessary to reliably detect underground hydrocarbon leaks in various environmental conditions.
Monitoring systems must also comply with release detection regulations, including US EPA directives (e.g. Design and Installation of Monitoring Wells).

Syscor's Solution

The HC-Tracker safety system is rapidly deployable as an effective and reliable leak detection system, due to:

1. Compliance:

Syscor's Intrinsically Safe, WirelessHART Field Transmitters (PCU-X00/01/11) seamlessly integrate with existing DCS/SCADA and asset management systems.

2. Simple Installation:

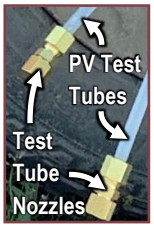
A well is excavated using standard hydrovac equipment. A Stackable Monitoring Well is assembled using two-foot sections of threaded, perforated, stainless steel (SS) tubing to the desired depth. Sensor probe(s), Instrumentation Cable(s) and polyvinyl (PV) test tube(s) are bundled inside the PolyFluoro Wicking Sleeve which rests within the tubing. The PCU-X01 Sensor Hub and antenna are mounted to an aboveground section of the tubing. A well is excavated using standard hydrovac equipment. A Stackable Monitoring Well is assembled using two-foot sections of threaded, perforated, stainless steel (SS) tubing to the desired depth. Sensor probe(s), Instrumentation Cable(s) and polyvinyl (PV) test tube(s) are bundled inside the PolyFluoro Wicking Sleeve which rests within the tubing. The PCU-X01 Sensor Hub and antenna are mounted to an aboveground section of the tubing.

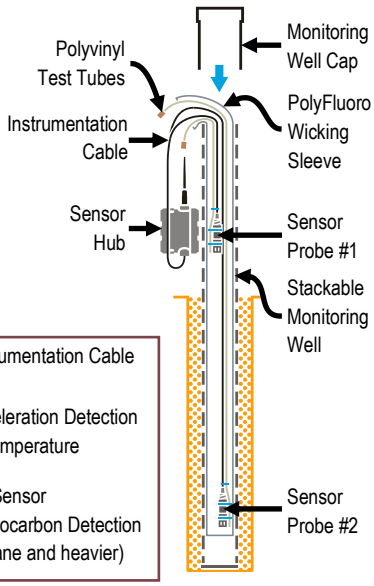
3. Ease of Sensor Testing:

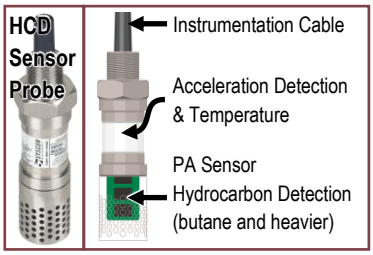
Through the test tube nozzle, inject a small volume of butane inside the PV test tube that is zip-strapped to each sensor probe. A fully functional sensor probe detects the butane from the end of the PV test tube. The Sensor Hub then sends a notification to the operator's monitoring interface. As the butane evaporates, the tested Polymer Absorption (PA) sensors return to normal.

4. Materials Innovation:

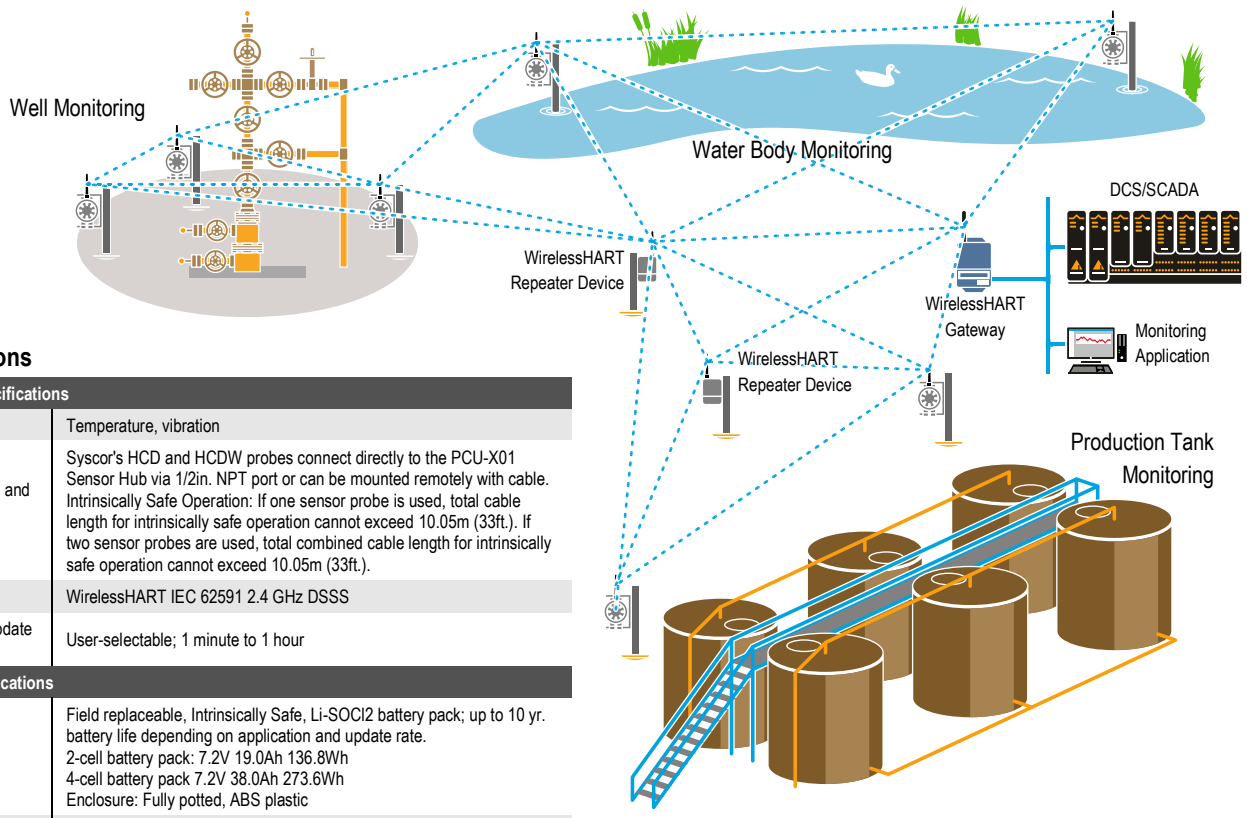
Syscor's Polymer Absorption (PA) Sensors provide accurate and reliable hydrocarbon detection in air (humid or dry), within water bodies, and even in ice. The PA sensors are used in both the HCD Hydrocarbon Detector Probe and HCDW Hydrocarbon Detector Probe with Water Level. Syscor's PolyFluoro Wicking Sleeve acts as a hydrocarbon amplifying wick to enhance hydrocarbon sheen detection.







Innovation driven by safety



Specifications

Functional Specifications	
Internal Sensors	Temperature, vibration
External Sensors and Intrinsically Safe Operation	Syscor's HCD and HCDW probes connect directly to the PCU-X01 Sensor Hub via 1/2in. NPT port or can be mounted remotely with cable. Intrinsically Safe Operation: If one sensor probe is used, total cable length for intrinsically safe operation cannot exceed 10.05m (33ft.). If two sensor probes are used, total combined cable length for intrinsically safe operation cannot exceed 10.05m (33ft.).
Wireless Comm.	WirelessHART IEC 62591 2.4 GHz DSSS
Wireless Data Update Rate	User-selectable; 1 minute to 1 hour
Physical Specifications	
Power Supply	Field replaceable, Intrinsically Safe, Li-SOCl2 battery pack; up to 10 yr. battery life depending on application and update rate. 2-cell battery pack: 7.2V 19.0Ah 136.8Wh 4-cell battery pack 7.2V 38.0Ah 273.6Wh Enclosure: Fully potted, ABS plastic
Communication	Maintenance Port for communication with HART field communicator
Enclosure	Housing: Stainless Steel SS316
Antenna Options 2.4GHz	- Omni-directional, flexible whip monopole antenna, N-Type male, straight, 4.26dBi peak gain - Omni-directional, rigid monopole antenna, N-Type male, straight, 5dBi peak gain - Other antenna options are available - Optional lightning arresters are available
Antenna Port	N-Type female
Sensor Probe Ports	1/2in. NPT
Sensor Wiring Connections	Screw terminals for 4x1 conductor 20 AWG tinned copper wire
Weight	Field Transmitter-3.75kg [8.3lbs.]; HCD- 400g [14.1oz.]; HCDW-500g [17.6oz.]; Universal Mounting Bracket- 0.5kg [1.1lbs]; 2-cell battery pack- 300g [10.6oz.]; 4-cell battery pack-600g [21.2oz.]; Stackable Monitoring Well (2ft. section)-1kg [2.2lbs]; Stackable Monitoring Well Endcap-102g [0.22lbs]; PolyFluoro Wicking Sleeve-35g (1.23oz) /ft.
Mounting Options	Universal Mounting Bracket with optional magnets
Performance Specifications	
Electromagnetic Compatibility	Meets all relevant requirements of EN 62479:2010 and EN-61326-1:2013
Vibration and Acceleration	Ultra-low-power, high performance, three-axis linear accelerometer; Dynamically selectable range from 0g to 16g; Acceleration and velocity detection
Temp. Sensor	8 bit resolution; worst case accuracy ± 2°C [3.6°F]
Operating Temp.	-40°C to +60°C [-40°F to +140°F]

Learn More

HC-Tracker	syscor.com/solutions/hctracker/
PCU-X01 Sensor Hub	syscor.com/downloads/syscor_spec-sheet_pcux01-wirelesshart-sensorhub_en_80175.pdf
PCU-X00 Repeater	syscor.com/downloads/syscor_spec-sheet_pcux00-wirelesshart-repeater_en_80173.pdf
HCD Hydrocarbon Detector Probe	syscor.com/downloads/syscor_spec-sheet_hcd-probe_en_80169.pdf
HCDW Hydrocarbon Detector Probe with Water Level	syscor.com/downloads/syscor_spec-sheet_hcdw-probe_en_80171.pdf
Field Transmitter Battery Pack	syscor.com/downloads/syscor_spec-sheet_field-transmitter-battery-packs_en_80155.pdf
Antennas	syscor.com/products/antennas/
Universal Mounting Bracket	syscor.com/downloads/syscor_spec-sheet_universal-mounting-bracket_en_80163.pdf
Stackable Monitoring Well	syscor.com/downloads/syscor_spec-sheet_stackable-monitoring-well_en_80185.pdf

Certifications

Note: Certifications apply to the complete system (Field Transmitter (IP67) + sensor probes (IP68))

USA :
FCC: 2AAZE-000697
Intrinsic Safety: CSA 19CA70174889X
Class I, Division 1, Groups C and D, T4
Class I, Zone 0 AEx ia IIB T4 Ga

Canada:
IC: 11413A-000697
Intrinsic Safety: CSA 19CA70174889X
Class I, Division 1, Groups C and D, T4
Ex ia IIB T4 Ga