

# The burning issue

If you have an engine bay fire, unless you are very lucky then it's likely your vehicle will be destroyed. Not only is it expensive, it can also be bad publicity. Now, Arriva plans to fit an innovative passive fire barrier, called 'eQuilt' to all its new vehicles. Mel Holley reports

Engine bay fires can take hold very quickly and, unless the fire service is able to reach the scene within a few minutes, can rapidly spread to the rest of the vehicle with dramatic results.

Engine bay fire suppression systems are one answer, but they require regular maintenance and renewal, as well as adding weight. And, as a 'one-shot' device they might not always extinguish the fire, depending on its nature.

The new alternative is eQuilt. A passive fire barrier, it is fitted instead of traditional engine bay sound-deadening and is extremely robust. It's proved itself in a number of severe tests and demonstrated beyond doubt that it will contain a fire in the engine bay.

Now, convinced by its worth, Arriva has decided to specify eQuilt to all new UK buses for its 2017 intake.

The patented product is supplied by Westerham, Kent-based Clark Wright, and was invented in a joint venture by Sales Director Gary Hammatt, and Technical Director Will Burton.

Says Will: "With eQuilt, if a fire starts in the engine bay, it stays in the engine bay."

Adds Gary: "We are so confident of the product that provided it's fitted correctly (including grille closers) we will repair or replace the vehicle at our cost if eQuilt or any of our products are proved to have failed."

## Fire stopping

Like fire doors in a building, eQuilt is designed to stop fire spreading to the passenger compartment - once this happens the vehicle is normally a total loss. There are 500-600 coach and bus



**Headline grabber:** Bus fires are dramatic; when this fire took hold a tyre exploded sending burning debris over the road, setting fire to a parked car

fires in the UK each year of which 70% result in a total loss.

And, it all happens very quickly. In London the average response time for a fire appliance is six minutes, although congestion makes that hard. In the provinces, especially rural areas, it can be longer.

As recent incidents demonstrate - even with modern vehicles - a fire takes hold before the fire service arrives.

The cost is significant. Not only the vehicle loss (which for larger operators comes straight off the bottom line due to self-insurance), but also the potential for the need to hire a replacement, cost of lost passengers/driver's property, recovery of the remains and even resurfacing of the highway if it has been damaged.

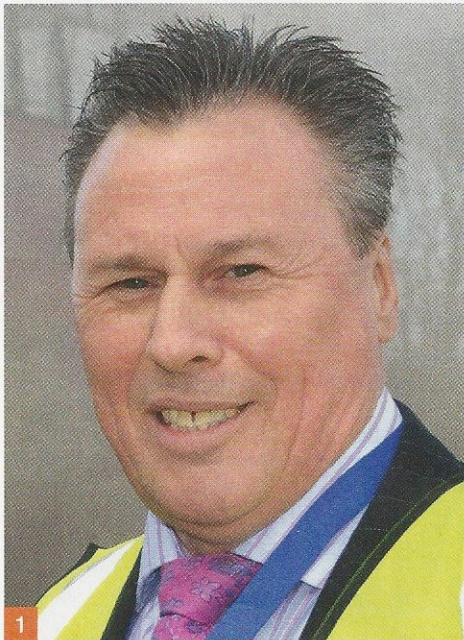
Add to this that everybody is now a photographer, thanks to camera phones, and you can guarantee that you'll be on the news; maybe even nationally if the vehicle was carrying children, anyone was hurt or it's just a 'slow news' day. Reputational damage can be significant, as fires on London's artics demonstrated.

## How it works

Looking like traditional insulation, eQuilt is fitted instead of current insulation in the engine bay. It has already passed numerous laboratory tests. In March 2014 it was put to a real-life test in a double-decker at the Fire Service College at Moreton-in-Marsh, Gloucestershire.

A fire, simulated by igniting diesel in trays in the engine bay, was contained by eQuilt despite temperatures peaking at 790°C. The combustible temperature of wood is 300°C and aluminium is 650°C. After 20 minutes of this punishment, when the 3.5 litres of diesel had burned itself out, the GRP inside the passenger compartment was hot and had

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“The tests that we’ve done, both times, have proved that you can keep the fire in the engine bay in excess of 15 minutes. Most places where we operate buses, you’d generally get a fire engine there in less than that time.

“When you’re paying £200,000-plus for a bus, but paying a modest amount for eQuilt - you’re investing that in the life of the vehicle - that make sense to me.

“It’s added protection. It’s going to be cost-effective and maintenance-free, and that’s what’s drawn me towards it.”

**Next steps**

Arriva is waiting for eQuilt to complete homologation with its suppliers ADL and Wrightbus. Volvo has already given approval for fitting to bodies on its double-decker chassis.


Already a series of certified laboratory tests have confirmed eQuilt’s fire blocking credentials. Homologation tests include absorption - checking that it doesn’t absorb liquid or moisture and sound deadening. On both, it has equalled or beaten conventional insulation. It is ECE R118 compliant in annexes 6,7,8 and 9.

Although this will be the first major installation of eQuilt, it is already in service thanks to retrofits with Metroline (a Volvo President) and UnoBus of Hatfield (a Mercedes-Benz Citaro).

**Sure-fire winner**

Although the product has taken a while to be accepted, Clark Wright would like to think that Arriva’s move to fit eQuilt will encourage other operators to do the same. It is a ‘fit-and-forget’ solution in new vehicles, providing exceptional heat absorption and sound proofing. Unlike a fire-suppression system, it doesn’t require maintenance, and the only requirement for a full life is to ensure that it is not removed or damaged.

This is why Clark Wright is confident its unique, British-invented and patented product will be a sure-fire winner.

That Arriva will become the first major user is no surprise, as it’s long been a leader in pioneering new technology that’s often now standard, from remote-reporting CCTV to driver monitoring systems, and software to prevent accidents as a result of accelerator/brake pedal confusion. Now, it will add eQuilt to this list of proven innovations. 

● Details: [www.clarkwright.co.uk](http://www.clarkwright.co.uk)

► bubbled slightly, but had not caught fire. This was against the expectations of observers, and even the watching fire crews.

How eQuilt works is secret, but once the temperature reaches 200°C it expands to 25 times its volume, enhancing its fire-stopping qualities.

Properly fitted - to ensure that access holes to the engine bay such as for wiring, fuel lines, heating and grill closures are covered in a fire - eQuilt will stop a fire and contain it. The result is a vehicle that can be economically repaired.

“Think of eQuilt as a fire control system for engine bays,” says Will.

There is a modest net cost for eQuilt depending on specification; in terms of the overall new vehicle cost, it’s negligible.

**Arriva’s decision**

The March 2014 demonstration (route one, Big Story, 12 March 2014) was conducted in front of a number of engineers from major operators, bodybuilders, the SMMT and Transport for London. However, with Euro 6 redesigns on the horizon, manufacturers made promises about fire containment, so major orders for eQuilt had not been forthcoming.

This changed after a fire in a brand new bus that destroyed it. Although

it was a competing operator’s vehicle that burned out, Arriva UK Bus Engineering Director Ian Tarran contacted eQuilt and asked for a further demonstration. This took place in December 2015.

You may be familiar with the ‘fire triangle’ - the three ingredients needed for a fire to start and be maintained - of heat, oxygen and fuel. Remove one of these, and the fire will go out.

Once again a double-decker (without fire suppression fitted) was used, but this time, in addition to an accelerant to start and maintain the fire, the engine was left running, with the injector pipe unions opened to feed the fire.

The result was remarkable; once all the combustible material in the engine bay, such as wiring and rubber, had gone up in smoke the fire went out as there was nothing left to burn. After 23 minutes, the fire had still not penetrated the passenger compartment.

Says Ian Tarran: “The number of fires has dropped significantly since we started fitting suppression systems in engine bays, but we still get the odd fire where you get severe amount of damage to the interior, because fire gets out of the engine compartment. So not even fire suppression works every single time.

1. Gary Hammatt: ‘Guarantee that fire will be contained’

2. It looks like conventional insulation, but eQuilt has unique fire-stopping properties

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