

Your Ref: 373082
Our Ref: CS/MSG24090233/R

17 September 2024

M/s MSIG Insurance (Singapore) Pte. Ltd.

16 Raffles Quay #24-01
Hong Leong Building
Singapore 048581
(Motor Claims Department)

**TECHNICAL INVESTIGATION REPORT OF FIRE INCIDENT INVOLVING THE
INSURED VEHICLE SKZ 1550E ON 11 SEPTEMBER 2024**

1. We refer to your letter dated 13 September 2024 and the instructions therein.
2. Our analysis, comments and opinions with respect to the cause of fire to the insured vehicle SKZ 1550E (herein referred to as “**Insured Vehicle**”) are set out below.

Inspection of the Insured Vehicle

3. The Insured Vehicle was physically inspected on 13 September 2024 at the premises of Cycle & Carriage Pandan Loop E-Car Service Pte Ltd located at 188 Pandan Loop, Singapore (128378).
4. A static inspection was carried out to the Insured Vehicle where the following general information was first recorded:-

Vehicle Registration No.	: SKZ 1550E
Make / Model	: MERCEDES-BENZ C200 AVANTGARDE (R17 LED)
Chassis No	: WDD2050422R122169
Year of Registration	: JANURARY 2016
Mileage	: N.A

5. The exterior body of the Insured Vehicle was found to be intact and unaffected by the fire.
6. The fire had resulted in minor fire damages to the engine compartment of the Insured Vehicle. Most of the components inside the engine compartments were found to be intact and unaffected by the fire. See photos 1 – 6 below.



Photo 1 shows the general view of the frontal portion of the Insured Vehicle at the time of our inspection. The frontal portion appears to be intact and unaffected by the fire.



Photo 2 shows the general view of the right body of the Insured Vehicle at the time of our inspection. The right body appears to be intact and unaffected by the fire.



Photo 3 shows the general view of the left body of the Insured Vehicle at the time of our inspection. The left body appears to be intact and unaffected by the fire.



Photo 4 shows the general view of the rear portion of the Insured Vehicle at the time of our inspection. The rear portion appears to be intact and unaffected by the fire.



Photo 5 shows the interior view from the right side of the Insured Vehicle at the time of our inspection. The right side of the Insured Vehicle was observed to be unaffected by the fire.



Photo 6 shows a general view of the engine compartment of the Insured Vehicle at the time of our inspection. Most of the components inside the engine compartment were found to be intact and unaffected by the fire.

Investigation and Technical Analysis

7. For this particular case, the fire appears to have been of electrical nature originated from the rear right portion of the Insured Vehicle, where the Engine Fuse and Relay Box is located. This can be determined from the burn pattern of the Engine Fuse and Relay Box and assembly components which were observed to have sustained visible fire damage on the rear right engine compartment.
8. Upon closer examination of the rear right portion of the Insured Vehicle which was where the fire had likely started, we had found traces of greenish residue along the original fitted fuse located in side of the Engine Fuse and Relay Box. The presence of greenish residue found along the wirings of the fuses indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires. This physical evidence would then appear to suggest that the cause of fire to the Insured Vehicle could have possibly been due to electrical in nature. See photos 7 - 11 below.
9. From our understanding the Engine Fuse and Relay. A fuse is typically a metal wire strip that melts or burns when too strong a current passes through it, thus interrupting the current passivity and breaking the circuit to a given device. Leading to electrical components like headlights, brake lights & instrument clusters and interior cabin lights to malfunction. For this particular case Mr Lim Tau Liang Terrence, (herein referred to as “**Mr Lim**”), had reported a engine temperature warning light displayed on the instrument cluster however, as the coolant fuse is located inside of the Fuse and Relay box which was also affected by the fire thus it is likely that the fuse failure can disrupt the electrical balance or cause related systems to malfunction, impacting the instrument cluster's ability to function properly and triggering the engine temperature warning light to be illuminated.



Photo 7 shows the general view of the Engine Fuse and Relay box top plastic cover located at the rear right of the engine bay which had sustained visible fire damages resulting in a hole found on the Engine Fuse and Relay Box top plastic cover (red circle).



Photo 8 shows the general view of the Engine Fuse and Relay box upon removing the top plastic cover located at the rear right of the engine bay. The Engine Fuse and Relay Box had sustained visible fire damages resulting in a hole found on the Engine Fuse and Relay Box (red circle).



Photo 9 shows the general view of the Engine Fuse and Relay box upon removing the top plastic cover and exposing the Engine Fuse and Relays located at the rear right of the engine bay. The Engine Fuse and Relays had sustained visible fire damages at the time of my inspection (red circle).

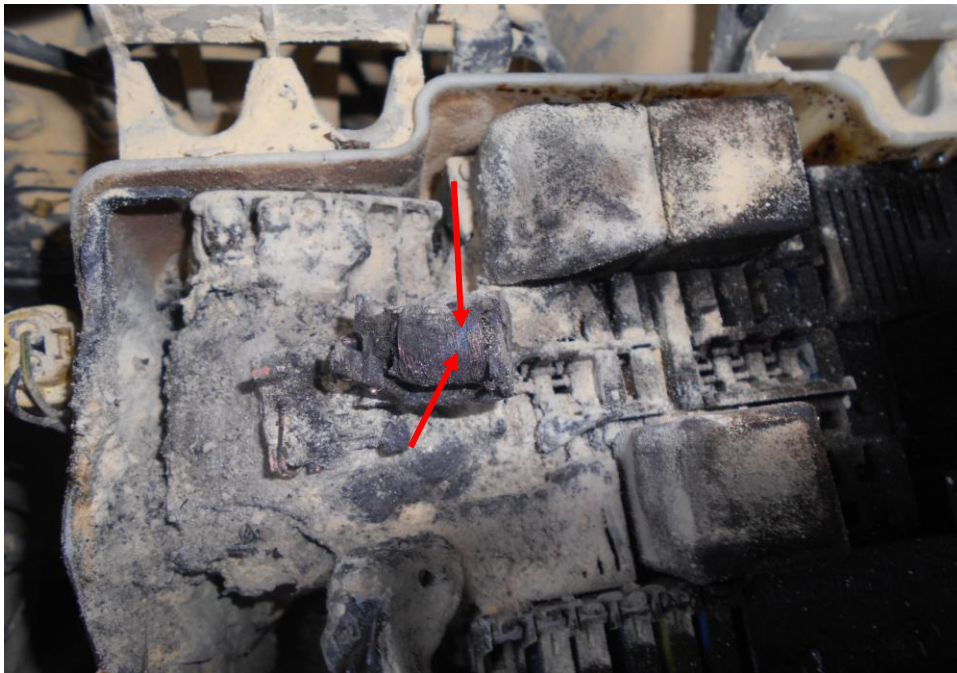


Photo 10 shows the general view of the Engine Fuse and Relay along with the original fitted wirings found in the relay. The presence of greenish residue (red arrows) indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires.



Photo 11 shows the close up view of the Engine Fuse and Relay along with the original fitted wirings found in the relay. The presence of greenish residue (red arrow) indicates internal heating of copper wires, a sign of an electrical short circuit occurring. The greenish residue is normally left behind from oxidation as a result of chemical reaction involving the copper wires.

10. From the Singapore Accident Statement, which was made by Mr Lim, we note that the fire to the Insured Vehicle had started at a time when Mr Lim was at a traffic light at Siglap. Mr Lim was first alerted when he noticed smoke emitting from the front bonnet of the Insured Vehicle.
11. We managed to speak to Mr Lim on 16 September 2024 where we were able to gather further information regarding the incident as well as information pertaining to the history of the Insured Vehicle.

12. According to Mr Lim, at about 1030hrs on 11 September 2024 Mr Lim was at Fullerton Hotel purchasing mooncakes for his clients. Upon purchasing the mooncakes from Fullerton Hotel Mr Lim then proceeded to drive the Insured Vehicle off to his workplace located at Senang Crescent. Mr Lim had driven the Insured Vehicle from Fullerton Hotel towards the East Coast Parkway (ECP) highway and had taken the exit towards Siglap Road. Upon reaching a traffic light junction at Siglap Road. Mr Lim noticed a engine temperature warning light illuminated on the drivers instrument cluster, upon noticing the warning lights Mr Lim then proceeded to drive the Insured Vehicle somewhere safer where he wouldn't obstruct traffic and that's when Mr Lim had safely pulled over the Insured Vehicle at a private estate located at Chai Chee within the vicinity of Bedok South National Police Post (NPP). Mr Lim then hurriedly turned off the engine of the Insured Vehicle and proceeded to open up the front bonnet, upon opening the front engine bonnet Mr Lim had already noticed white smoke emitting from the rear right portion of the engine compartment in particular where the Engine Fuse and Relay box is located at. Not long after Mr Lim had noticed small flames emitting out of the Engine Fuse and Relay Box. Mr Lim then went to the rear trunk of the Insured Vehicle and took out a 500ml water bottle to try to extinguish the fire but to no avail, a nearby police officer whom was on duty and stationed at Bedok South National Police Post (NPP) that day had noticed Mr Lim trying to extinguish the fire on the Insured Vehicle and had rushed over to provide assistance to Mr Lim by taking a fire extinguisher and extinguishing the fire to the Insured Vehicle. Not long after SCDF had arrived to ensure the last remnants of the fire to the Insured Vehicle had been extinguished.
13. Mr Lim made an insurance report on the following day at Cycle & Carriage Pandan Loop E-Car Service PTE LTD on 12 September 2024 at 1558hrs.
14. Mr Lim mentioned that he had called Cycle & Carriage Pte Ltd hotline and made towing arrangements. The tow truck eventually arrived, and the Insured Vehicle was towed to Cycle & Carriage Pandan Loop E-Car Service Pte Ltd.
15. Mr Lim mentioned that at the traffic light junction of Siglap Road there was a warning lights displayed at the instrument cluster indicating a engine temperature warning light however on the journey from Fullerton Hotel to East Coast Parkway (ECP) highway there was no abnormal rise in temperature when he was driving the Insured Vehicle.

16. With regards to the history of the Insured Vehicle, we were able to gather from Mr Lim that the Insured Vehicle was purchased pre-owned by him in 2021. He is the owner and main driver of the Insured Vehicle.

17. Pertaining to the maintenance aspect, Mr Lim sends the Insured Vehicle for periodical servicing. He provided us with his latest servicing record on 14 March 2024. Refer to invoice 1 below.

TAX INVOICE

Invoice Name & Address: Mr Lim, 16 Ipoh Lane, #04-05, Singapore 438620

Owner Name & Vehicle Info: /Lim Tau Liang Terence (Lin Daol), Reg No/Reg Date: SKZ1550E / 04/01/2016, Date In/Mileage: 14/02/2024 / 54113, Chassis No: WDD2050422R12169, Engine No: 27492030478461, Make/Model: MB/MB C 200 SEDAN (W205) *AVANTGARDE / A, Colour/Trim: 027 799 Diamond Whi/ 042 201 Black

Account No	Term	Date/Tim	Printed	CSE	Operator	WIP No	Invoice/Credit Note No
CSM00011	Cash	02/03/24	11:33	JG	83 / Joe Goh	33392	26364126

Description of Goods / Services	Qty	Unit Price S\$	Amount S\$
Z SCUSE Star Care Utilization.1) 2) 02/24, 2) DD/MM/YY, 3) DD/MM/YY			
1) Replace Engine Oil, oil filter 2) Check/adjust wiper spray nozzle, tyre pressure, AT fluid, brake fluid, coolant & windshield washer reservoir 3) Inspect brake pads, horn, lighting, seat belts, seat belt buckles, tyre, wiper blades 5) Service System update - Xentry			16.00
6) Engine Compartment Wash.			16.00
N 00116601 EXTRA WORK FOR: SERVICE: REPLACE DUST FILTER			80.00
N 00116801 EXTRA WORK FOR: SERVICE: REPLACE AIR FILTER ELEMENT			32.00
N 00119701 EXTRA WORK FOR: SERVICE A: REPLACE BRAKE FLUID			
N 00119801 EXTRA WORK FOR: SERVICE A, REPLACE COMBINATION FILTER, PERFORM NOT FOR ECE VEH.			
X [STR] BRAKE FLUID	2.00	61.63	10.00
X DUST FILTER	1.00	79.63	10.00
X AIR-COND. PARTICLE FILTER	1.00	202.87	10.00
X AIR FILTER INSERT	1.00	165.61	10.00

Guarantee Your Warranty, Maintain with Cycle & Carriage!

Parts	514.23	Nett	658.23
Labour	144.00	9% GST on	59.24
Standard Menu	0.00		
Specialist Job	0.00	Total Payable	717.47
Diagnostics Job	0.00	Paid	0.00
Sundry/Others	0.00	Total Due	717.47
Total (w/o GST)	658.23		

Payment should be made strictly by NETS, credit cards or PayNow (via QR code or UEN) only. Thank you.

Any dispute to the invoice must be made within 3 days. This is a computer generated document, no signature is required.

Pandan Loop Service Center
188 Pandan Loop
Singapore 128378
Tel: 6777 5388
Fax: 6779 5383
www.mercedes-benz.com.sg

Invoice 1 shows the last servicing package done on the Insured Vehicle on 14 March 2024 at Mercedes-Benz Cycle & Carriage PTE LTD which included the changing of engine oil, oil filter, brake fluid, dust filter, air con particle filter and air filter (red arrows).

Incident Scene Photographs

18. We were able to obtain photos from Mr Lim of the Insured Vehicle after the fire was put out. In general, the information that could be gathered from these photographs had corresponded to the events that were related to us by Mr Lim. See photos 12 - 13 below.



Photo 12 shows firefighters (red arrows) ensuring the last remnants of the fire has been taken out on the Insured Vehicle.



Photo 13 shows firefighters and the police (red arrows) ensuring the last remnants of the fire has been taken out on the Insured Vehicle.

19. Despite the circumstances of incident being reported by Mr Lim about the Engine temperature warning light being illuminated on the instrument cluster, we are of view that the possibility of the cause of fire to the Insured Vehicle being due to engine overheating would seem unlikely despite the engine temperature warning light was triggered due to a electrical short circuit in the Engine Fuse and Relay compartment thus triggering the engine temperature warning lights on the instrument cluster and the fire had originated from the rear right portion of the engine compartment in particular the Engine Fuse and Relay box rather. As discussed in paragraph 9 above.
20. The possibility of the fire being due to external factors (foreign material(s) stuck on hot surfaces, arson and sabotage amongst others) would also seem unlikely given that our examination of the available incident scene photographs did not reveal any unusual material(s)/object(s) found on the ground near where the Insured Vehicle was positioned. The location of where the Insured Vehicle was positioned was also observed to be not at a secluded location.
21. The possibility of the fire being due to electrical in nature would then seem more likely given that engine overheating and external factors would both seem unlikely. The fire being due to electrical nature is also supported by the condition of the original fitted wirings found in the Engine Fuse and Relays, which was earlier discussed in paragraph 7 above.
22. Our checks with both local and international bodies and associations had revealed that at the time of writing this report, there is a manufacturer recall on 27 May 2021 for diodes in the rectifier bridge of the alternator may fail, it was rectified on 23 September 2023. See search result from LTA below.

Vehicle Recall Details

* ONLY INFORMATION ON VEHICLE RECALLS SUBMITTED FROM 9 APRIL 2007 IS AVAILABLE

Owner ID Type Singapore NRIC	Owner ID 724C
Vehicle No. SKZ1550E	Make/Model MERCEDES BENZ/ C200 AVANTGARDE (R17 LED)
Engine No.: 27492030478461	Chassis No.: WDD2050422R122169

Recall Details

Recall No.: R2021060999

Manufacturer Recall Date:
27 May 2021

Estimated Completion Year of Recall:
2021

Brief Description (As Provided by Motor Dealer):
Mercedes-Benz AG has determined in certain C-Class vehicles (model series 205) with 4-cylinder spark-ignition engine M274 that diodes in the rectifier bridge of the alternator may fail.

Date Rectified:
23 Sep 2021

Hotline Information:
CYCLE & CARRIAGE CUSTOMER ASSISTANCE CENTRE at 64719111

For more details, contact MERCEDES-BENZ SINGAPORE PTE LTD

Conclusion

23. Having investigated and technically analysed the damages of burnt nature to the Insured Vehicle, we are of the view that the cause of fire to the Insured Vehicle as of electrical nature and the fire had originated from a short circuit along the factory original wirings of the Engine Fuse and Relays located at the rear right of the engine compartment.
24. At the time of inspection, we did not find any unusual skeletal remains which could have suggested that there was possible modification(s) and/or additionally fitted electronic and/or electrical component(s) on the Insured Vehicle.
25. We did not find any evidence which had suggested that the cause of fire to the Insured Vehicle was due to poor maintenance and/or recurring electrical problem.

26. Our investigations had also revealed that at the time of writing this report, there is no manufacturer recall of similar make and model vehicle as the Insured Vehicle that may possibly be related to this incident.

27. SCDF was activated to attend to the fire incident and a fire report pertaining to their findings will likely be forthcoming. We have applied for this fire report and will forward a copy of the report once it is made available to us.



Elton Seet

Technical Investigator



Ang Bryan Tani

AMSOE, AMIRTE, AFF SAE, M.MATAI, AFF.Inst.AEA

Senior Technical Investigator

Technical Investigation & Reconstructionist (SAE-A)

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