Pipeline TPI monitoring

Luna provides monitoring for critical water pipelines at the Ras Al-Khair and Riyadh City projects in the Kingdom of Saudi Arabia.

CASE STUDY **Client location: Kingdom of Saudi Arabia**

Challenge

Newly installed large water pipeline systems are at risk of accidental damage by home, road and other construction activities, which could interrupt the flow of fresh drinking water to major cities.

With 80% of all pipeline leaks attributed to third-party intrusion, the ability to detect potentially harmful activities quickly and accurately has never been greater.

Solution

Luna engineers suggested the installation of the Luna Pipeline Monitoring System (PMS) for third-party intrusion (TPI) detection. The system can quickly and accurately identify and classify hazardous activity before damage occurs.

Results

The aim of both projects is to contribute to the integrity of the water pipelines and thus secure an uninterrupted water supply to the Saudi consumer.

The system reduces pipeline incidents that could potentially impact the flow of fresh drinking water to major cities.

Background information

With over 2 million square kilometers, the Kingdom of Saudi Arabia is a vast country, almost nine times the size of the United Kingdom. Most of the land is arid with no continuous flowing rivers, lakes or other natural water reserves. To sustain the swiftly growing population of over 66 million, a large portion of fresh water needs to be generated by desalination.

The government-owned Saline Water Conversion Corporation (SWCC) operates 31 desalination plants in 17 locations along the East and West coasts of Saudi Arabia. Through a pipeline network of more than 5,600 km, the treated water is transported into more than 46 governorates and cities throughout the Kingdom.

Ras Al-Khair supply pipelines

Ras Al-Khair is the location of a desalination project on the east coast of Saudi Arabia. The plant supplies water to Riyadh, Al Majma'ah, Shaqraa, Al-Ghat, Thadig and Al Zulfi through a total of 914 km of pipeline. Luna began installation of Phase 1 of the project in March 2019.

Riyadh City feeder pipelines

Three pipelines within Riyadh, amounting to 133 km, ensure the transport of water from the city reservoirs to terminal stations for distribution to the consumer. Luna will install its latest distributed fiber-optic sensing (DFOS) system on all three critical feeder pipelines following the completion of the Ras Al-Khair Phase 1 installation.

Advanced monitoring solution

Offering third-party interference monitoring and right-of-way detection, the Luna system can alert the pipeline operator of potentially hazardous activity occurring within the pipeline corridor, such as digging, vehicle movement and other large machinery, before contact with the pipe is made.

Activities or events that occur along a pipeline produce unique sounds and vibrations, which DFOS can detect. Using advanced processing, these unique acoustics are analyzed to eliminate background noise and then converted into a high-resolution visual. By applying advanced algorithms, these sounds and vibrations are deciphered to create specific alarms for a given event or sequence of events—allowing the operator to monitor individual or interactive threats, where and how often they occur, whether they are time-dependent and their potential of becoming a major issue.



Riyadh, Kingdom of Saudi Arabia.

Why Luna Pipeline Monitoring?

One system, many threats

The Luna PMS offers a variety of detector applications to monitor right of way and third-party interference, geohazards, theft and critical infrastructure in real time, from a single operating system.

Fewer unwanted alerts

The ability to automatically classify specific events, such as mechanical or manual digging, allows the client to minimize unwanted alerts while providing enhanced situational awareness of the right-of-way.

Early warning

Any potentially harmful construction activity near the pipeline generates an alert that can be addressed before any damage can occur.

Proven and ready to grow

Luna has a strong track record of providing TPI monitoring solutions in both urban and desert environments and is well prepared for future expansion of these water pipeline projects due to the continuing growth of Riyadh and other Saudi Arabian cities.



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