

## High Speed 1 and St Pancras International Ventilation and Smoke Extract

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Press release from: [Senior Hargreaves](#)

Agency: **Ainsworth Maguire**

Smoke extract and general ventilation specialist, Senior Hargreaves, has completed two contracts, with a value exceeding £8 million, for London and Continental Railways. The ventilation and fire control projects at the St Pancras International Station and the tunnels on the High Speed 1 (HS1) rail link were completed on time and to budget, despite technical challenges requiring innovative engineering approaches.

Commenting on the developments, Phil Doyle, Senior Hargreaves general manager of contracts said, "Many prestige office, government and leisure buildings in London depend on Senior Hargreaves ductwork for daily comfort and importantly for fire protection. St Pancras International and the HS1 tunnels are two of the most unusual and challenging projects we have undertaken so far."

St Pancras International has been redeveloped as a major rail hub, linking UK domestic and continental rail services. Six of the 15 platforms are now the new home for Eurostar services to the continent. Four will be for UK midland services and three for high speed domestic services to Kent. Below ground there will be two further platforms for cross London services.

The European platforms are separated from the domestic services and have the same security, immigration, passport control and customers facilities as any major port or airport. In addition, St Pancras International has a full range of shops, catering and hospitality outlets.

Space limitations required many of the train-side facilities to be installed below the platform level. Fortunately, the Victorian engineers left large voids beneath the platforms. These originally housed a beer vault in a brick arched undercroft. This is the area where security and customs offices, shops and other customer facilities are located. To ventilate these below platform areas for daily comfort and emergency smoke removal, Senior Hargreaves have installed a network of above ceiling ductwork. This is connected by vertical ducts to the main extract ducts located in voids under the floor.

Senior Hargreaves HFD/SID fire ductwork was used in many areas in this network. This dual purpose ductwork meets both day to day ventilation and emergency needs. In a fire situation this special ductwork construction enables smoke and hot gasses to be transported safely out of the building without fume leakage or premature collapse. This is important as it increases the window of time for the emergency services to organise safe evacuation.

A radically different approach to ventilation was required in the three double bore tunnels on HS1. The two deep tunnels are ventilated by vertical shafts. These house heavy duty, fire resistant ductwork with temperature resistant, powerful high volume reversible fans. These shafts can be used to inject fresh air into the tunnels or extract stale air. If there is a fire or other incident, the shafts can be used to extract smoke or fumes close to the source. Alternatively they can introduce fresh air remotely to give airflow or pressurisation to protect passenger escape routes and give safer access for fire and other emergency services.

In tunnels that run under the Thames, where the installation of shafts was impractical, a system of injectors has been installed at each tunnel entrance. These introduce air at high velocity via a slot in the roof of the tunnel known as a Saccardo nozzle. The pattern of deployment will depend on the incident. As with the deep tunnels, the principle is that in an emergency the adjoining tunnel, which is cross linked by a series of protected passages, will become the escape route and fans are used to give pressurisation to exclude smoke and fume from this area.

### More Information

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High/low resolution images are on the web at [ainsmag.co.uk/ha166/4454ha1a.htm](http://ainsmag.co.uk/ha166/4454ha1a.htm)

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Senior Hargreaves is the UK's largest ductwork manufacturer. They produce over 4,000 tonnes of HVAC ductwork each year for a diverse range of construction applications. The HFD range of fully tested fire resistant ductwork is designed for smoke extract and ventilation in fire engineering projects, where safe evacuation of people is vital.

[You can find this press release here](#)