

# New Civil Engineer

## 'Sheer luck' fire hit car park still standing

8 January, 2018 By [Katherine Smale](#)

It is "sheer luck" the Liverpool Echo Arena car park is still standing after a fire ripped through the structure and destroyed 1,300 vehicles earlier this week, a leading fire expert has said.

Fire engineering specialist Mosen managing director Fathi Tarada said large parts of the reinforced concrete structure appeared to have spalled off, leaving large amounts of reinforcement exposed and a highly weakened, failed structure.

He said looking at the type of damage caused, he was under no doubt the fire had been fuelled by hydrocarbons from the cars and having a car park full of cars was a case which was not normally considered in the fire design.

"I think the whole issue is, this is a horrendous fire scenario that hasn't really been foreseen before and like any other disasters I hope it triggers our thoughts as to how to design car parks better," said Tarada. "I don't know why it needs another disaster for us to think about our codes.

"I maintain that the fact the building hasn't collapsed is pure fluke."

Tarada questioned whether it was right to expect the fire service to fight this type of severe fire when measures to limit fire spread, which are mandated in tunnel design exposed to the same petrochemical fire risk, could be introduced relatively simply.

One simple measure could be the introduction of a fire trap drainage channel which could collect petrochemical run off and prevent the propagation of flames along the conduit.

"From the pictures it doesn't look like this building was built with drainage slots that stop the spread of fire," he said. "If it had of been then I don't think there would have been such a massive fire. That's a pretty low tech, simple way of stopping the spread of fire."

Among the more complex and expensive systems available he said foam deluge systems and high pressure mists, which use very fine droplets but with very little water, could be installed to limit the fire spread. Tarada said if there was too much water released the hydrocarbons would simply float on the top and the fire could spread more easily.

Although he did warn the systems such as the channels needed to be inspected and cleared out on a regular basis to maintain effectiveness.

Multi storey car parks have come under fire in the past for lack of maintenance leading to structural failures.

At the time of a [partial collapse of a Nottingham multi story car park last year](#), structural safety campaigner, University of Edinburgh chair of future infrastructure and past ICE president Gordon Masterton highlighted the issues. He said car park ownership tended to vary and there wasn't the same obligations for formalised principal inspections on a cycle which would be expected for say a bridge structure.

"But a question that could be legitimately asked is, is it now time to make it more rigorous and make it more of an obligation for car park owners to have good practice and follow recommendations?" said Masterton.

Liverpool City Council said that as soon as the site has been made secure, structural engineers will begin the process of determining the viability of the structure. It said the process of removing the 1,305 vehicles that were parked inside could take many weeks, as most were entirely incinerated.

Mayor Liverpool Joe Anderson said: "We are still in the process of trying to make the site safe so that structural engineers can begin the process of analysing the extent of the damage.

"Frankly, it's likely that the car park will have to be demolished as the fabric of the building has been extensively damaged. To put this in perspective, one of the cars of the third floor has actually crashed through to the floor below.

"So it's not safe yet even to enter the building and we cannot have anyone risking their lives trying to do so, especially with the strong winds we're currently experiencing."

Operator the Arena and Convention Centre (ACC) Liverpool has been contacted for a response.