

**EUROPEAN SCIENTIFIC RESEARCH SHOWS
SMOKE GAS COOLING PERFORMANCES**

ONE SEVEN®: EFFICIENT, EFFECTIVE AND SAFE

'How does the smoke gas cooling performance of One Seven® relate to those of water extinguishing during an interior attack?' A question which each fire brigade should ask itself. Scientific Research done on behalf of among other the French Atomic Institute CEA, excludes any doubt: the performance is absolutely similar to this of Low Pressure water extinguishing (510 l/min). All the more reason to also take advantage of all the other extinguishing benefits from One Seven®.

Besides smoke gas cooling abilities One Seven® has also many other advantages in various fire classes and situations. Significantly less water is required than with traditional water extinguishing systems (leading to less water damage) but causes for instance also a low reignition risk. Not without any reason there are over 160 satisfied users in the Netherlands and thousands in the rest of the world. Each innovation however also raises questions. Especially in our profession this is more than understandable as it concerns the safety of both firemen as well as others involved. A frequently asked question is how the smoke gas cooling performance of One Seven® compares to those of systems which are solely based on water. Partly thanks to the conclusions of the PROMESIS research the answer to this question is perfectly clear.

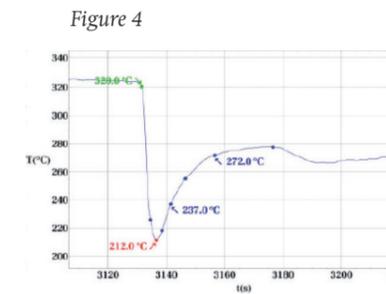
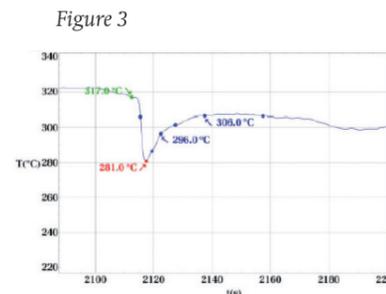
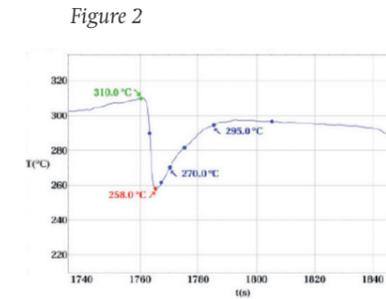
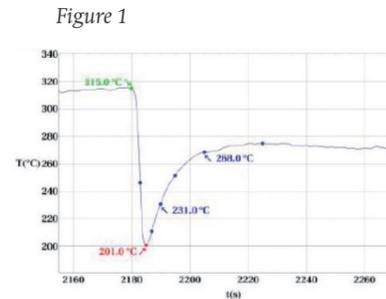
Independent research

On the initiative of particularly the French Atomic Institute CEA an extensive scientific research has been done in 2009 and 2010 (see inset). The conclusion of this independent research is very clear: low pressure water extinguishing (510 l/min) and One Seven® offer the best results and hardly differ from each other at smoke gas cooling. This is demonstrated by figures 1 to 4, which show the evolution of the average temperature during an interior attack, measured by 240 thermocouples: both the evolution of the temperature as well as the temperature values are almost the same with both systems.

Different tactics

The researchers however make a very important remark: both methods work according to a different cooling process, which ask for different deployment tactics. Water will cool the hot gas layers by vaporization of the water droplets during their 'flight' into these hot gas layers. One Seven® however needs to be affixed to the walls and the ceiling, where it will stick and stop the heat flow, evaporate and cooling the hot gas layers and the construction. This different cooling process asks for a different deployment tactic, as shown in Figures 3 and 4. With short pulses (+/- 1 sec) the cooling effect of One Seven® is moderate to weak. As Figure 4 however shows very clearly, the cooling effect is very efficient using the proper deployment tactic (3-5 sec), where both the walls as well as the ceiling are being 'painted' for a large efficiency.

This shows once again what for all extinguishing techniques apply: if the wrong tactics are used, this is immediately visible in the results. This is unfortunately also shown in a recently executed research in the Netherlands for the cooling performance of various extinguishing techniques. During this research the wrong deployment tactic for One Seven® was used, namely those of High Pressure extinguishing with short pulses of +/- 1 sec. This has led to the already known weak results (see also Figure 3) and thus also to a misperception and incorrect conclusions with regards to the smoke gas cooling performance of One Seven® itself.



The average temperature evolution during an interior attack with:

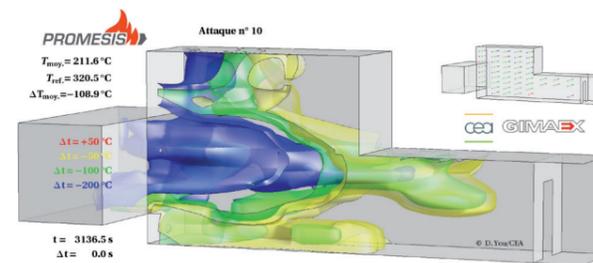
Figure 1: Water, Low Pressure, straight jet, 510 l/min, short pulses (+/- 1 sec)

Figure 2: Water, Low Pressure, spray, 300 l/min, short pulses (+/- 1 sec)

Figure 3: One Seven®, straight jet, short pulses (+/- 1 sec) inside the smoke layer

Figure 4: One Seven®, straight jet, long pulses (3-5 sec) 'painting' the ceiling and the upper parts of the walls

This thoroughly executed research shows that the smoke gas cooling performance of One Seven® is excellent if the right deployment tactic is used. Source: PROMESIS (see inset).



3D-model of the cooling effect from One Seven® when the walls and ceiling are covered with foam (3-5 sec).

Innovative solution

One Seven® is therefore more than just a product. It is an innovative solution which consists of a refined technique, specially developed types of foam and corresponding deployment techniques, which differ from what is regular with water extinguishing. And as shown by the PROMESIS research program: the smoke gas cooling performance during an interior attack is comparable to those of Low Pressure water extinguishing (510 l/min). Through which One Seven® has proven itself without any doubt as an efficient, effective and reliable method for fighting fires.

Want to know more about the results of this research? Or do you have any other questions about One Seven®? Just contact us at +49-3371-6913-0 or call your local One Seven® distributor.

**PROMESIS:
SCIENTIFIC RESEARCH**

The PROMESIS research was done on behalf of among other the French Atomic Institute CEA, in cooperation with a group of scientists, consultants, first responders, industrial partners and a team of very experienced and well trained firemen. Also TNO (Dutch Organization for Applied Research) and various other contributed their experience in some of the campaigns. During two years 170 tests took place under reproducible conditions in a specially built testing facility, which was equipped with 240 thermocouples and flux meters. Besides that also the internal pressure as well as the door opening was measured. The test were focussed on the interior attack, were among other the smoke gas cooling performance of a full range water based extinguishing media (water, aspirated foam and One Seven®) were monitored, but also the effectiveness of the correct used technique with each of these systems. The conclusion: the smoke gas cooling performance of One Seven® is very effective, as long as the right deployment tactic is used!

