



MOL - Hungarian National Oil Company

Product pipeline project

DW 9220 C-LEAK v1.5 - 1999

Customer Profile

MOL Plc. is the leading oil and gas supplier in the Central European region. The company has operated for over 60 years, not only traversing the country with an extensive pipeline system, but also performing international transit duties.

Business Case

In the 1990s, certain sections of the pipeline network were already over 30 years old. Because of material ageing and corrosion on the pipelines, there were more than 20-50 leakages per year. The activity of the company was made even more difficult by the growing number of unauthorized extractions and theft.

Reasons for success

- 1 Reliable partnership
- 2 Independent solution
- 3 Total pipeline network coverage
- 4 Cost effective
- 5 Exact measurement
- 6 Simple connectivity with 3rd party SCADA or IT systems

- Nearly 20 attacks annually
- Significant environmental pollution
- Endangering operation
- Delivery deficiencies
- Repair costs

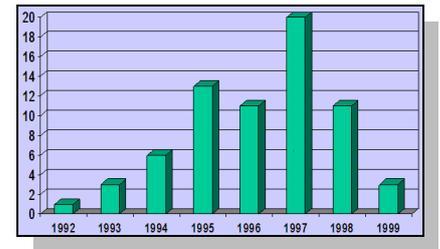


Figure 1 MOL remote pipeline theft numbers

Solution

In 1997, MOL Plc. invited tenders to establish a system to monitor the leakage and theft events of the pipeline.

By developing new technologies and components and drawing on its own innovation and resources, CASON Engineering Plc. installed a leak detecting system that met the requirements on the entire product pipeline system in Hungary.

The concept of the application is that existing site instrumentation be used in combination with a unique central analysis of the data.

In less than six months, CASON Engineering Plc. installed the complete DIWICON-L leak detection system on the more than 1000 km of product pipeline operated by MOL Plc.

Benefits

In 2000, CASON Engineering Plc. was awarded an innovation grand prize for its new DIWICON-L technology application. With the unique solution, highly precise location definition, and quick response time of the DW 9220 C-LEAK application, pipeline leaks and attacks have fallen to one or two per year.

MOL Plc. now saves over 1 million Euro annually with the DIWICON-L C-LEAK system by quickly detecting the leakages and decreasing the number of thefts.

C-LEAK system in MOL Plc. has detected more than 20 leak and theft events. The prevention with DIWICON-L policy saved more than 1 million Euro to MOL Plc.

CASON DIWICON-L

Leakage Detection and Localization System

MOL - Hungarian National Oil Company Crude oil pipeline project

DW 9220 C - LEAK v1.5 – 2000

Business Case

Based on the success of the DIWICON-L Leak Detection system on the product pipeline system, in 2000, MOL Plc. decided to extend the innovative system its crude oil pipeline network as well.

Solution

MOL Plc. requested CASON Engineering Plc. to extend the leak detection application to its nearly 900 km of crude oil pipelines.

CASON Engineering Plc. finished the integration of the crude oil pipelines into the C-LEAK v1.5 application within three months.

Benefits

The application has proved to be worthwhile. The leakages and the attacks on the crude oil pipeline have been almost eliminated.

MOL Plc. now saves over half million Euro annually with the DIWICON-L C-LEAK system by quickly detecting the leakages and decreasing the number of thefts.

PETROTRANS Product pipeline

DW 9220 C-LEAK v2.7 – 2004

Customer Profile

Petrotrans is the sole operator of the national petroleum product pipeline network. The company's main profile is the transportation of petroleum products.

Business Case

Petrotrans wished to start operation of the 350 km of product pipeline which it owns. The pipeline had not been used for over 10 years the unauthorized drilling of holes in the pipeline had made its usage impossible. The increasing costs of railway and water transportation forced the company to revive the cheaper pipeline transport.

Solution

Petrotrans invited tenders to install an automatic application for detecting leakages and thefts on its product pipeline.

CASON Engineering Plc. won the tender based on its successes with applying the DIWICON-L C-LEAK system on the Hungarian pipelines and on the pipeline systems of CONPET.

Seven measuring points were created on the 350 km long pipeline and the system was implemented within 2 weeks together with the DIWICON-C product group.

Benefits

By applying the new and unique devices, all the extraction and leakage points were defined on the pipeline within one month.

By quickly detecting leakages and decreasing the number of thefts, the DIWICON-L leak detection technology has helped Petrotrans to make its pipeline system suitable for logistic product transport.

MOL - Hungarian National Oil Company Product pipeline

DW 9220 C-LEAK v3.1 – 2006

Business Case

In 2006, MOL Plc. constructed a new 190 km product pipeline. The pipeline was designed for the delivery of highly toxic substances like Methanol, C8, and DSL.

These substances, especially methanol, are highly toxic. Any leakage could cause severe environmental pollution and would pose a significant risk to human health.

Solution

CASON Engineering Plc. installed the newest innovation of the DIWICON-L technology, the C-LEAK v3.1.

40 measuring points were created on the pipeline at both sides of each separation valve, and at the forwarding and receiving stations. The most up-to-date DW 115 GEx fast reaction special pressure transmitters and the field DW 4324 L signal processing units were installed at these measuring points. The new field devices refined the accuracy of localization and minimum detectable leakage quantities. The latest generation of the central software's thin client application made the processing of the alarms easier.

Benefits

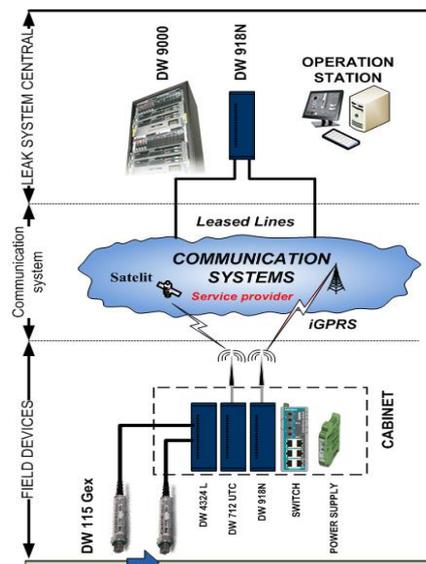
The new generation successfully passed all the tests so it has been proved capable of the following precision:

On a stationary pipeline:

- Detection threshold ≤ 50 litre/hour
- Defining location of leakage ± 100 metre precision
- Defining location of leakage within maximum 5 minutes.

During delivery:

- Detection threshold ≤ 150 litre/hour
- Defining location of leakage ± 250 metre precision
- Defining location of leakage within maximum 5 minutes



CASON DIWICON-L

Leakage Detection and Localization System

Prikarpat Zapadtrans

Product pipeline

DW 9220 C-LEAK v3.1 – 2006

Customer profile

Diesel oil is transported from Russia to Hungary using the "Eastern" Pipeline. This pipeline connects at Beregdaróc station to the 1,200 km length Ukrainian pipeline, which is operated in Ukraine by Prikarpat Zapadtrans, a subsidiary of the Russian Yugo-Zapad Transneftprodukt company.

Diesel Oil deliveries starting to Hungary from the 5C pump station. The delivery is also supported by the 1K booster pump station. Transportation shall take place to Hungary and Mukachevo simultaneously in both or only in one direction.

Business Case

The new system must be used to achieve the following objectives:

- Leak detection and location system efficient operation of the 351 km (Zarichevo) - 441 km (Janosi) - State Border section,
- Hydraulic monitoring of the pumping stations,
- Real time monitoring establishment by continuous measurement comparison of the Ukrainian (Janosi) and Hungarian (Nyírbogdány, Tiszaujvaros) measuring station data,
- Manual recording of 5C and Tiszaujváros tank measurement data,
- Realization of 2 operation centers in Rovno and Százhalombatta,
- Data analysis during the management system operation .
- Hydraulic analysis.

Solution

The DIWICON-L leak detection system has been implemented on a total length of 155 km (57 km in Hungary + 98 km in Ukraine). Additionally a 231 km length pipeline is hydraulically monitored. Devices for leak detection and flow measurement data collection has been installed on 7 stations (valve stations / measuring stations / pumping station, / tank farm).

System functions:

- Negative pressure wave detection method,
- Mass flow balance (on line and historical),
- Hydraulic analysis.

Realization of Leak Detection system on gasoil transportation pipelines in Trans-Carpathian region of Ukraine and integration of the Ukrainian DIWICON-L with the similar DIWICON-L leak detection system of MOL Easter pipeline.

The system installed accomplishes data exchange on the long-distance product transmission pipeline between Prikarpat Zapadtrans Ukraine and MOL Hungary.

The installed system comprises the following on the Ukrainian and Hungarian sides respectively:

- Establishment of the monitoring center,
- Online collection of measurement data,
- Transmission of measurement and process data to the monitoring centers via GSM / GPRS communication,
- SQL Database Management,
- Implementation of leak detection monitoring and balance software functions.

Benefits

As a result of the DIWICON-L system implementation, on the first 9 months after the system commissioning more than 40 different theft locations has been identified, discovered and successfully liquidated.

