



Leaks in tanks and pipe systems - Interview with expert Jost Berg, SGB

Leaking petrol station tanks and pipe systems represent a threat for the environment and health. We discuss the characteristics of leak detection technology.

Regardless of the different laws and regulations affecting a country, one principle always applies: the petrol station operator is responsible for all damages caused by the leak of fuels into the ground or, in the worst case, into the water cycle. The consequences for operator range from enormous payments in damages to imprisonment for negligence or willful misconduct.

CEO of PetrolPlaza Bruno Boroewitsch talks to Jost Berg, CEO of SGB GmbH, a technology leader in the field of leak detection, about processes, technologies and how service station operators can protect themselves from risks caused by leaks.

BB: Jost, SGB is considered the inventor of the leak detection systems of class 1. What does this mean?

JB: In 1956, the Water Act was amended in the Federal Republic of Germany. Among other things, it regulated the protection of groundwater against pollution caused by water polluting liquids.

Single-walled heating oil tanks could continue their operations with SGB's invented and patented vacuum leak detection systems. For the consistent environmental protection, however, double-walled tanks and suitable leak detection systems have very quickly become the standard. In 1976 SGB launched the first overpressure leak detector for tanks and pipes. Today's leak detection systems of class 1 are working according to this principle. In the early 1990s the air overpressure systems broke through at the pump with Aral's decision to only install class 1 systems.

What does class 1 exactly mean and which are the other classes?

To put it in a nutshell, the European standard EN 13160 acknowledges 5 different classes of "leak detection systems". I would not like to go deeper into class 3, 4 and 5 as in all these processes the stored product is able to escape into the environment. It is very risky if not even irresponsible to still use them at petrol stations.

Class 2 is still a widespread system at petrol stations. Here, the gap between the double-walled tanks and the pipes are filled with liquid. If the liquid level goes down, this indicates a leak. However, if it is a leak in the outer wall, the leak detection liquid (usually a polluting water-glycol mixture) escapes

into the environment; and if it is a leak in the inner wall, the leak detection fluid will be mixed with the stored product. This can cause significant economic damage.

Leak detection systems of class 1 are generally described as follows: "Systems of this class will detect a leak above or below the liquid level in a double skin system. They are inherently safe and will detect a leak before any liquid can enter the environment (i.e. pressure or vacuum systems)."

"The key feature of this system is that it warns the operator before any products can pollute the environment"

This is achieved by monitoring the gap with air through overpressure or under pressure. If the pressure changes, this indicates a leak. If it is a leak in the outer wall, air is blown into the environment or drawn in from the environment. If it is a leak in the inner wall, air is blown into the interior of the tank in case of an overpressure system which is the preferred system for fixed petrol station tanks. Thereby, the stored product will not even enter the gap. In under pressure systems, the stored product runs into the gap, but is retained by the still tight outer wall. In case of a renovation or replacement the tank can be emptied without any problems. The stored product remains intact and there is no harmful liquid escaping into the environment.

In which applications and markets SGB systems are used and which percentage covers petrol stations?

SGB systems are mostly used in oil camps, tanks and pipe systems in the chemical industry, but also in the food industry and of course at service stations. Approximately 40 % of our installed systems are located at petrol stations, where usually 4 tanks can be monitored by one system.

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What does this mean in numbers?

In numbers, SGB has delivered more than 350,000 systems that monitor more than 1,000,000 tanks and piping systems.

That is very impressive. And to which ratio could the environmental damages be reduced thanks to these installations?

To zero. We do not know of any case where one of our systems failed and caused a polluting incident. However, there are unfortunately some cases where correct alarm signs were ignored by operators of the installations for a longer period of time. And there was even one case where a self-sufficient system was deliberately destroyed so that the alarms were prevented.

What can be done in such cases?

A lot! Especially in the case of petrol stations, which are often operated by temporary auxiliary staff, a professional remote monitoring is very important. With SGB's flexible solutions any number of systems can be monitored from a central location day and night. Beside the alarms, also the correct

functions of the systems are continuously examined and transmitted to the central location. The monitoring central location can be at our customers, at their service partners or at SGB.

What are the leak detection system standards at petrol stations today?

It varies from region to region and from country to country. We cannot talk about a global standard. With a few exceptions such as California or Florida, Europe is a leader in double-walled leak detection systems. They have been obligatory for tanks and pressure piping systems in Europe for several years. New installations are double-walled almost everywhere in Europe. However, the replacement of old systems has more or less urgency depending on the country. Although there is an increasing global environmental awareness that benefits double-walled monitored systems, in many regions of the world they still build single-walled systems.

There are still big differences in the double-walled leak detection systems throughout Europe. While class 1 is standard in Germany, Austria and Switzerland, which are the countries with the strictest water protection regulations, class 2 systems can still be found in France, Spain and the UK.

Is that driven by economic reasons? Are there cost benefits for class 2 systems?

Perhaps at first glance, if you consider only one tank. At a typical petrol station with about 4 tanks, however, class 1 becomes more efficient very quickly. As our class 1 systems can monitor all tanks of a petrol station, often the acquisition and installation costs are even more efficient. Other benefits include savings in the maintenance and operation of the tanks, as well as a lower risk for the environment and product in the case of a leak.

If you read Jamie Thompson's [Technology Corner article on this topic from 2013](#), it becomes clear that all arguments including the economic ones are in favour of class 1. Accordingly, the trend throughout Europe is developing towards class 1. But as I said before, it is happening at different speeds depending on the country. Anyway, I personally expect the leak detection systems of class 1 to be standard throughout Europe in a few years time.

Jost, I wish for our environment and SGB that you are right! Thank you very much for the interview.

It was a pleasure Bruno! Thank you for your visit and for the opportunity to share this exciting topic with the PetrolPlaza readers.