



Certificate of Derogation from a Notified National Technical Rule

(in accordance with part 6 of the Railway Group Standards Code)

1. Type of deviation

Deviation Number: **12/168/DGN**

Derogation from a Notified National Technical Rule

2. Details of applicant:

Railway Vehicle Technologies, Windhoff Bahn- und Anlagentechnik GmbH, Hovestrassse 10,
D-48431 Rheine, Germany

3. Your reference number:

Windhoff/2130/001

4. Status of applicant:

Manufacturer – Contracting Entity

5. Title of certificate:

Derogation to Engine Exhaust Requirements defined in GM/RT2130 Issue 3 Clause 3.1.

6a. Details of Railway Group Standard (RGS):

RGS Number:	Issue No:	Issue Date:	Title:
GM/RT2130	Three	December 2010	Vehicle Fire, Safety and Evacuation

6b. RGS clause(s):

3.1.1

6c. RGS clause requirements:

“3.1 Engine exhaust

3.1.1 Excepting where engines only operate within a possession, the location and direction of the engine exhaust exiting from the vehicle shall be in accordance with Figure 1.

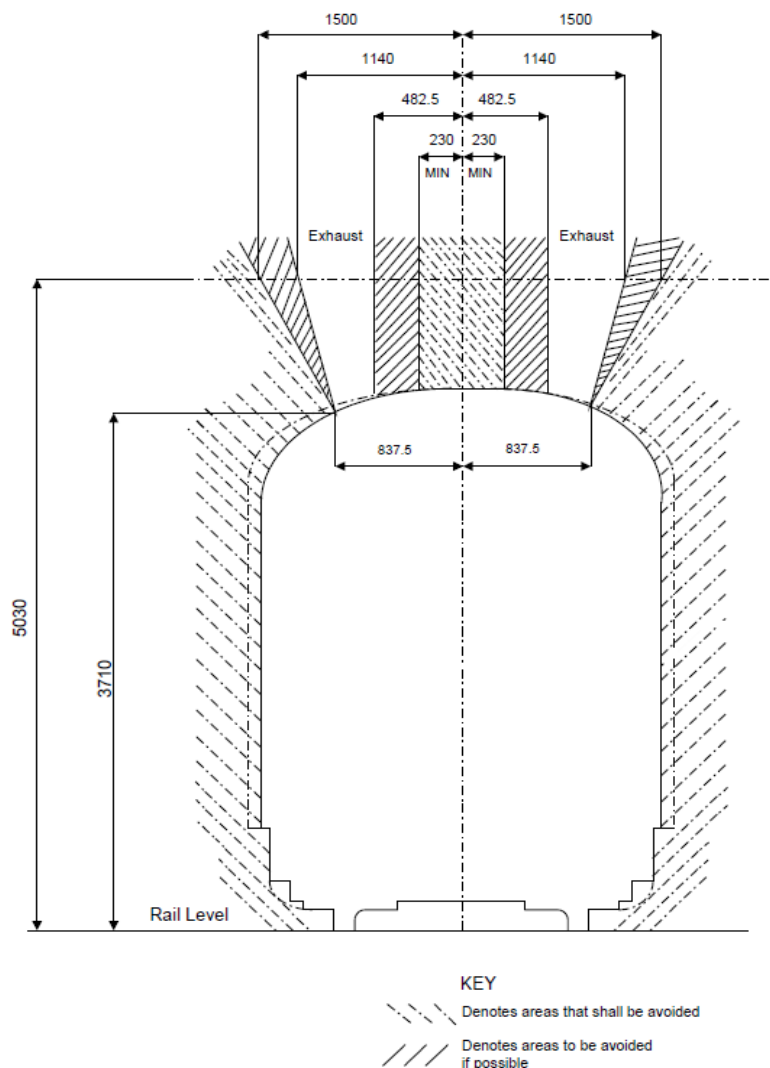


Figure 1 Direction of engine exhaust

7. Scope of deviation:

Windhoff Multi-Purpose Vehicle (MPV).

8. Impacts of complying with the current RGS requirement:

The Windhoff Multi-Purpose Vehicle (MPV) will operate in transit mode on the Network Rail Managed Infrastructure as well as self-powered within a Possession. The MPV Main Engine exhaust direction is as depicted in Figure 2 below and is therefore in an area that GM/RT2130 states should be avoided.

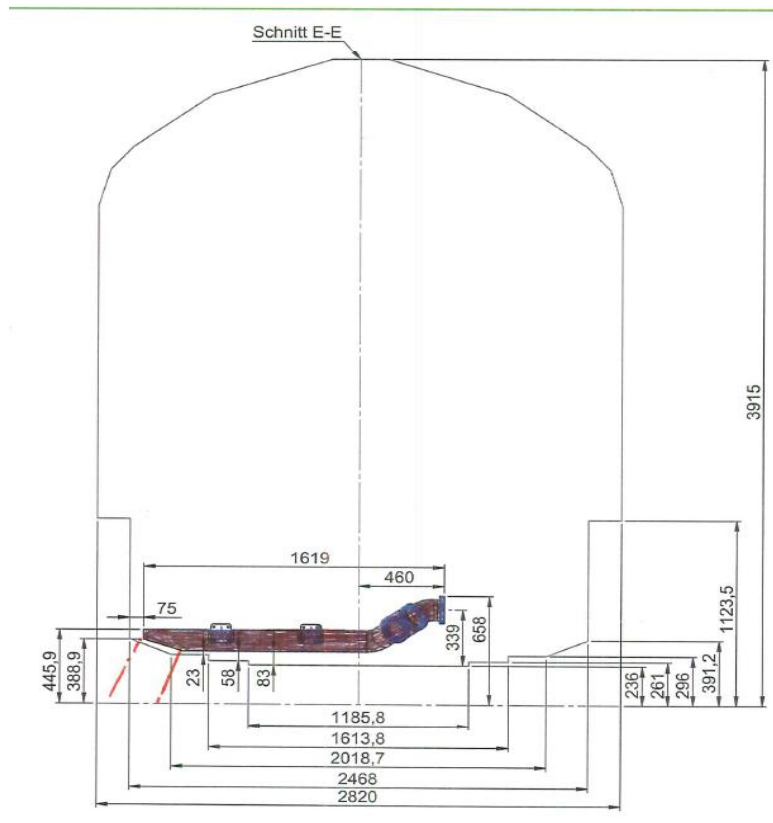
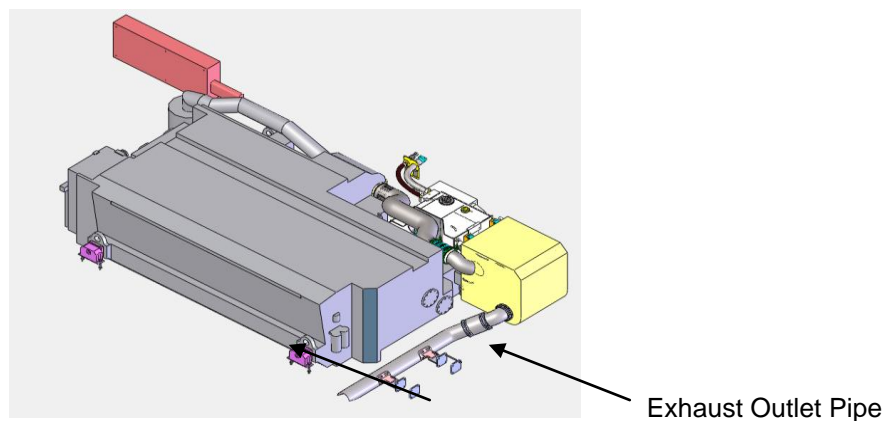


Figure 2



The MPV main engine is under floor mounted between the bogies. The exhaust system outlet is downwards towards the track and outwards as depicted.

The MPV design concept for the construction and maintenance of the upper part of the railway infrastructure in terms of the modules that can be accommodated would be severely compromised if the exhaust system outlet was in compliance with GM/RT2130. The primary purpose of the HOPS is to construct the Overhead Line Equipment and supporting structures and requires machinery and operative to work at height. A number of structures would be required to facilitate the installation of a compliant exhaust system and this would severely impact the functionality of the HOPS MPV.

9. Proposed alternative actions:

The proposed alternative action is to design the MPVs with the same exhaust system outlet design (Figure 2 above) used on MPVs that construct and maintain the upper part of the railway infrastructure. Summary details are (non-exhaustive listing):

- | | | |
|-----------------------------------|----------|-------|
| • OLE Alliance (WCRM Project, UK) | 14 units | 2000 |
| • Network Rail (CTRL) | 4 units | 2005 |
| • Schweizerische Bundesbahn | 16 units | 2008 |
| • SPL Powerlines GmbH | 1 unit | 2009 |
| • Schweizerische Südostbahn | 2 units | 2010 |
| • Alpine Energie Österreich GmbH | 2 units | 2011. |

Apart of those vehicles supplied to the UK, some of these MPV were demonstrated and approved by the relevant National Railway Safety Authority as being in compliance with EN14033 Part 2, Clause 5.6.1: "The exhaust gases from combustion engines used for working operations shall be directed towards the top of the machine, clear of the catenary and the work areas. Other positions are permitted to be used for machines used for construction and maintenance of the upper part of the infrastructure, e.g. catenary, bridges and tunnels".

10. Impacts of the alternative actions:

The performance requirements of the HOPS has resulted in the selection of an exhaust outlet direction that is proven in application and accepted as in compliant with European Standards. However, the impact of using this design has been considered and the following summarises this work:

1. The MPV is an On-Track Machine and will tend not to stop in Railway Stations. It is acknowledged that there is a low risk to the public as the machine passes through a station and to track workers along the way. However, with the exhaust outlets is below the platform level any particles from the exhaust will be very unlikely to cause harm; for example, the worst case would be eye irritation to the public and track workers, but this is considered improbable.
2. The risks to the HOPS Ground Crew Operatives with the exhaust arrangement being mounted under the floor are seen as very low as they will be aware of the position of the outlet. For the MPV Operatives that are working on the upper part of the railway infrastructure, the risks from the exhaust system are greatly reduced compared to an RGS compliant design.
3. The track record of operations of other OTM that have previously been granted a deviation because they have under floor exhaust outlets demonstrate that they do not pose a risk of causing an infrastructure equipment fire. This UK track record is also supplemented by the record of operations on the mainland European railways.
4. Experience with other OTM (example UFM 160) that have an under floor exhaust outlet has demonstrated that there have been no issues with track-mounted equipment (e.g. hot box detectors). Further, the proven design provides the assurance that there is no risk from exhaust gases entering the MPV Cabs.

On the basis of the above, the Operator of the High Output OLE Construction System (HOPS) has concluded that, in terms of safety risk, although non-compliant with RGS, the primary requirement for construction and maintenance of the upper part of the infrastructure application, the under floor exhaust is the best option and poses acceptable risk.

11. What other options have been considered?

The action taken for the HOPS Project was to consider the implications of an alternative compliant solution on the HOPS MPV. Consideration was given to a compliant exhaust direction by providing a structure at the vehicle ends to allow the exhaust mounting, but this was discounted due to a significant loss of functionality for the majority of the HOPS Train Modules. In order to provide the multi-purpose functionality that is fundamental to meet the HOPS OTM functional requirements, the fitment of an exhaust system in compliance with GM/RT2130 would severely limit the capability that is fundamental for the construction and maintenance of the upper part of the railway infrastructure.

12. Consultation with affected parties

- Network Rail,
- Amey.

13. Additional actions/observations:

Upon receipt, the applicant is required to identify affected, interfacing parties and copy this certificate, together with supporting information, to those parties.

The derogation will be in place for the life of the MPVs of the High Output OLE Construction System (HOPS).

Attachments:

- Amey's letter of support dated 01/02/2013 Ref. AR-HOPS-GC30113-2
- Network Rail's letter of support dated 26/02/2013
- Windhoff's drawing No. 1050300000753-0 (27/02/2012): 115 MPV mit Ramme Fambo Vehicle
- Windhoff's memo dated 16/01/2013 regarding the position of the engine exhaust outlet.

14. Method of elimination:

N/A

15. Start and end date:

N/A

16. Signature of applicant:

Railway Vehicle Technologies

Date of application:

27/09/2012

17. Lead Standards Committee details:**Name of Committee:**

Rolling Stock

Date of meeting

26/10/2012

Minute reference:

12/RST/10/314

Authorised by:

Signed by Cliff Cork on 01/03/2013

Date of Authorisation:

01/03/2013

Cliff Cork

Head of Delivery, Infrastructure and Rolling Stock