

Polluted tunnels blown away!

Civil engineering in railway tunnels can be a hazardous undertaking. When you consider the dust and fumes being generated from the work undertaken, not to mention the frequently moving plant equipment within a confined space, you can appreciate these are places where you certainly need to keep your wits about you.

Hazards can come in many forms including exhaust fumes from diggers, bulldozers and locomotives; ballast dust from stone being removed or replaced; brake dust; fumes from welding, cutting and grinding.

To help in managing this problem Factair has developed the most extensive range of temporary ventilation and monitoring equipment on the market. Factair has been supplying tunnel ventilation and air quality monitoring services to the rail industry for over 13 years. In that time it has developed a comprehensive fleet of ventilation fans, which can be deployed in a variety of configurations, this is supported by a sophisticated range of instruments to monitor the air quality in the tunnel and respiratory protective equipment for individuals working in the dustiest applications.

Factair works closely with its clients, beginning with a site survey, progressing through to developing a risk assessment and method statement. Factair utilises sophisticated flow management software to establish the required airflow within the tunnel, allowing for obstructions such as locomotives and the air loss from ventilation shafts. This ensures that the ventilation scheme will be able to cater for the work being undertaken within the tunnel and the pollution from the vehicles operating within it. This is a vital part of the service and is designed so that at no point do those within the tunnel have to leave the worksite because pollution levels have risen above those stipulated in EH40.

Factair recently ventilated and monitored the atmospheric conditions within Abottscliffe and Shakespeare tunnels for Balfour Beatty Rail Infrastructure Services Ltd. Balfour's had a contract to renew the ballast stone and track within both tunnels. The tunnels were ventilated using the modular fan system which ensured there was no equipment on track to obstruct the movement of plant, locomotives or personnel. This was especially useful for the Shakespeare Tunnel project where



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each road has an individual tunnel portal but there are large cross-passages situated inside joining each tunnel. As a result access for plant equipment was at a premium and Factair designed a stacked system of fans which moves air high in the tunnel as well as at ground level successfully ventilated the tunnels whilst allowing for the airflow losses through the cross-passages.

When it comes to ventilating a railway tunnel there still is no substitute for horsepower and Factair has the most powerful temporary ventilation fans on the market. Factair's latest modular series fans each produce over 97,000 cubic metres an hour with a typical contract being supplied with in excess of half a million cubic metres an hour of air!

Wherever possible Factair deploys its fans adjacent to the tunnel portal in a number and formation sufficient to keep the whole column of air within the tunnel moving at a minimum of 80 metres per minute. This arrangement has a number of advantages over fans deployed locally within a tunnel. Firstly it avoids the possibility of the fumes and dust only being shifted along the tunnel but not out of it. Secondly it ensures there are no additional obstructions within the tunnel, keeping the workspace clear for the movement of plant and personnel.

During the possession Factair's engineers remain on site to ensure the equipment is operating continuously and regularly test air quality wherever there is a worksite within the tunnel. The pollutants tested as standard are carbon monoxide, carbon dioxide, nitrogen monoxide, nitrogen dioxide, airborne dust particles, volatile organic compounds, acetylene, hydrogen sulphide as well as the oxygen level.

During the site survey the best location for deployment of the fans is identified and wherever possible this will be in accordance with the prevailing wind conditions. Factair's fans, however, can be reversed in air flow direction without any re-deployment, should prevailing wind conditions change, which is always a possibility in the British Isles!

Also during the possession key members of staff such as Machine Operators, Machine Controllers and COSSs are individually issued gas detectors which monitor the main pollutants and also continuously datalog the readings. These results are compiled together with readings taken by Factair's engineers and supplied to the client as an environmental report at the end of the contact. This provides a useful health and safety record for the client.

For the dustiest applications such as controlling auto-ballasters or for staff with existing respiratory problems such as asthma, Factair also provides battery powered air fed hoods. These self contained units deliver filtered breathing air to the face of the user and feature an integral hard hat, hearing protection and eye protection.

Should you have a tunnel renewal project, where you suspect fumes and pollution could be a problem, then Factair is on hand to recommend a solution and provide a no obligation site survey and quotation. To contact them call 01473 746400.

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