



eFix – The Game-Changer in Permanent Leak Detection

How ELIS Technologies is transforming geomembrane installations safety with real-time geomembrane monitoring.

by Tomas Gregor Jr., COO at ELIS Tech and Matej Turjanik, Head of Global Markets at ELIS Tech

Executive Summary

*When environmental safety and public trust are on the line, the eFix Permanent Leak Detection System from ELIS Technologies delivers solutions that go beyond traditional monitoring. This article highlights **three real-world case studies** where eFix not only identified potential leaks but also helped landfill operators manage public relations crises, prevent costly legal disputes, and ensure rapid responses after emergencies. Our deep expertise and commitment to innovation in geomembrane leak detection, led by industry veterans Tomas Gregor Sr. and Tomas Gregor Jr., have positioned us as the leaders in safeguarding landfills and other critical sites worldwide.*



eFix Monitoring Box at a Landfill Leachate Pond



ELIS Technologies – Decades of Expertise in Leak Detection

ELIS Technologies brings more than 30 years of experience to the geomembrane leak detection field, offering cutting-edge solutions and services to ensure the integrity of liners worldwide. Founded by industry experts, the company specializes in both exposed and covered geomembrane liner leak detection, with an impressive record of success globally. Leading the charge is our **CTO, Tomas Gregor Sr., a pioneer in leak detection who personally oversaw the installation of the first-ever permanent monitoring system for geomembranes, built in Slovakia in 1991.** This system, covering 8,000 m², revealed three leaks, ranging from 1 to 5 cm in size, and paved the way for future innovations in the field.

In the years that followed, Tomas Sr. participated in the installation of similar systems across Europe and Japan, where he oversaw the **first fully automated monitoring station** in 1996. Now, his son, **Tomas Gregor Jr., COO of ELIS Technologies**, continues this legacy, having been directly involved in more than **1.2 million m² of eFix installations since 2016.** Together, this father-son team brings unmatched expertise and technical know-how to every project.



*Mr. Tomas Gregor Jr.
COO at ELIS Technologies*



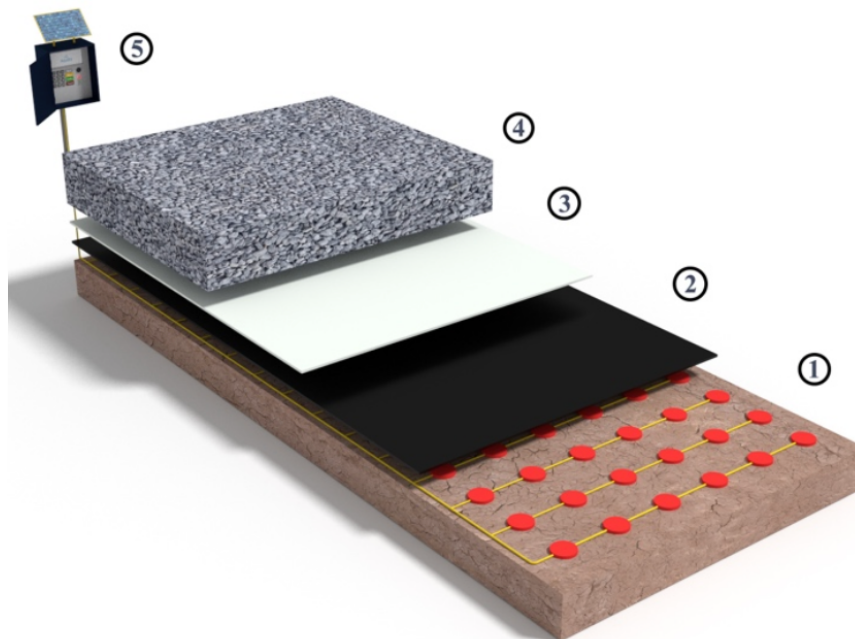
*Mr. Tomas Gregor Sr.
Chief Technology Officer and Co-Founder of ELIS
Technologies*

What is eFix? – Permanent Leak Detection System by ELIS Technologies

The **eFix Permanent Leak Detection System** is a state-of-the-art solution for monitoring geomembrane liners in landfills, ponds, and similar facilities. Unlike traditional systems that rely on manual labor-intensive inspections, eFix can provide continuous monitoring to detect leaks in real-time, offering unparalleled protection for sensitive environmental projects.

A typical eFix layout:

1. **Monitoring System:** A grid of ELIS sensors placed below the geomembrane liner, connected to the eFix Monitoring box.
2. **Geomembrane Liner:** The barrier that protects against environmental contamination.
3. **Geotextile:** Protects the liner from potential punctures and stress.
4. **Protective Layer:** Typically composed of gravel or similar materials, containing electric sources to generate an electric field.
5. **eFix Monitoring Box:** The control unit that collects and processes data from the sensors.



The system operates by detecting changes in electrical field caused by leaks in the liner. When a breach occurs, the electricity passes through the defect, and the sensors immediately register this change, pinpointing the exact location of the leak.



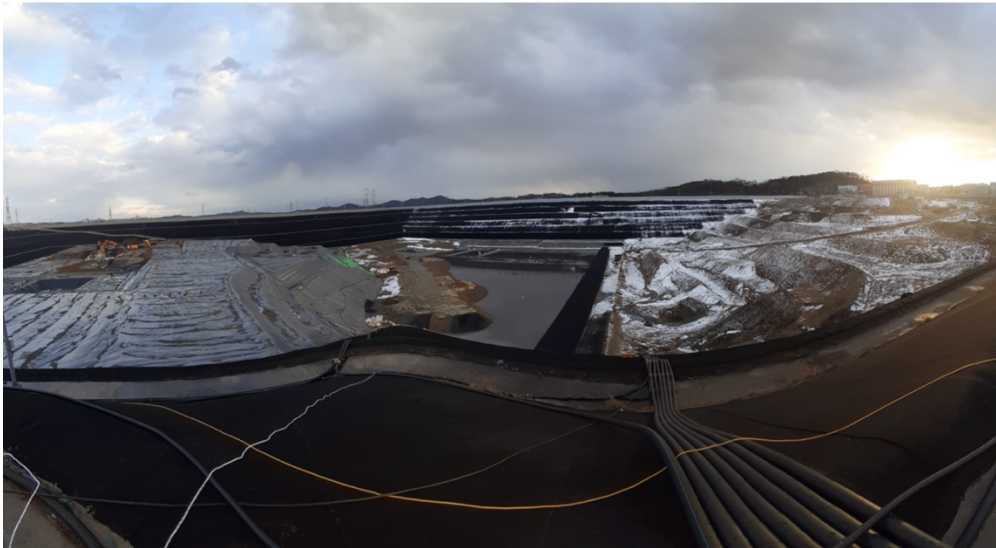
Configurations of eFix:

- **Offline eFix:** Data is collected by technicians during site visits and processed by ELIS, with a full leak report provided.
- **Semi-automatic eFix:** Data is autonomously collected and sent to ELIS for processing, eliminating the need for on-site technicians.
- **Automatic eFix:** The flagship model that continuously collects and evaluates data, providing real-time on-site access to leak detection information 24/7.

Case Study 1 – Gaining Public Trust Through Transparency

In one instance, a mid-sized (120 000m²) landfill operator faced opposition from local residents concerned about potential environmental risks. Protestors blocked access roads and halted the construction of a new landfill section. In response, the operators sought out ELIS Technologies to install a **24/7 monitoring system** that would offer real-time leak detection and provide the community with transparency.

During a presentation for the residents, we demonstrated how the system would immediately alert them in case of any breach in the liner. This assurance helped alleviate public fears, and after a second live demonstration post-installation, the protests ceased, allowing the project to continue without further delays. The installation of the eFix system proved to be a vital tool for managing public relations and ensuring community trust in the safety of the landfill.



Case Study 1 - landfill site with eFix cables



Case Study 1 - eFix automatic monitoring box during installation

Case Study 2 is on the next page.



Case Study 2 – Protecting Against Rogue Contractors

Four years after eFix was installed at a landfill, elevated levels of contamination were detected in the nearby monitoring wells. Initial concerns pointed to potential damage in the liner. After extensive inspections, ELIS confirmed that the liner was fully intact. Further investigation revealed that a contractor had been illegally discharging leachate water into a nearby field, leading to contamination.

By providing evidence that the **eFix system** had preserved the integrity of the liner, ELIS helped the landfill operators avoid blame and shift responsibility to the contractor. This case highlighted how eFix can protect clients from external risks beyond their control.



Case Study 2 - completed offline eFix a monitoring box on a landfill site

Case Study 3 is on the next page.



Case Study 3 – Rapid Response After a Fire

After a fire broke out at a landfill site, the eFix system played a crucial role in minimizing environmental damage. The fire had compromised the geomembrane liner, but thanks to the eFix monitoring system, the exact location of the breach was identified within hours. Immediate repairs were made, preventing further contamination and ensuring the safety of the surrounding environment.

The ability of the eFix system to rapidly detect and localize the damage was critical in this emergency, demonstrating its value in safeguarding against unexpected events.



Case Study 2 - fire damage discovered using eFix technology

Conclusion

The **eFix Permanent Leak Detection System** from ELIS Technologies is a comprehensive solution for long-term environmental safety. Whether it's winning public trust, protecting against rogue contractors, or responding to emergencies, eFix has proven to be a vital tool in the management of landfills and other critical sites. Our unmatched expertise and innovative technology ensure that our clients can confidently protect their projects for years to come.