Water mist on wheels

Bettina McDowell of the International Water Mist Association (IWMA) introduced water mist lances and nails in the Q2 issue of *Fire & Rescue*. In the second part of the series she writes about fire engines and trolleys that also make use of water mist to fight fires.

Oliver Callies has given fire protection a lot of thought. Once a firefighter himself, he has been part of the firefighting world for more than 40 years. About 20 years ago he started his own business and is now CEO of the German company Callies Fire-Fighting Systems, a member of the IWMA and a specialist in high-pressure water mist systems.

Over time Callies has developed a number of concepts, including one that touches upon the size and use of fire engines: 'Normally a fire engine carries a lot of water making it big and heavy. With water mist, mobile extinguishing systems can be smaller and lighter.'

Having developed a number of different fire engines, it has become his philosophy to move away from the big trucks and to fit smaller vans with a slightly different mixture of equipment. The event which triggered off this development was a major accident in Essen, Germany more than 20 years ago. Several people were trapped in a burning car and the ambulances rushed to the scene but having received misinformation the fire service were sent to the wrong location and the people died.

In response to this tragedy, Callies Fire-Fighting Systems in co-operation with Magirus developed the Fire Rescue Ambulance Personnel (FRAP), an integrated vehicle which carries the emergency physician's equipment as well as a compartment for two firefighters with breathing protection.

'These vans may not be able to cover the whole spectrum but with the water mist system on board the relatively small vans are more flexible and can actually handle up to 80% of all operations,' says Callies.

The Rio de Janeiro fire department was impressed with the vans and now owns about 100. Oliver Callies also recommends that the vans should not remain at fire stations but should flow with the traffic or be positioned at crucial points within the city to ensure a rapid intervention at all times.

In Germany many industrial fire brigades use the vans. They are often equipped with another gadget which evolved from the idea of producing smaller firefighting units: the water mist trolleys. Typically the trolleys are deployed for class A and B fires. They complement stationary systems or replace non-existing stationary systems.

Oliver Callies explains: 'This system was developed some time ago but we advance and enhance it constantly. Normally the trolleys incorporate a 300 to 450-litre tank but we have constructed a lighter and more compact 100-litre tank.'

Customers can also choose the length of hoses, the kind of engine (electric motor or combustion engine) and the amount of water being carried to suit their needs. For Evobus – a Daimler subsidiary – Callies added a 150m hose to the system. The halls in which the buses are built are huge with a penetration depth of up to 200m.

'Here, it would be a problem if the firefighters had to carry all their stuff to the fire source but the trolley can be wheeled and the water is at hand,' explains Callies.

The course of action would be to walk up to the smoke-affected area, position the trolley there and then to approach the fire with the jet pipe. And if equipped with heavy breathing protection, a great penetration depth would be feasible.

German firefighters in industrial facilities now use water mist trolleys to combat fires in the class A and B category.

A water mist system operates at low, medium or high pressure that is less than 12.5bar (175psi) or up to 120bar (1,680psi). It takes away the heat and the oxygen from the fire triangle by spraying small water droplets, leaving only the combustible material behind. The additional cooling effect helps prevent re-ignition.