LIQUID LEAK DETECTION SYSTEMS

Case Study

TTK JET FUEL LEAK DETECTION SYSTEM AT ABU DHABI INTERNATIONAL AIRPORT, UAE

Project Background

The client requested a comprehensive jet fuel leak detection and location system to monitor its underground jet A-1 aviation fuel pipeline which is completely buried with concrete.

The project consists of continuous monitoring of the whole fuel pipeline network and early alarming in the event of jet fuel leakage, principally from the filling hydrant pits.

Presential flight hangar under construction

PROJECT OVERVIEW

Project	Presidential Flight Hangar 2 at Abu Dhabi International Airport
Location	Abu Dhabi, United Arab Emirates
Application	Airport underground jet fuel pipeline, airport jet fuel hydrant systems
Project Type	New Project
Contract Scope	TTK assures engineering and material delivery. TTK's local partners assures the installation, Test & Commissioning of the fuel leak detection systems
Completion Date	April 2022
Technology	FG-NET-LL digital monitoring unit with hydrocarbon sensing cables and point sensors from the FG-OD range
Project Managed by	TTK Middle East

TTK's Solution

For this project, TTK has designed a complete monitoring, alarming, and logging system based on addressable hydrocarbon sensing cables and a digital monitoring unit.

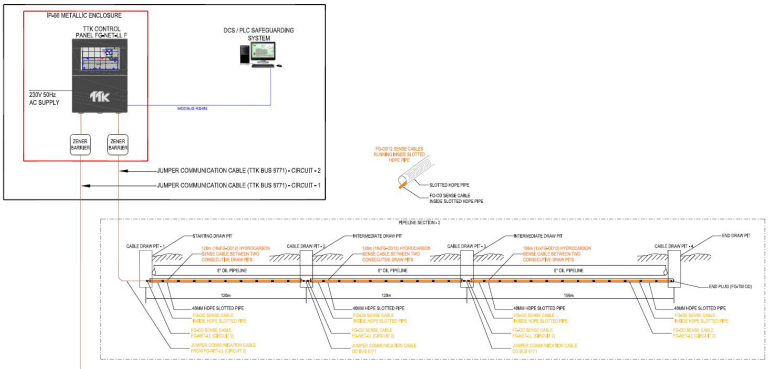
The sensing cables (FG-OD range) are installed along the pipelines through access risers, ensuring a continuous protection of the entire pipeline. The monitoring unit (FG-NET-LL) is installed within a control room nearby the apron. On each of its two separate circuits (leaving a third circuit available for future extension if needed), connected sensing cables by daisy-chaining. Standard lengths of 12 and 20 metres of cables are installed to suit different site section needs. The monitoring unit is connected to client's SCADA system via its JBUS/MODBUS protocol.

When a leak is detected on a sensing cable, the monitoring unit triggers an audible alarm, activates relays, displays the precise location of the leak on its integrated dynamic map and instantly reports to client's SCADA System, it also sends email alerts and SNMP traps to a LAN-connected SCADA System.

Technical advantages of TTK's hydrocarbon sensing cable:

- **Detects quickly, even small quantity** of hydrocarbon liquid, allowing to give very early alarm and gain precious time to operators to react in the event of a leak.
- **Reusable**, allowing onsite test and significantly reducing equipment cost.
- **Insensitive to inorganic pollutants, external loads (pressure), and water**, thus suitable for humid environment.
- Every individual cable is **addressable and independent**, allowing the detection and location of multiple leaks over a long-line system.

A filtering fabric sleeve is inserted around the slotted HDPE corrugated conduit as shown in the picture at right, allowing to prevent obstruction of the pipe slots and sand ingress inside the conduit.

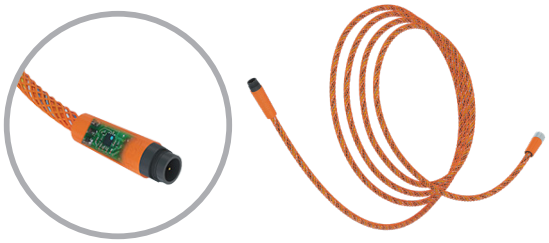


Extract of TTK hydrocarbon leak detection system diagram for the airport underground fuel pipeline

Preparation of a cable draw pit in which TTK sensing cable (inside a white fabric sleeve) is inserted

FG-NET-LL: digital hydrocarbon leak monitoring panel

TTK fuel sensing cable is inserted inside a slotted conduit which is inside a white fabric sleeve - typical



Addressable fuel sensing cable: FG-OD

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