

Easy Pow' air technology from Groupe Leader provides a flexible working distance of between two and six metres with nearly no turbulence and with automatic angle positioning.



Blowing in the wind

Christian Emrich, a German Rescue Engineer and Master student at the Cologne University of applied sciences, has written an operational standard for Rescue Ventilation following a thesis on the subject. He shares his findings with *Fire & Rescue* magazine.



Christian Emrich wrote his diploma/bachelor thesis on ventilation. Following its publication in Germany (June 2008) the Groupe Leader company asked him to help in research and development as a "working student". Emrich carries out international training and presentations on firefighting and Rescue Ventilation. For more information contact christianemrich@gmx.de.

The aim of this project was to get scientific facts regarding tactical consequences of how and when to use ventilation with different fan technologies. The tests were done under cold and hot conditions in different structures. The aim was to get answers for oft-asked questions such as when to start the ventilation, pressurising dangers due to PPV/PPA usage, importance of proportion between entrance and exhaust openings, and the differences between the three fan-technologies.

Following the scientific tests it was ascertained that positive pressure is lower if the entrance is sealed with a conventional fan. Why? The most important factor for good ventilation is the air volume and the air flow which enters the building. If a conventional fan with a huge cone seals an entrance completely, a high volume of air hits the wall and does not travel in the building.

The consequence of the different tests and measures was an operational standard for "Rescue Ventilation". Why "Rescue Ventilation" and not PPV (Positive Pressure Ventilation) or PPA (Positive Pressure Attack)? One of the most significant test results was that even with the use of a fan in the optimum position with an exhaust opening in the fire room, there was almost no pressure in the structure.

The exhaust opening was very important. The proportion between the entrance and exhaust opening, however, was unimportant. The main factor was opening the maximum size of exhaust in the fire room in the same direction as the outside wind.

If windows were to be opened against the wind's direction, it was discovered that monitoring wind situation constantly was necessary. The wind must not have more force than the fan's air flow, and the guidance states that open windows should be closed if the natural wind is flowing faster.

In a nutshell, the best rescue conditions (i.e. rescue visibility) possible and the fastest reduction in temperature are to be achieved with the maximum exhaust opening in the fire room.

The tactical standard for Rescue Ventilation reveals that the first step is to open an exhaust opening from the outside, for example with a pike pole and portable ladder or ladder-truck. At the same time the fan is positioned in front of the entrance with the correct distance – which depends on the technology. Once these two things are done then the attack crew can open the fire compartment door and check the situation. After a few seconds it should be possible to start searching for victims or tackling the fire with visibility and maximum safety.

The operation standard has several benefits. By opening from the outside the firefighters don't have to go in the fire room "blind". Why would firefighters enter rooms where they don't see anything? And why would they work under the highest risk and in ineffective conditions? In real life, it happens usually only for the sake of a damaged structure, and not for saving lives.

Scanning a compartment with the Rescue Ventilation tactic makes it possible to find a victim much faster, much easier and with the highest safety for firefighters. Plus water and smoke damage is lower when a fire is found quickly.

Operation Tactic Standard for Rescue Ventilation

- * Position the fan at the right distance, turn it 90°, start running the engine at a low power level.
- * Open exhaust opening from outside.
- * Turn back the fan and put it slowly to the power level you need.
- * Scan the room for victims and/or attack the fire in a much shorter time and with a much higher level of security!