



Fire power

Stephen Vaughan discovers that fire rescue vehicle manufacturers are listening to airport fire crews when it comes to upgrading equipment.

Airport fire rescue vehicles are markedly different in design and capabilities to those used in towns and cities across the world, and they have to be able to cope with aviation's demands.

Fire vehicles in an urban environment are faced with combustible situations less often than we may think. The profile of the municipal fire engine is approximately 80% technical rescue, road accident intervention, storms, floods and cats up trees, with only the remaining 20% dedicated to fire fighting.

Exactly the opposite is true of such vehicles at airports. Though they may not be called upon for full emergencies too often, their *raison d'être* is to extinguish fires quickly and create maximum survivability for passengers.

"The design of airport fire vehicles is almost entirely focused on the rapid quelling of fires," says Wolfram Muecke, senior vice-president of sales and marketing for Rosenbauer, one of the world leaders in the manufacture of fire tenders.

"The situation at an airport is very different to out on the street. Speed is key. Aluminium melts at 660 degrees which means you have to get there to suppress the fire and provide a safe escape path for the passengers before the fire eats through the outer skin and insulation and into the cabin."

Indeed, ICAO stipulates a response time (from the initial alarm to the first vehicle in position to apply extinguishing foam) of two, and not exceeding three minutes, to reach the end of each runway.

The Panther 8x8, Rosenbauer's flagship vehicle, currently in situ at airports across the UK, Germany, France, Japan and Australia. It has a top speed of 138km/hr and an acceleration time from 0-80km/hr in under 25 seconds. This is a phenomenal response from a vehicle weighing up to 52 tonnes.

Where city-based fire engines tend to have commercial chassis by the likes of Scania or Volvo with a maximum rating of 300 to 400 horsepower (HP), Rosenbauer's made-for-airport machines possess power that ranges from 700 to 1250 HP.

"The acceleration, cornering, top speed and braking performance are more like F1," jokes Muecke. "What is more, unlike urban applications

which take water from fire hydrants in the road, these vehicles carry most of their own liquid.

"For Category 10 airports, a minimum of 32,300 litres of extinguishing agent are required from a minimum of three trucks when operating with a foam concentrate with a certain level of performance. We can pump up to 8,000 litres per minute, while our roof turrets can discharge 6,000 up to a distance of nearly 100 metres.

"The combination of heat, the danger of explosion and the need for speed mean that all the fire fighting, be it via roof turret or pump installation, is controlled from inside the cabin via electronic joysticks."

Daily use

Paul Hardiman is the airport fire manager for London Heathrow. The tenders under his command are what he describes as an "integral" part of the safety of passengers visiting Heathrow.

He says: "Our vehicles are used almost daily for call outs, minor ground incidents such as fuel spills or small bumps, and local standbys. Occasionally, they'll be called into action for a full blown incident. Whenever the aircraft





commander declares an emergency or potential emergency, the vehicles are brought to standby immediately."

Heathrow has a daily crew of 22 firefighters along with nine vehicles. Hardiman and his colleagues are soon to receive the new generation of Panther vehicles from Rosenbauer.

"The main advantage over what we currently have is the overall improved crew safety," he says. "Each vehicle is fitted with rear steer capability which enhances the vehicle's cornering performance at speed."

"In addition much use of new technologies has been incorporated into the vehicles including High Reach Extending Turrets (HRET), Forward Looking Infra Red cameras and advanced communications."

Listen and learn

Another company that has recently upgraded its vehicles is Oshkosh Corporation. Based out of Wisconsin, Oshkosh is the number one manufacturer of airport fire engines in the US and also exports to the likes of South America, Saudi Arabia and Dubai.

"We have recently revamped our Striker truck range with an eye to the future," says Kristin Michal, marketing programmes manager for Oshkosh's airport products.

Its latest model, which has 1,500, 3,000 and 4,500 gallon versions, has been devised to create more visibility for the drivers, a more intuitive control panel and a lighter weight.

"We carried out two years research and worked with fire stations across the world," says Michal.

"We interviewed drivers about what they liked and disliked about all the trucks out there, then rode with them and videoed what they did and why they did it, to figure out how the layout of cab would work best."

"Our new vehicles are in many ways built upon suggestions that came from the fire fighters themselves."

One of the suggestions Oshkosh took on board was to cross-lay the fire hoses on the truck: instead of having them rolled up, the hoses now lie flat and fold back and forth, making them easier to unfurl with easy access to 600 feet of hose from either side of the vehicle. In addition, a walk-in service area has been created at the rear of the vehicle.

"The drivers told us that easy access to the engine compartment is vital. Open up the rear door on the new Striker and you will find an innovative walk-in service port with easy access."

"If necessary, the entire power-train can be removed for maintenance without involving the water tank, while the engine oil, transmission fluid, and power divider fluid can all easily be checked."

Other innovations include Pulse Technology, which includes a high-quality 'dry' chemical fire suppression headline capability along with the ability to blast dry chemicals over 90 feet, a chassis that is 5% lighter than before, meaning faster acceleration and shorter stopping distances – especially as this is allied to an 11% improved brake torque – and, improved visibility, with 84 square feet of glass and a 238 degree horizontal view for the driver.

What next?

The fundamental challenge of any airport fire vehicle – to carry plenty of water and extinguishing liquid over a runway, which may be up to 4.8km long and discharge in a precise manner – will, of course always remain.

And with new performance enhancing technology constantly being developed, the airport fire trucks of the future will be faster, more agile and boast more foam power than ever before.

"Just like in Formula 1, each year the vehicles become fractions of a second faster," says Rosenbauer's Muecke. "They also become safer. There is a move towards electronics, which means driving enhanced vision systems and infrared cameras combined with GPS, which allows the control station to direct the fire truck precisely in case of low visibility."

"Then you have telemetric systems that enable off-site management to check on the fleet's health. This should make the operating of the fleet commercially more feasible and save money. All of these things are happening and are slowly making a difference to the industry."

Heathrow's Hardiman, however, is quick to point out that it is not all about the vehicles.

"Fire officers have to keep up with fire vehicle technology, know their airport and know the risks," he says. "Today, the modern fire officer is also driven by the commercial impact and financial implications of their actions."

"You can't just close a runway because of an incident. You have to consider the commerciality of the decision. That's why having the very best vehicles and manpower at your disposal is imperative for any airport." AW



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