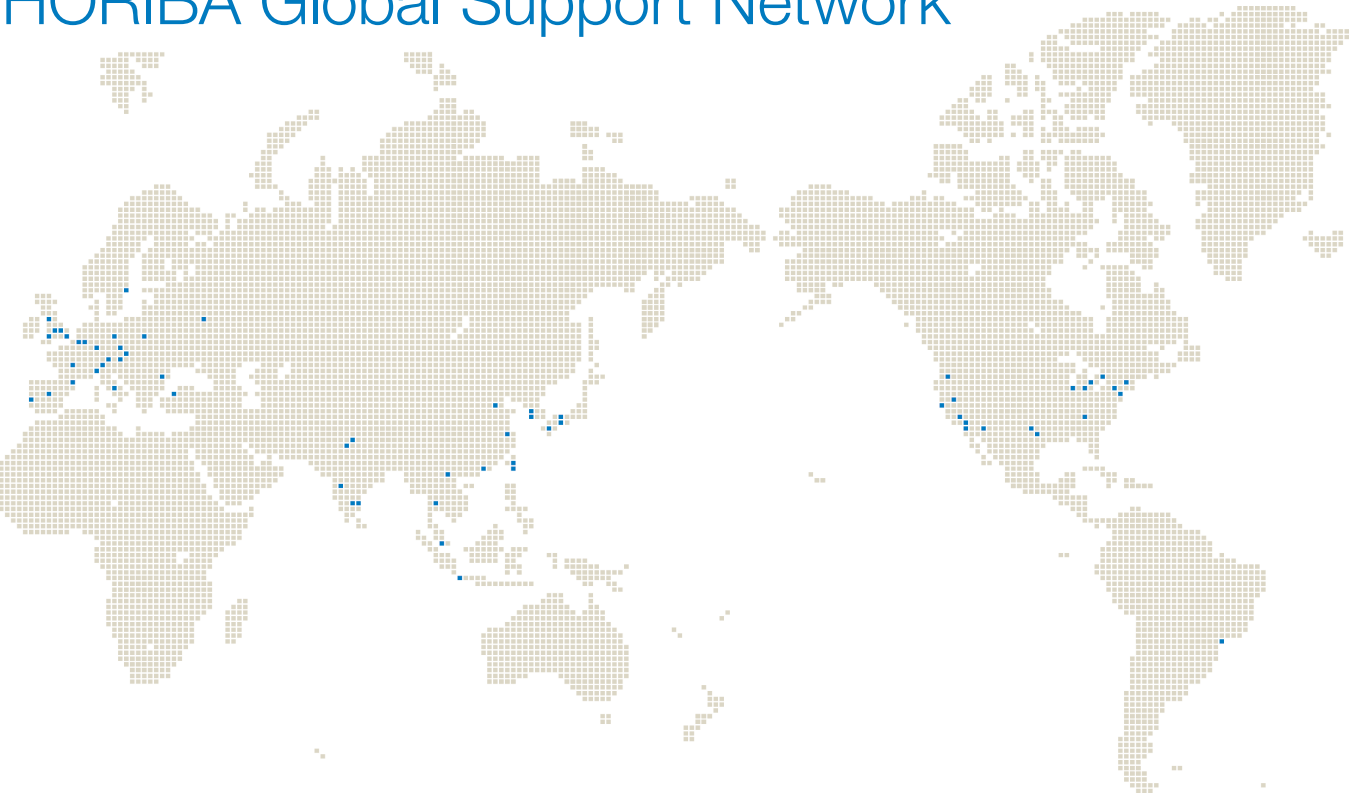


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We can also assist in laboratory operation by providing technical information, additional training courses, servicing and maintenance support.

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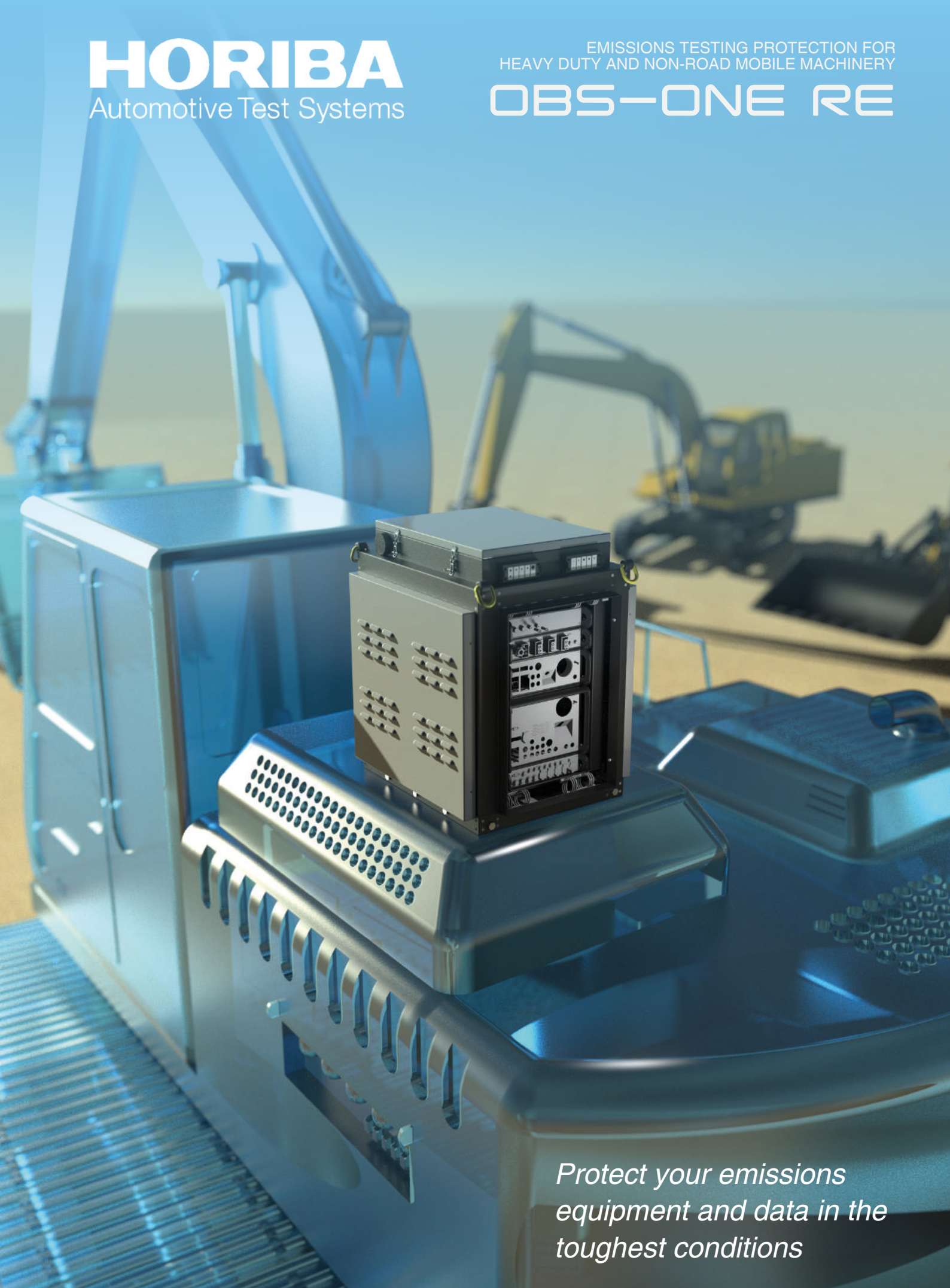
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*Protect your emissions  
equipment and data in the  
toughest conditions*



# On-board Emissions Measurement System

## OBS-ONE RE (Rugged Enclosure)

### Background

Since the introduction of NTE (Not To Exceed) for USA HD (Heavy Duty) On Road Vehicles in 2004, HORIBA has provided Portable Emissions Measurement Systems (PEMS) for In Service Conformity and Type Approval testing.

On road measurement of emissions has since extended to EU HD On Road Vehicles (In Service Conformity) and EU LD vehicles (Real Driving Emissions).

In 2019, it has become a requirement for some categories of Non-Road Mobile Machinery (NRMM) to perform and report In Service Monitoring – and the applicable categories are due to be extended under forthcoming EU legislation.

The NRMM application creates several challenges for OEMs, and for the OBS-ONE system. There are a wide variety of vehicles to be monitored with various conditions (environmental & operational) under which the measurements must be made. These include extreme variations in temperature, weather, shock and vibration. Special considerations also need to be taken into account in mounting on the vehicle. To overcome these challenges, HORIBA has developed the RE (Rugged Enclosure).

Whilst minimising the above effects on the OBS-ONE, the design allows its unique feature of front access and modularity to be retained, utilising the standard cables, connections and fittings. A key feature is the Wi-Fi module, which enables the OBS-ONE to be operated and monitored remotely, therefore allowing the NRMM driver to concentrate on the vehicle use.



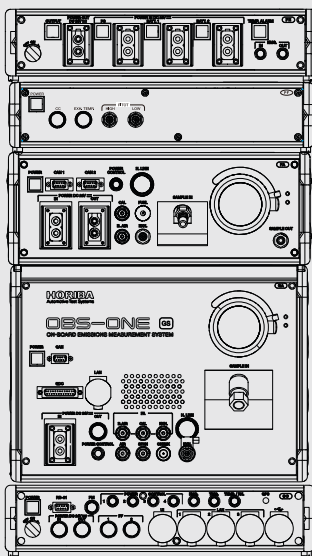
### NRMM (Non-Road Mobile Machinery) & HD (Heavy Duty) Specification

#### Protects against:

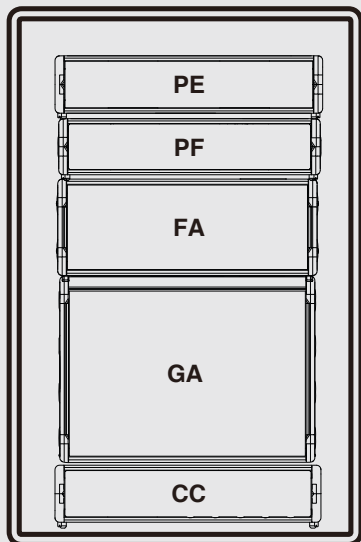
- Dust, Wind and Rain ingress
- Vibration
- Shock events
- Environmental variation

#### Provides:

- Maximum Duty
- Greater flexibility
- Temperature management
- Fast Setup
- Wi-Fi
- Easy mounting
- Ease of access



Recommended Setup



Recommended Setup Inside RE

Above layout is the recommended standard configuration for certification testing. A second enclosure is needed for the PN / PM Modules. Please contact your local HORIBA Group Office for further information on setups.

### Features

#### Easy to Install

- The RE allows the use of all the original OBS-ONE connections and cables; no special connectors are required.
- Front access is for the heated line with a weather-proof brushed access point. All external connections enter via the top bulkhead, providing effective sealing of the OBS-ONE within the RE module.

#### Adaptability

- Designed to protect the OBS-ONE in a wide variation of temperatures from -7°C to +40°C; temperature controlled fans maintain a consistent internal temperature.
- Dust filters are provided on the exterior covers.
- A sub frame is provided for forklift handling, as well as D rings for overhead lifting.

#### Accessibility

- The RE is manufactured with all the OBS-ONE connections pre-fitted internally with cabling. This allows quick and simple installation of the OBS (GPS, Weather Station, Gas Supplies, Power etc.).

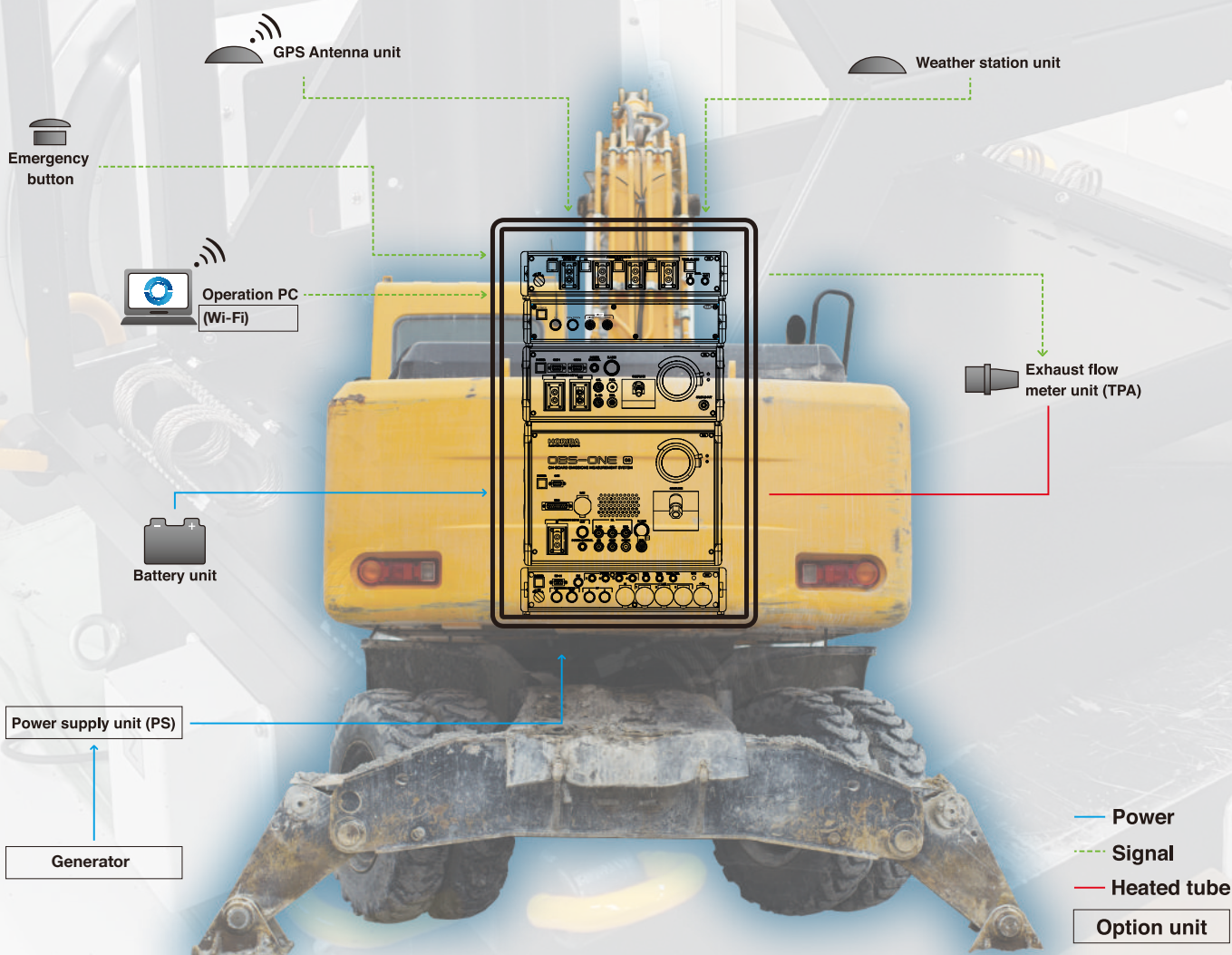
#### Shock / Vibration Isolation

- With long life and robust springs arranged for isolating movement in X, Y and Z directions, the OBS-ONE is protected from harmful vibrations and shock impacts, over a wide range of NRMM operating conditions.
- The RE design is modular due to the springs, which can be changed easily on site should a new application require differing levels of shock / vibration isolation and damping.

#### Additional Features

- With inbuilt Wi-Fi, the RE allows the OBS to be remotely monitored and controlled from a distance.

### Total System Configuration





## Hot & Cold Climates

Testing is required to be within the normal driving conditions of the vehicles use, which can see it subjected to adverse weather conditions, and a variety of industrial applications.

# NRMM & HD Challenges

## Harsh Operating Environments

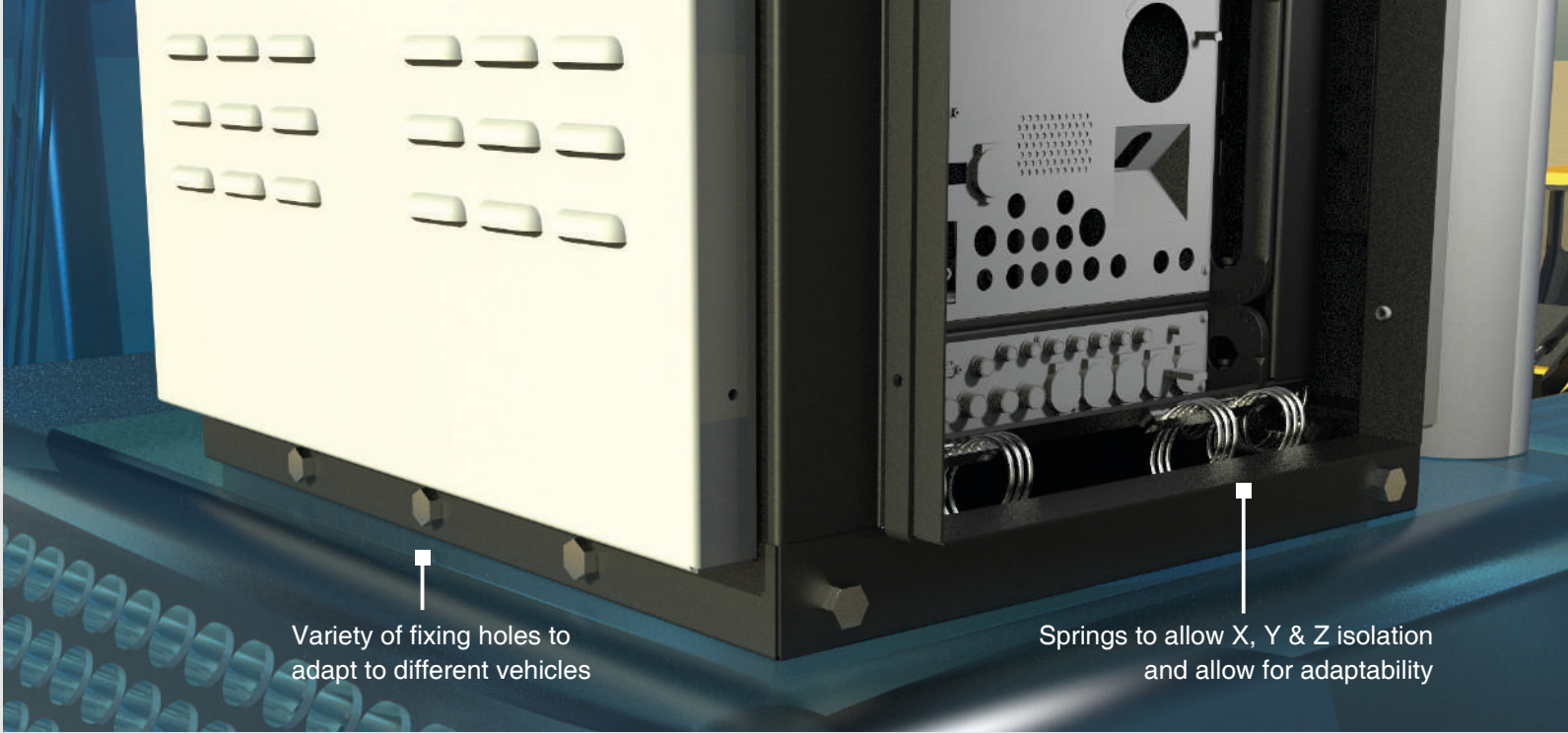
The measurement accuracy of the OBS means that it must be protected from the extremes of NRMM operation e.g. weather conditions, dirt, dust, shock and vibration. The RE module has been designed to cope with the vast majority of such conditions.

Temperature controlled fans ensure that the internal temperature remains consistent over a wide range of ambient conditions.



Rigorous Solution

The RE's development has included testing on a shaker rig and on NRMM vehicles, to ensure the product's durability / robustness. Most importantly the analysers maintain a stable response within tolerance appropriate for certification.



Variety of fixing holes to adapt to different vehicles

Springs to allow X, Y & Z isolation and allow for adaptability

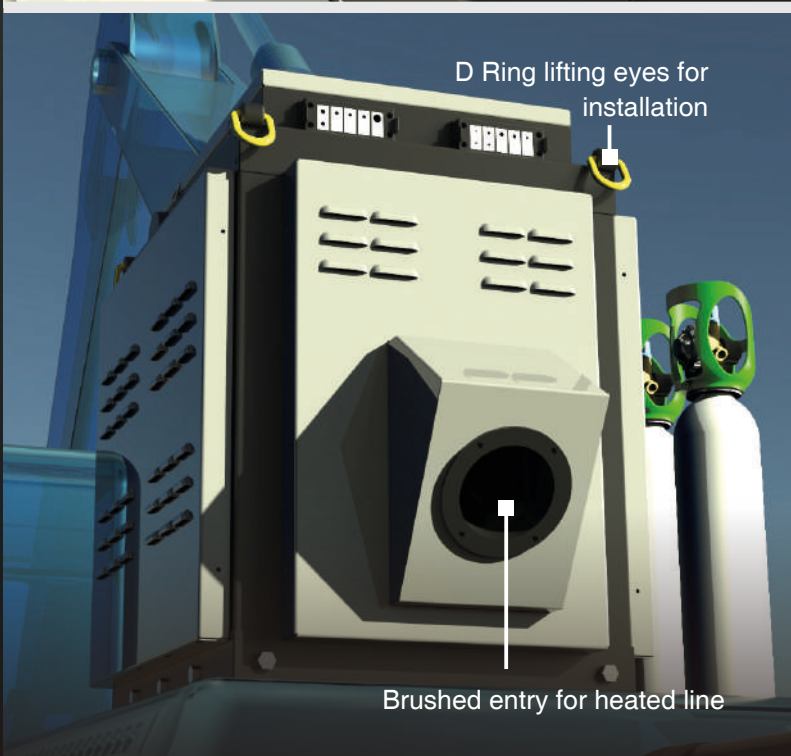


Weatherproof cable entry for the OBS-ONE, with existing OBS connectors

Quick access to top entry, with no special tools required

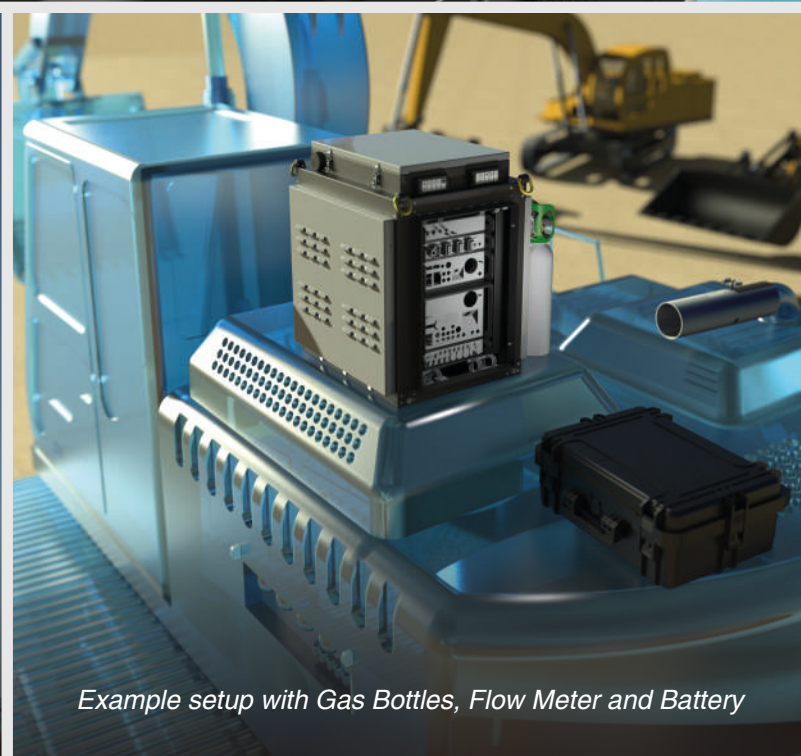


Example of a test setup on a HD Vehicle



D Ring lifting eyes for installation

Brushed entry for heated line



Example setup with Gas Bottles, Flow Meter and Battery