

Bespoke ventilation system keeps workers in sewer safe

February 2018

The project

Ensuring operatives working on repairs to a sewage system were kept safe by removing contaminated air and minimising the risk from toxic and explosive gases

- Value of project: £400,000
- Length of Tunnel: 150 metres
- Duration of the project: five months

The challenge

Over and above the normal challenges of supplying air to confined spaces, the design of the ventilation needed to allow for the impact of changing weather conditions and rates of sewage flow.

There was also the danger that if fresh air was supplied into the confined space under too much force, it could disturb pockets of gases, and thereby increase the risk of explosions.

RVT was brought in to design and provide a ventilation system to protect workers conducting an overhaul of a sewage system in Yorkshire.

The work was being carried out in a live -flow sewer chamber, where discharges of fats and oils were blocking siphons. The plan was to unblock the siphons by removing an existing walkway and other steelwork and installing a smaller, new walkway to prevent further obstructions.



As well as being an unpleasant environment to work in, real dangers to health existed in the form of noxious, and even explosive, gases. It was vital to provide a supply of good quality air so that the work could continue safely.

The correct balance also had to be found between applying enough pressure to remove contaminants from the siphon, while being careful not to apply so much forced air in that it could disturb pockets of gases and create the risk of gas explosions.

Benefits of the RVT solution

- The pressure generated by the fan ensured a flow of fresh air back through the whole of the working area, removing stale air and toxic fumes
- Reliable supply of fresh air for workers underground flexible ducting ensured the air could be routed through to the furthest end of the working area

“ RVT took all the details, went away and came back with the correct solution, backed up by detailed calculations, to select the most reliable safety equipment to suit this specific task. As always, they provided a professional solution and quality kit we could rely on.”

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The solution

RVT considered all the danger factors and designed a tailor-made plan of action which centred on the installation of a powerful ventilation fan to replace pungent, stagnant and contaminated air with a welcome flow of fresh air. They gave careful consideration to the dynamics and dimensions of the sewage tunnel itself, measuring its exact distance and size, in order to control the air flow effectively and deliver air at the correct pressure. This would ensure workers at the site worked in a healthy environment, free from unpleasant and potentially harmful contamination from toxic gases, as well as removing the risk of explosions. Gas levels were monitored to ensure the ventilation was working.



The 450 CF (Centrifugal Fan) chosen to drive the air is capable of generating airflow of 20,500m³/hr so was ideal to force a supply of fresh air through ducting into the furthest end of the sewer tunnel. In addition, the positive pressure created by the fan ensured contaminated air was continuously replaced.