



INTERNATIONALE FACHMESSE
MIT KONGRESS
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WITH CONGRESS

- PERSÖNLICHER SCHUTZ
SAFETY
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HEALTH AT WORK

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Press Release – Background Article

Congress Respiratory Protection and Occupational Hygiene

Smart Solutions and Individual Responsibility

Respiratory protective devices are getting modular, less heavy and more comfortable so that they can be used flexibly. After all, demographic change is also reflected in the workforce here. Today, more and more people work longer hours. Careful occupational hygiene in respiratory protection is a central issue – especially for fire brigades.

“We are increasingly challenged by the demographic change in site fire brigades and with people obliged to wear PPE in the industry,” says Siegfried Fiedler, Head of the Respiratory Protection Group at the Association of German Site Fire Services, and goes on to say: “As fitness decreases, a trend we also increasingly observe in young people, the requirements made on respiratory protection increase.” It is true that respiratory protective devices protect their wearers, but they also place an enormous physical strain on them. “The devices should have the lowest possible weight and a low breathing resistance,” says Fiedler.

And then there are users who have beards – also for ideological reasons – or who wear glasses. These interfere with the respiratory mask of the RPE since it may no longer seal the respiratory tract. Special hoods designed for air supply can remedy this. “There should also be as few prerequisites for using respiratory protective devices in shift operations,” demands Fiedler. Even today there is wide variety of options available for working with respiratory protection such as fan-assisted respirators, powered fresh air hose breathing apparatuses, ventilated encapsulated suits, lightweight self-contained breathing apparatuses, and ventilated booths.

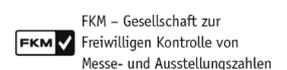


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Modular Kit for Compressed Air Breathing Apparatus

Dräger, for instance, is a company that promotes a holistic attitude and recommends the TOP Principle comprising Technical, Organisational and Personal measures. In terms of products the company offers anything from low-maintenance half masks to lightweight compressed air breathing apparatuses that are easy and convenient to handle. This is achieved by weight reductions, reduced breathing resistance and ventilations. For some workloads fan-assisted filter devices can also be sufficient; they are dependent on the ambient air quality but are markedly lighter. MSA Safety features the M1 compressed air respirator in its range – a product that can be personalised choosing from a modular kit and therefore be configured for various firefighting tasks.

Helping to determine whether the use of personal protective equipment and respiratory protective devices, in particular at work, can be reconciled with the wearer's medical condition is the G 26 medical aptitude test by the Employers' Liability Insurance. This test must be repeated at regular intervals. The type and number of tests is determined by the protective respiratory device used and the age group. "Our working group is in close contact with manufacturers. They run wear tests to examine the quality of products and measures for their suitability for daily use prior to their market launch."

Ever more Healthy and Longer on the Job

In general, the aim is to maintain workers' health. This also allows employees to work longer. The efforts are already paying off now: the employment rate of people aged 55 to 64 is rising constantly. "Even though we have hardly seen any fatal respiratory-protection-related accidents in the EU so far or they have not been registered because there is no notification requirement, serious accidents occur time and again," says Dr. Adrian Ridder, MIFireE-Member, a team member of atemschutzunfaelle.eu and Deputy Head of the Department Fire Prevention and Hazard Protection at the Düsseldorf fire brigade. Ridder currently sees most challenges on the technical level. In accordance with the new international ISO Standard 17420-1 and -2 all protective respiratory devices must be pressurised. Although most employees





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already use such devices not all PRE has this feature. Furthermore, targeted training on handling these new devices is urgently recommended.

PRE-related emergency training can help prevent accidents and/or ensure any parties involved in an accident are assisted optimally and as quickly as possible. In this context high hopes are also set on digitalisation. Monitoring can be improved by mobile and/or connected gas measuring devices. Tracking systems can help to better locate the rescue forces or individual members of the team. Sensors in the equipment can capture and convey vital parameters. “The implementation, however, proves somewhat difficult,” says Fiedler and goes on to explain: “The principal challenge lies in stable signals. Furthermore, you have to be able to interpret the signals when it comes to vital parameters.” Blood pressure, heart rate and body temperature vary considerably, and impact people to differing degrees.

The Next Assignment is only as Good as the Last

“After each operation with respiratory protection our comrades return polluted,” explains Armin Wernick from the Messe Düsseldorf fire brigade. This is why the Conference for Fire Brigades, Rescue Organisations and Industry deals not only with respiratory protective equipment but also with occupational hygiene. “For a long time the saying went: the darker the hard hat, the more experienced its wearer,” says Marcus Bätge. He is the CEO of FeuerKrebs, a society that fights to promote and sustainably improve the health and working conditions of fire fighters. Despite the pride in pitch-black hard hats, says the fire marshal, there is a growing awareness about hygiene after an operation. After all, smoke, gas and micro particles can constitute substantial health hazards. Through studies in the USA and Canada we know that firemen have a higher risk of suffering from cancer. “It is key to take off your protective equipment as quickly as possible after the operation and ideally to have a shower.” Because these particles spread everywhere – in the car, in fire crew quarters and at home where they can also cause a hazard to family and friends. However, the risk is particularly high for the firemen themselves because noxious





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substances are absorbed through the pores of the skin once the sweat starts drying after the job is done; and this also applies to the head of operations once he has been engulfed in smoke.

One solution to this problem is the black&white solution, as developed by Danish company Viking, in the form of the “Guardian” protective suit. A zipper system allows the outer skin of jacket and pants to be separated from the lining to be stored in a water-soluble bag. This ensures that cleaning staff do not come into contact with these polluted garments either.

Praised as pioneers time and again is the Mannheim fire brigade, which always brings a shower and decontamination van to the scene. After extinguishing the fire the rescuers undress systematically, their equipment is wrapped in plastic bags and loaded into the decontamination vehicle together with such devices as respirators, cameras, torches. The team takes a shower and then puts on clean clothing to go home.

At present, work is being done everywhere to raise greater awareness about this issue and come up with advanced solutions. Marcus Bätge tours all of Germany to deliver talks sharing information and the latest findings on Facebook so as to reach as many people as possible. “The people affected have to change their attitude to hygiene and assume responsibility themselves. Even a smouldering fire requires a specific type of equipment and those fighting it should only eat after having a shower and thorough cleaning,” says the experienced fireman citing two examples from his everyday work.

With Personal Responsibility and Optimised Protection

Manufacturers are also putting a lot of thought into this developing equipment that repels more pollutants and is easy to clean. They are working on alternative concepts for optimising cuffs, for example, as the “gateways” for pollutants. With a view to improving fasteners/closures at clothing openings the Heinsberg-based PPE producer S-Gard has launched a protective suit and flame protection hood with nano-particle barrier layers that protect the skin from even the smallest root particles.





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All openings – neckline, sleeve cuffs and waist and legs trims – are particle-tight – closed with stretch trims or rather “aprons” made of Nomex® Nano Flex-Material by DuPont™. The latest product innovation by W.L. Gore & Associates combines the permanent water tightness and breathing properties of GORE-TEX products with the protection from blood-transferrable pathogens. A feature so far only available with GORE® CROSSTECH® products.

Laundries are now changing their cleaning procedures by using CO₂ since it is 10 times less viscous than water and therefore penetrates fibre structures and membranes a lot better to dissolve toxic substances without damaging the fibre. For this cleaning process CO₂ is liquefied under pressure. At the end it is re-converted into the gaseous state. After opening the cleaning drum the gas evaporates and the garments dry in no time. At the end of the day, this process promotes not only decontamination and cleanliness but also the durability of the textiles and the retention of their protective function.

At times where sustainability and resource-saving processes are omnipresent this is probably a good solution to better protect firemen, rescue services and workers in industry. Disposable suits and/or single-use protective devices – as used in the chemical industry and as called for by some fire brigades to improve hygiene – will then probably only be necessary on special occasions if at all.

The current trends will be presented to trade visitors at A+A 2019 in Düsseldorf from 5 – 8 November.

For information on A+A 2019 and its exhibitors go to:
<http://www.AplusA.de>

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