Office of Transport
Safety Investigations

Bus Fire Safety Report webinar – 27 September 2023

Responses to unanswered questions during the event

Question: What is the evidence that there was no warning from the technology? Was the system working correctly? What brand was involved? Are they using valve extensions? Additionally, is this information available such as images of the in-cab monitor from the bus which has had a thermal or fire? Or is it anecdotal?

Answer: Thank you for your question.

As part of the incident data that OTSI collects for every bus fire and thermal incident, there is a question on how that incident was detected. In addition, OTSI's incident database collects information on whether the TMS and engine bay fire suppression systems (EBFSS) were fitted, and if they were activated. The method of detection analysis in this report is based on that data. Given the number of bus fire and thermal incidents, it is not practical for operators to capture all in-cab indications currently. If an incident is being investigated, however, the video will then be reviewed and in some cases indications are visible.

Question: A review of various bus fires over the past 20 years indicated buses manufactured from the mid 90s with the introduction of air conditioning and associated high amperage charging system had a major impact on bus fires due to poorly designed/ installed A/C wiring systems or poor maintenance practices. Did your investigations identify this trend?

Answer: Good question.

This report focused on the data from the last 10 years. Most of the buses included in the analyses were manufactured post mid 90s, meaning any comparison between buses manufactured in mid 90s versus buses manufactured post mid 90s was not possible. The normalised incident analyses versus year of manufacture are shown in Figure 27 of the report. View the full report.

Question: Have other countries' authorities mandated automatic fire suppression systems for the body or wheel of buses?

Answer: From July 2018, a new amendment to the European UNECE Regulation 107 was mandated, requiring the installation and testing of fire suppression systems in engine compartments of new buses and coaches. There is currently no such mandate in America or Australia, however all NSW buses under TfNSW contract are now fitted with EBFSS. All future buses supplied under these contracts will be delivered with EBFSS.

Thank you for your question.

Question: Is there enough data regarding Zero Emission Buses (ZEBs) to identify if there are any trends or patterns?

Answer: Data on ZEBs is not yet available. We can expect more data to become available as more ZEBs are rolled out.

Question: Did you investigate links between introduction of progressively stricter emissions standards (ADR 79/00 - through 79/04) and the batch fires in bus manufacturing (2004 and 2009-11 bus builds). Additionally, did you investigate difference in rates in NSW compared to other states (why does NSW seem to have higher rates than VIC / QLD?).

Answer: We did not investigate links between introduction of progressively stricter emissions standards; however, this will be considered in our future research. Regarding the second half of your question, we could not obtain the data required to do this sort of analysis, which is why the report has recommended a national incident and bus fleet database to be set up with consistent classification systems across all states and territories.

Question: Are there any lessons we can learn from bus operators nationally or internationally for best practice or use of technology to prevent or detect fires

Answer: Great question, there are several saftey lessons to help prevent or detect bus fires.

Based on the Bus Fire & Thermal Incidents 2013-2022 report findings, OTSI makes the following recommendations for bus operators:

- Review existing fire and smoke detection technologies in buses and explore newer solutions that can lead to early fire detection.
- Review the appropriateness of the type, location, installation and maintenance of the existing fire mitigation/fighting technologies fitted in the buses, while ensuring rigorous risk assessment and regular audits for compliance.
- Explore other fire suppression technologies available for the engine bay, body and wheel well of the buses.
- Review the appropriateness of the type of extinguisher and its location on the bus, along with the sufficiency of driver training into the use of onboard extinguishers.

View the full report to view all key recommendations.

Question: What sort of auditing does OTSI undertake to ensure that fire suppression systems, TMS or fire extinguishers are functional and maintained to specification prior to fires and incidents?

Answer: Thank you for your question.

Currently, only portable fire extinguishers are required to be included in bi-annual NHVR inspections while EBFSS and TPMS are not. EBFSS maintenance is governed by the requirements of AS-5062, however it is not enforced by legislation, and TPMS is considered an add on. The requirement under BOAS is that the bus is maintained as per the OEM requirements, however, this doesn't appear to be adequately monitored.

Question: Is the initial wiring installed with the understanding that extra equipment will be added? Is the wiring able to take higher voltage to meet the additional equipment?

Answer: Thank you for your question.

The base wiring of the bus has capacity for extra equipment to be added, but this equipment must be added and protected in a way that does not compromise the overall electrical integrity of the bus.

Question: Can OTSI introduce an annual risk review based on findings and identified risks through known issues and aged fleets?

Answer: OTSI will continue to review the normalised data against identified risk factors and report's findings annually. Depending on the findings, some of this analysis may also be included in the annual bus fire safety reports.

Question: Are there lessons the bus industry can learn from the trucking industry for fire mitigation?

Answer: Certainly, following the webinar, we have been made aware of the EPA report on preventing fires on trucks. We are currently reviewing the report's findings and recommendations.