

Embrace new technology to fight chemical fires effectively

Taking all necessary measures to prevent accidents involving dangerous substances from occurring is a priority for the chemical industry. Where risk is created, responsibilities must be met to manage those risks and ensure that suitable emergency arrangements are in place and work effectively.

Knowing that a fire can be put out quickly and effectively, is an integral part of the control of hazards and one of the challenges of providing adequate fire suppressing systems is the power needed to activate them and the time they can take to work. Where additional, mobile firefighting crews are required, more human life is put at risk and more time is taken up, when time is critical, so a reliable built-in system is preferable.

Fire suppressant foam is one material often employed to bring fires under control, yet traditionally, it has not always been possible to deploy them quickly enough to put out surface fires effectively, with the majority of the foam burning away before it even reaches the fire, but this is where the application of the latest technology can help.

NEW GENERATION FOAM FIRE SUPPRESSION SYSTEMS

“We’ve spent the last 3 years developing the fourth generation of this Pressurized Instant (Pi) Foam fire suppressing technology, resulting in a system that is far more efficient and economical than earlier versions,” explains Andras T. Peller, Director of Swiss Fire Protection Research and Development AG (SFPRD).

Given the chemical industry requires the use of storage tanks with a large surface area, these developments are to be welcomed. Installing a fire suppressant system that has the capacity to cover a liquid surface quickly and effectively is imperative. The latest generation of Pi Foam technology has just such a capacity, closing off the oxygen supply and bringing a fire under control swiftly.

TIMELINESS IS VITAL

Time is of the essence when it comes to fighting fires and unlike other fixed systems, the latest pressurised instant foam fire suppression systems can be used almost instantaneously, because the foam is pre-mixed, ready and waiting.

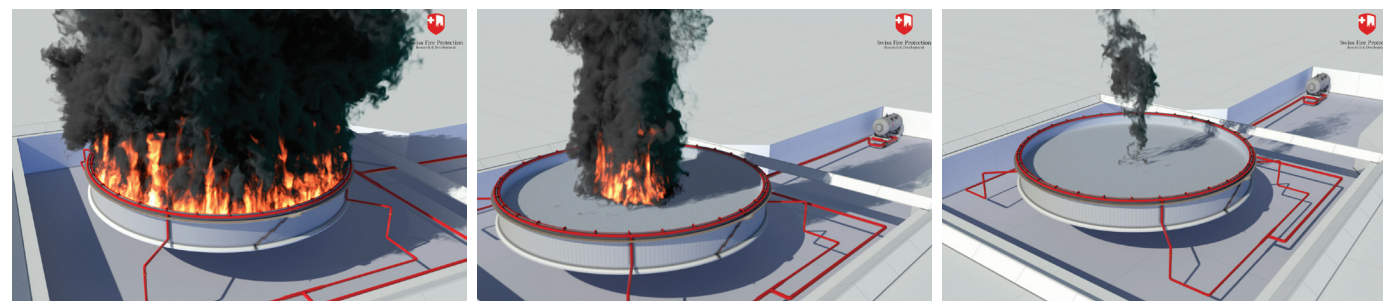
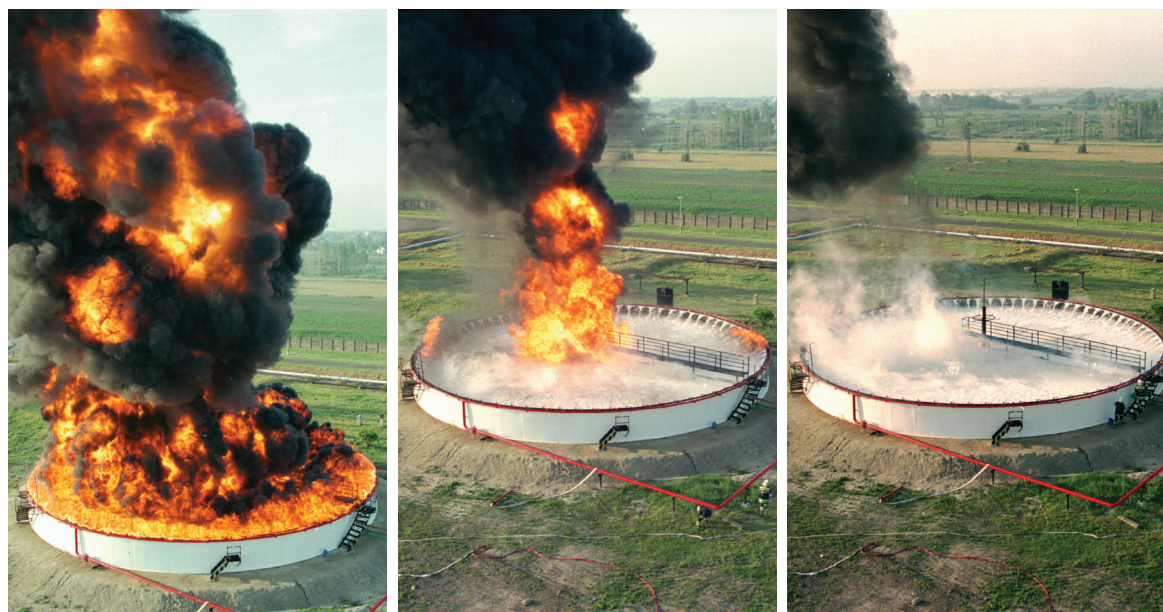
“Traditionally, foam technology has required a large amount of water to make the foam solution and powerful pumping stations to provide the required pressure, but this is where the latest generation of foam systems differ from those that have gone before – they don't rely on the water source and boosting pumps at the time of the crisis,” explains Andras.

Using soluble gas, the foam is mixed a day in advance (rather than when the fire breaks out) and is kept in a pressurised vessel – ready for use when needed, meaning there is no delay whilst the foam is prepared. In addition, the base foam premix lasts well if stored under the prescribed conditions, having been shown to keep its condition and characteristics for at least 10 years.

THE BENEFITS OF PRESSURISED INSTANT FOAM

“Using the latest generation of pressurised instant foam fire suppression systems can extinguish a surface fire on a full tank of oil in 3.14 (pi) minutes. We all know that time is critical when fighting fires as within 5 minutes of a fire igniting, the wall of a storage tank above the product level will reach 500 degrees Celsius, so it can incur significant structural damage,” observes Andras.

“Installing a fire suppression system that works as quickly as Pressurised Instant Foam, gives you the best chance of being able to protect your storage facility from lasting damage and save the facility from expensive downtime and repair. More importantly, being able to suppress a fire in such a timely manner gives you the best chance of being able to protect both people and the environment from harm.”



A SELF-PROPELLING AND INDEPENDENT SYSTEM

This pre-mixed foam then becomes a self-propelling system that doesn't require any external force provided by machinery with which to work, you simply open the valve of the storage vessel, the foam expands, with the internal pressure pushing the foam out.

Here then, you have another benefit of this foam technology, given it doesn't require sophisticated machinery in order to work, it is also without the high installation, operation and maintenance costs which go hand in hand with such machinery or the concern that they could potentially fail at a critical moment.

A SIMPLE YET EFFECTIVE SYSTEM

The latest generation of foam suppressing systems apply foam directly to the fire, with no spillage and no soil contamination, plus any excess foam can be collected after use, making it a more environmentally friendly too. Moreover, the foams now being developed by SFPRD are not toxic at all, as was previously the case.

In essence, the systems are simple, yet incredibly effective, forming a closed system that is not reliant upon external power, water supplies or infrastructure; standing ready at all times with relatively low installation, operating and maintenance costs. All in all, they are both more efficient and more cost-effective too.

SCALABILITY COMES TO THE FORE

Pressurised instant foam systems are also scalable; you can achieve much higher quantities of foam in a much shorter timescale and hence adapt the system to meet the needs of your chemical storage facility more easily. The new systems can produce in 3 minutes the same amount of foam that a more traditional system would take hours to produce.

There is virtually no limit on the type or size of tank these foam systems can be scaled to fit, from small cone-roof containers to large tanks with floating roofs, protecting all of them equally effectively, and these systems are better able to cope with simultaneous fires too.

Conversely, the system can be scaled downwards too, so it has been installed on fire trucks in South Africa and used on the Hungarian Formula One circuit, where the foam has been utilised in hand-held fire extinguishers for example.



EFFICIENT FIRE SUPPRESSION

Not only does the most recent Pressurised Instant Foam work quickly, but it also effective in tackling a wider range of fires than was previously the case, this is primarily because the foam is made without the addition of water, thus making it suitable for suppressing fires where water based foams shouldn't be used, like those where vegetable oil is on fire for example.

In fact, the system can be adapted to meet different needs, with a range of different foams available for use with different products and in different environments, so clients can utilise the one most suited to their needs. The technology has already been adapted for use with oil storage tanks, in airports, on military sites, in mines, petrol stations, factories and for use with vehicles – so it is eminently flexible.

A ROBUST AND VERSATILE SYSTEM

Unlike some alternatives, pressurised instant foam fire suppressant systems have the capacity to work in all manner of terrains, temperatures and extreme weather conditions, from 30 below zero to a desert climate, making them a robust choice.

Pressurised instant foam systems function entirely independently of the water and electrical network, and don't require an energy input, making them particularly versatile, and therein lies their great strength, as you won't need to rely on anything else or anyone else to activate the system.

The fact that these systems work entirely independently of outside supplies and human intervention, makes them particularly well-suited to remote sites. One such installation was designed for a site in Libya that incorporated 3 storage tanks in the middle of the desert on an unstaffed site with no water supply – a challenge that few other fire suppressing systems would have the ability to meet.

A TIMELY REMINDER

Not long before we go to press news breaks of a fire sweeping through a chemical factory in Shanghai, whilst earlier in May, a fire broke out at a chemical plant in Louisiana – both timely reminders of the necessity of having effective fire suppressing systems in place.

Fire is one of the main causes of major losses within the chemical industry, so improving the management of fires where chemicals are stored is a priority and finding a system that is network independent, efficient and cost-effective is key.

SFPRD has made it their mission to research, evaluate and improve industrial fire prevention, protection and emergency systems. Find out more at www.pifoam.ch and www.sfprd.com.

