



case study



case study 06

## Halifax Fans put dust in a spin

Despite the recent fashion for ‘vortex’ vacuum cleaners, the principle of the centrifuge applied to air filtration is far from novel but is highly effective. Put simply, if air containing particulates is spun in a cylinder, the heavier particles will be flung off to the periphery and can be bled off and expelled while the cleaned air passes through the outlet in the centre of the other end of the tube.

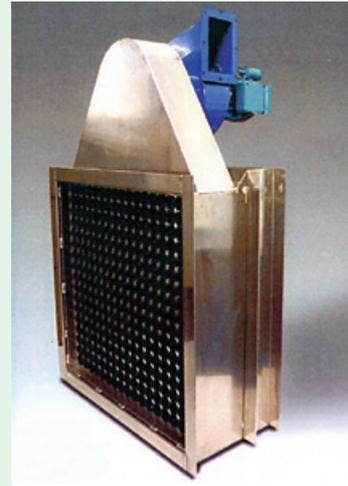
Clarcor UK Limited achieves 99% extraction of particles as small as 10 microns with their Tempest Spin Tube Inertial filters. The cyclone tube assembly itself is fabricated from polypropylene or from a compliant fire resistant material where the application demands it, such as for the Euro Tunnel locomotives which are fitted with Tempest filters.

The tube is only 36mm diameter, and a battery of 200 to 300 parallel tubes is sandwiched between baffle plates, creating a sealed interior. The high speed air enters the tube at up to 10m/s from the front of the filter bank, either rammed by forward movement or drawn in by an induced draft fan. It passes over angled vanes at the front of the tube, and is spun, creating a vortex within the tube. Towards the other end, the bleed outlet at the periphery bypasses the central clean air outlet and the contaminants are bled into the interior of the sandwich and passed out through the fan, while the purified central stream passes through the centre cone of the cylinder, forward of the bleed vent, on the far side of the sandwich. The

benefits of this system are that airflow is constant regardless of dust concentration, and the whole assembly is highly reliable and maintenance free.

For their dust handling fans, Clarcor relies on a Halifax backward inclined Mistral impeller. This style of fan was selected for Clarcor by the engineers at Halifax Fan as it offers superior self cleaning properties, essential since the fans handle all the filtered dust particulates, combined with high efficiency and reliability in this arduous environment.

As Clarcor supplies their filters worldwide, the reliability of this, the only moving part of the assembly, is critical. According to Mike Ebo of Clarcor, “We use Halifax because they have consistently provided us with excellent service at the right price. We have a long history with Halifax, and they have always been able to match our requirements for bespoke fans and motors to meet the demanding standards applying in each of our markets, so they were the natural partner for Clarco to select.”



Halifax ID fan on Clarcor filter battery

### Application benefits

- Backwards inclined impellers with superior self-cleaning properties
- Bespoke design to customer specification
- High efficiency and reliability in arduous operating environment
- Halifax cited as “natural partner” for fans



Euro Tunnel locomotives are fitted with Tempest filters.

### Halifax Fan Limited

Mistral Works, Unit 11, Brookfoot Business Park, Elland Road, Brighouse, West Yorkshire, HD6 2SD, UK  
T: +44 (0)1484 475123 F: +44 (0)1484 475122 E: sales@halifax-fan.co.uk

### Halifax-Fan (Shenzhen) Co Ltd

1 & 2F, No. 4 Building, Creative Industrial Park, Shang Xia Wei, ShaJing, ShenZhen, GuangDong Province, China  
Telephone No. 0086 755 8149 0059 Fax No. 0086 755 8149 0019

[www.halifax-fan.co.uk](http://www.halifax-fan.co.uk)

Produced by Kirk-MarCom Ltd e: eddie@kirk-marcom.com