

II. Justification

A. Statistical data

5. Statistics from the Swedish Bus and Coach Federation show that the fire department is called in approximately 0.85 per cent of all fires on Swedish buses. This is only the reported number of fires and it is likely to assume that the real number of fires, including smaller fires extinguished by the driver, is much higher.

6. In Germany, 350 to 400 bus fires are reported every year which corresponds to 0.4 per cent of the buses (PUBA, 2010) and in Finland bus fires have almost doubled over the last ten years (VTT, 2010).

Figure 1 **Statistical survey of calls to a fire department in bus fires in Sweden**

Source: The Swedish Bus and Coach Federation, 2012

7. Statistics show that a significant number of fires start in engine compartments or separate heating compartments. For example:

(a) In Finland, during 2010–2012, 103 out of 187 fires started in engine compartments or additional heater compartments. These fires had different causes (Trafi, 2013).

(b) In 2007, the New York State Public Transportation Safety Board (PTSB) conducted a review of the causes of previously investigated bus fires over a five year period (2002–2006). The review included 120 fire investigations and found that 76 per cent of the fires started in the engine compartment (PTSB, 2008).

(c) A study of fires in buses and coaches in Sweden, including data from bus fires where the fire department had been involved (years 2005, 2008 and 2011), reports that the most common fire origin (location) is the engine compartment. (The Swedish Bus and Coach Federation, 2012).

8. The Swedish Accident Investigation Authority investigated a fire with two Compressed Natural Gas (CNG) propelled buses in urban traffic and strongly recommended mandatory fitting of fire suppression systems in engine compartments (Swedish Accident Investigation Authority, 2013).

9. By introducing harmonized requirements, it would be possible to reduce the consequences of a fire starting in the engine compartment. If the fire is extinguished or at least suppressed by an automatic system, the risk for passengers, drivers and other persons in the vicinity of the bus is reduced. The cost for the society should also decrease. Swedish insurance companies require a fire suppression system in the engine compartment of larger buses and coaches, otherwise they cannot be fire insured. This "requirement" was introduced for buses and coaches registered in 2004 and after. Since then the average cost per bus fire has decreased (see Figure 2).

Figure 2

Average cost per bus fire for insurance companies in Sweden

Source: Swedish Insurance companies, 2012

B. Estimated costs

10. The estimated cost for building the engine mock-up is 12,000 to 17,000 € It is a one-time cost for the technical service. The cost for testing a fire suppression system is expected to be maximum 17,000 €. An approved suppression system is estimated to cost around 1,100 € for each vehicle, installation excluded.

C. References:

New York State Public Transportation Safety Board (PTSB), *Special study bus fire analysis-PTSB investigations 2002 thru 2006*, (2008). Available from

www.dot.ny.gov/divisions/operating/osss/ptsb-repository/Bus%20fire%20report%20FINAL%2008.pdf

Swedish Accident Investigation Authority, *Brand med två biogasbussar i stadstrafik i Helsingborg, Skåne län, den 14 februari 2012*. RO 2013:01, Statens haverikommission. (2013). Available from www.havkom.se/virtupload/reports/RO2013_01.pdf.

The Swedish Bus and Coach Federation, *Bussar och brandsäkerhet*, Svenska Bussbranschens Riksförbund, (2012). Available from

www.transportgruppen.se/Global/BuA/Sveriges%20bussf%C3%B6retag%20bransch/Pdfer/brand_2012.pdf?epslanguage=sv

Trafi, *Bussipalot Suomessa 2010–2012*, Esa Kokki, Timo Loponen, (2013). Available from www.trafi.fi/filebank/a/1366109611/78a92ce787b1d2a28bc122c64710093c/12021-Trafin_julkaisu_10-2013_-_Bussipalot_2010-2012.pdf

Statistics taken from article on Evacuation trials 1994-2006

Statistics of fire events based on information from rescue services. It contain only incidents with vehicles in use. Fires in parked vehicles excluded.

- 507 incidents was recorded during the period.
- The mean value was 56 incidents per year.
- Lowest was 1997 with 38 incidents and the top value was 2000, 2001 and 2003 with 70 incidents