

LASTFIRE representative Niall Ramsden:

“Confidence in fluorine free foam is growing”

The world of industrial firefighting is close to a fluorine free solution in the foam transition issue, according to [LASTFIRE](#)¹ representative dr. Niall Ramsden. Confidence is growing that the alternatives for fluoridated firefighting foam will do the job properly in case of large pool and tank fires. Although LASTFIRE performed a series of successful field tests with synthetic fluorine free foam products during 2021, Ramsden says a lot of work remains to be done. “We have to upscale the foam tests and convince the international fire community to rely on the use of fluorine free foam products. There is no way back.”

Niall Ramsden made his statement during the recent LASTFIRE Foam Summit in Paris in September. The Summit included a visit to the GESIP training and test centre near Vernon, where a few small scale demonstrations were carried out, showing the effect of fluorine free foam products on industrial fire scenarios. A 100 square metre pool fire and a burning tanker filling installation were extinguished quickly during the demonstration program.

Ramsden: “Critics could make the objection that such small scenarios are completely disproportionate to very large credible incidents, such as full surface tank fires or tank pit fires with dimensions of 10.000 square metres and more, and that fluorine free foams have never been tested on such large fire scenarios in practice. The reality is that fluoridated foams have also never been scientifically tested on surfaces this size. Full scale testing on large volume fires is very difficult and expensive. Therefore the only proof of the effect of fluoridated foams comes from real terminal and refinery fires, which are very scarce worldwide indeed.”

“We have to convince the international fire community to rely on the use of fluorine free foam products. There is no way back.”

Ramsden emphasizes that F3 foam tests need to be upscaled and performed on more realistic scenario’s and volumes, while environmental policies, costs and practical issues set limits on the possibilities of reproducible scientific tests. But LASTFIRE certainly made a big step forward in realistic testing by creating a 300 square metres test pit in Vernon together with GESIP. “We started testing fluorine free foams in June this year, comparing the

¹ [Afkorting voor Large Atmospheric Storage Tanks](#)

characteristics and effectiveness of five different 3F foam products. The results are very encouraging and prove the ability of the new generation foams to generate an effective flow and create a sustainable foam blanket, similar to fluoridated foam. A second series of tests will be carried out later this year and we expect the results of the testing program to be released in 2022. In the next phase we have to expand the testing program to larger fires, and also on other chemicals than hydrocarbon fuels. We're not there yet."



In Ramsden's opinion it is important to raise confidence within the international fire community that 3F foams are an effective alternative for the current AFFF-products that industrial fire brigades rely on. Health and environmental laws will pose a worldwide ban on the use of any PFAS containing products within time, including firefighting foams. "It is encouraging to see that several firefighting and industrial organisations have already switched to fluorine free alternatives. A good example in The Netherlands is the fire brigade of Amsterdam Airport Schiphol. The recent replacement of their crashtender fleet was a perfect occasion to make the transition to fluorine free foam at the same time. Elsewhere in the world we see other industrial firefighting organisations to make this change as well."

The LASTFIRE representative explains the objectives to be achieved with the testing program: "Primarily the tests have to prove the effectiveness of 3F foam products in practice in order to stand the comparison to fluoridated foams. A very important aspect in our studies are the characteristics of the bubble structure of fluorine free foam. The ability to create a smooth flowing stream of foam and to create a sustainable and burn resistant foam blanked largely depend on the foam bobble structure. The importance of a high quality foam bubble structure has been proven by the foam tests carried out so far. And we will focus on that issue furthermore during the follow-up tests."

Within the international fire community there is also discussion about compressed air foam systems as a possible medium for large industrial fire scenarios. Could fluorine free foam,

applied by a CAFS²-system be a reliable alternative too? In Ramsden's opinion it can: "As a matter of fact we have tested CAFS in one of the test scenarios at [GESIP](#) in Vernon in June. There was no doubt about the effect. Knock-down of the 300 square metre test fire occurred very quickly while only half the amount of foam concentrate and water were used compared to the tests with aspirated foams. Once again: it's the bubble structure that makes the difference. One of the main characteristics of CAFS is the very compact bubble structure. Therefore I think it could be a reliable alternative. We have to do more research though on appliance and throw length of CAFS on large scale industrial fires."



During the follow-up testing program LASTFIRE will perform more tests with fluorine free foams on larger test fires as well as tests on other types of chemicals in order to determine the range within the new generation aspirated foams can be used.

Furthermore LASTFIRE aims to do

tests with a one percent foam mix ratio while until now the focus has been on 3 per cent.

Niall Ramsden: "We have made quite some progress in realistic testing already and we will continue to substantiate the proof that fluorine free foam is as effective as fluoridated foam on realistic industrial fire scenarios. The testing program focuses on the effectiveness of the 3F foam products on realistic fire scenarios but also on logistical and technical aspects, such as equipment and preservability. One of our objectives is to carry out the foam transition with minimal consequences for firefighting equipment and logistics within the firefighting community."

² [Compressed Air Foam System](#)