


DustRover™

VEHICLE-MOUNTED DUST MONITORING
FOR MINING & URBAN APPLICATIONS



acoem
CREATING ENVIRONMENTS OF POSSIBILITY





How do you shorten the path between monitoring and informed action?

For more than 50 years we have been designing and manufacturing class-leading multi-parameter environmental monitoring and industrial reliability solutions.

We offer our global customers a complete range of integrated measurement technologies and services, ensuring that your data is always accurate and your equipment operates with maximum efficiency.

We believe in helping you find the right balance between progress and preservation.

Empowering industries, government authorities, scientists and communities to make knowledgeable decisions based on reliable data, our holistic solutions lead to operational excellence and better outcomes.

At Acoem, we create environments of possibility.



If dust is dynamic, why should dust monitoring be static?

Hyperlocal dust mapping on a browser-based dashboard

Whether it is deep in a mine pit or on a city construction site, excessive dust levels pose a rising challenge to the health and safety of workers and communities. Monitoring this constantly shifting particulate matter is critical.

DustRover™'s efficient system can identify and alert operators to dust events or changes in the conditions of the haul roads.

DustRover™ can effectively monitor emissions from all haul road traffic, which can be a major contributing factor to overall mine site dust levels. If left uncontrolled, dust can become a significant health and safety hazard.

DustRover™ can also monitor track temperature and humidity, help to reduce the cost of tyre wear and tear, and enhance water truck intervention efficiency.

Designed & manufactured in Australia to thrive in harsh working environments

Global expertise, local knowledge

The mining industry demands a dust monitoring system that is robust enough to cope with the notoriously harsh conditions of surface mining.

Having worked closely with the mining industry and environmental agencies around the world for over four decades, Acoem has built a reputation for developing smart, cost-effective and user-friendly solutions.

DustRover™ is the latest addition to Acoem's suite of monitoring solutions and has been developed to meet the specific needs of the mining industry, and withstand even the most challenging of environments.



The DustRover™ difference

Wide-range tracking of dust, location, temperature & environmental conditions

As a specialised area monitoring system, DustRover™ accurately measures environmental conditions for above-ground transportation operations.

DustRover™ is comprised of an integrated network of components that work together to monitor, measure, analyse and alert users of changes in conditions. Its compact size and durability allow easy installation on haul trucks, or other mobile vehicles, to monitor ambient dust levels and environmental parameters on mine site roadways.

It has the ability to handle even the most brutal landscape while continually feeding valuable information back to an operations or command centre.

Operators can choose the time interval at which they want to retrieve data from the DustRover™ – from seconds to every hour. They can also program alarm levels for each parameter that aligns with their individual occupational health and safety management plan and/or government/EPA regulations.

The information is then processed using Acoem Airodis™ software, analysed and displayed on an easy-to-use webpage with mine site and geographical area of vehicular travel. The webpage can be viewed by any authorised user on a web-enabled device. Data and reports can also be downloaded at a later date for modelling or historical record keeping.



DustRover™ is also suitable for urban applications where vehicle-generated dust occurs.


Traffic light system


Alerts tailored to your site's individual requirements


At the first sign of a hazardous rise in dust levels, the system uses a simple traffic light hierarchy to immediately send an alarm signal to activate dust suppression mechanisms.

The system detects variations in concentration of dust levels and is capable of measuring particle sizes as small as 0.3 micrometres (μm).

Mine staff are provided with accurate, timely and targeted data on dust emission levels which can help them identify where haul road dust intervention is most needed.

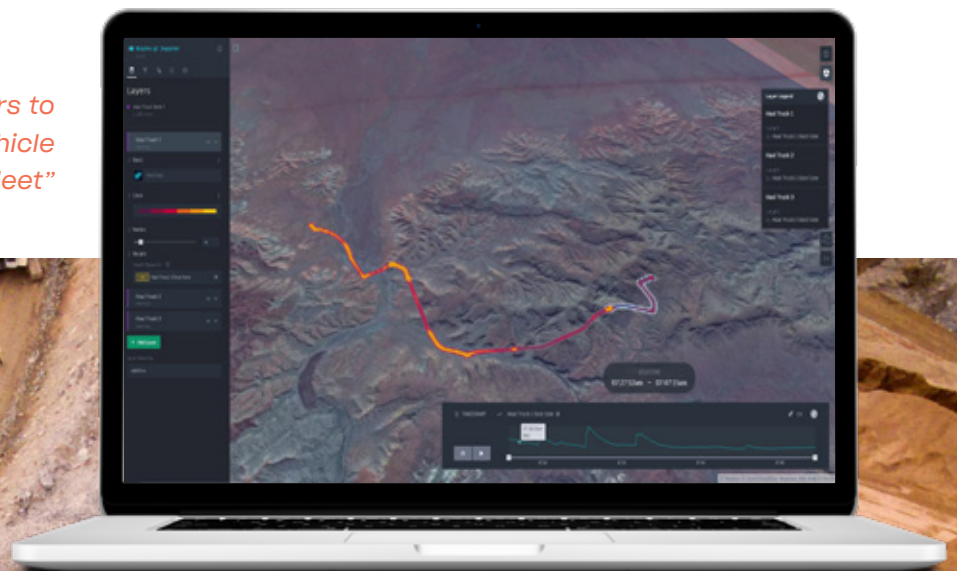
 Indicates optimal track conditions with acceptable dust emission levels. Acceptable road surface temperature and moisture levels.

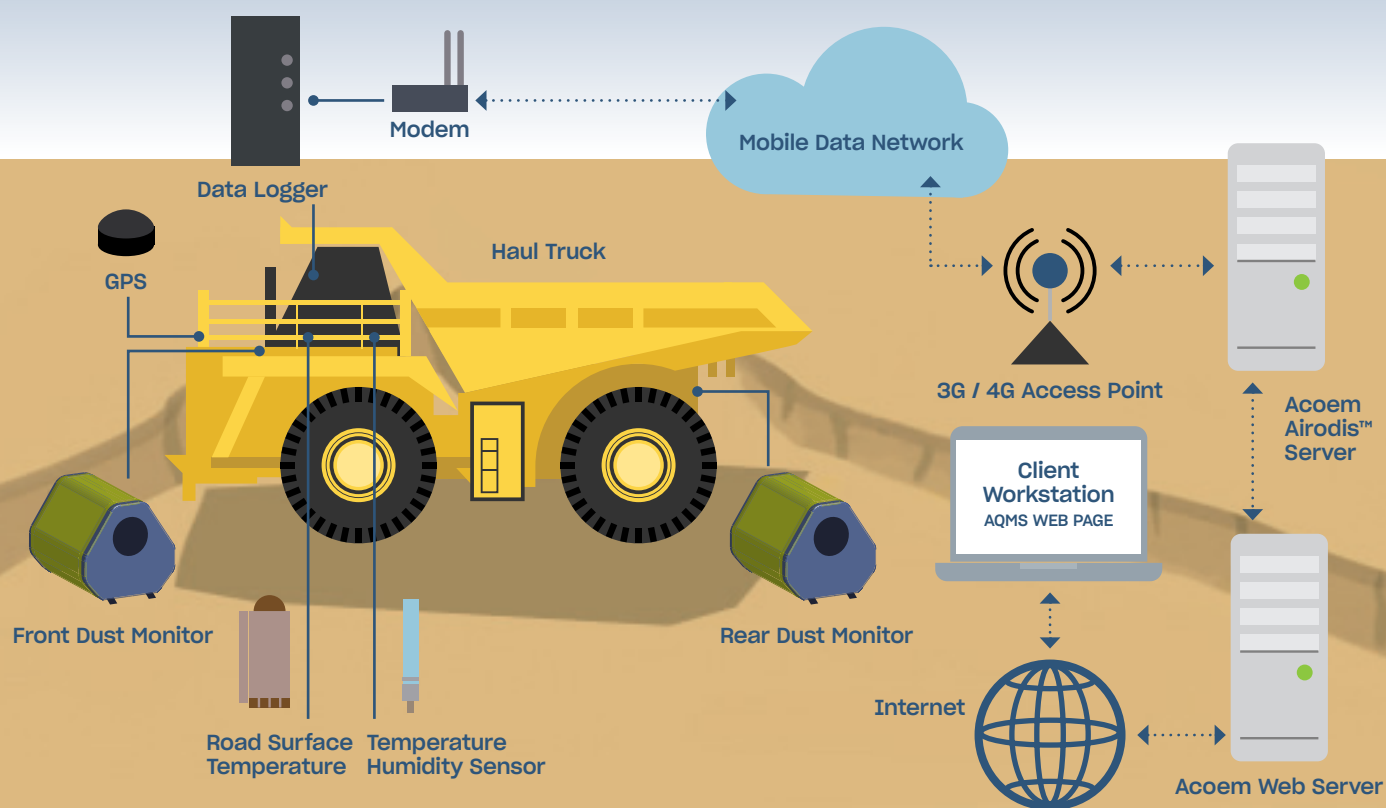
 Indicates marginal track conditions with an increase in dust emission levels. Intervention with water cooling / spraying may be required.

 Indicates extreme track conditions with potentially hazardous dust emission levels. Immediate intervention required.



Web interface allows operators to view routes and data for one vehicle or an entire fleet





DustRover™

Vehicle-mounted dust monitoring on the move for mining & urban applications

Key benefits of DustRover™

- Compact & lightweight
- Designed for easy 'set + forget' installation
- Robust stainless-steel enclosure
- Trending tool for accurate location & monitoring information
- Simple traffic light alert system
- Low maintenance
- Suitable for multiple mobile applications - mining, industrial, urban vehicles.

The DustRover™ system includes:

Dust monitor

Typically mounted at the rear of the vehicle, the robust monitor gives an indication of dust levels being generated by the vehicle for that particular road surface. A second, front monitor can be installed closer to the cabin to provide data that reflects ambient conditions.

Router / modem

A 3G / 4G cellular router is integrated into the DustRover™ system to enable the logged data to be uploaded to the Airodis™ software.

Road surface temperature sensor

An infra-red sensor mounted on the side of the vehicle provides accurate readings of road surface temperature every few seconds. This is particularly useful for detecting changes between wet and dry road conditions.

GPS

A GPS module is fitted as standard. The GPS antenna can be mounted on the vehicle antenna bracket or in some applications, secured to the logger enclosure.

Data logger

A proprietary data logger polls the sensors of the system every two seconds and retrieves measurements. The Airodis™ software then uploads and processes the data from the logger.

Ambient temperature and relative humidity sensor (optional)

Depending on your specific requirements, the DustRover™ can include an optional ambient temperature and relative humidity sensor. The sensor features a simple radiation screen for measuring in protected areas of the installation. Additional screen options are available if the sensor is located on a vehicle that is prone to water jets or spray impact.



*DustRover™ - Vehicle-mounted, mobile dust monitoring system
for mining, industrial & urban applications”*



DustRover™ specifications

Parameter	Device	Specification
Control enclosure	System	Dimensions: 300 mm x 200 mm x 80 mm Material: Stainless steel
Power	System	Nominal 2.0 A @ 24 VDC \pm 2.5 VDC provides an accurate indication of the dust concentration near the road surface. Other power options available: 12 VDC (current consumption based on system fitted with all options)
Sensor polling rate	Logger	2 seconds
Memory storage	Logger	5 days
Data transmission	Modem	Internal: 3G / 4G
Dust emissions	Monitor	Provision for up to two dust monitors on standard system. Range: 0 - 10,000 $\mu\text{g}/\text{m}^3$
Navigation / position	GPS	Units: Decimal degrees Location accuracy: 5 meters (with full satellite coverage) Other parameters measured: elevation, speed over ground (SOG), course over ground (COG), signal strength, number of satellites
Road temperature	IR Sensor	0 to 60 °C
Ambient temperature	HMP60	0 to 60 °C
Relative humidity	HMP60	0 to 100 %
Operating status	System	Logger: Data download status GPS: Signal quality indicator Dust monitor: Operating status Road surface temperature: Operating status
Data transmission	3G / 4G Modem	Data push to server: FTP or SFTP Transmissions rate: Data push every 10 seconds Data averaging period minimum: 2 seconds Options: 1) Upload to Airodis™, or 2) Data push to FTP
Operating temperature	System	- 10 °C to + 60 °C

About Acoem

At Acoem, we create environments of possibility — helping organisations find the right balance between progress and preservation — safeguarding businesses and assets, and maximising opportunities while conserving the planet's resources. We deliver unrivalled, interoperable AI-powered sensors and ecosystems that empower our customers to make enlightened decisions based on accurate information.

Together with 150 distributors, our 800+ employees work across 27 offices, 5 manufacturing facilities and 3 R&D centres in 11 countries, to provide trusted, holistic data solutions for customers worldwide.

Acoem links possibilities with protection.

For more information visit acoem.com



Acoem
1492 Ferntree Gully Road
Knoxfield VIC 3180
Melbourne Australia
+61 3 9730 7800 | email@acoem.com