

Global Leaders in Tunnel Ventilation





Fläkt Woods - The Group



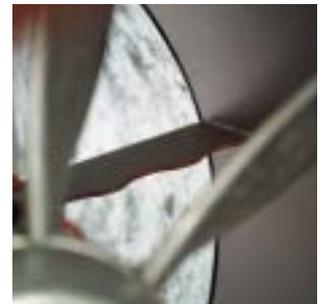
Leaders in Air Movement

Fläkt Woods is the industry leader in air movement technology, providing innovative solutions worldwide. Our extensive knowledge of design and applications is based on over 90 years of experience in tunnels, buildings, industry and original equipment manufacturers. Fläkt Woods' global coverage reaches over 100 countries and is supported by an extensive distribution network.

Our expertise in tunnel ventilation applications covers road & rail tunnels, metros, tunnel construction and wind tunnels. Fläkt Woods' products have been successfully used in underground projects throughout the world and our Axijet and Axicent product ranges are unrivalled in their technology, innovation and efficiency.



AXIJET - jet fan range



Performance

The AXIJET jet fan range has been designed and developed using the latest design tools in aerodynamics and acoustics. Offering unsurpassed performance in low sound power and maximum efficiency, AXIJET fans have been thoroughly tested using ISO 5801 & ISO 13350 methods.

Products

The AXIJET is available either as a high efficiency unidirectional fan, or as a truly reversible fan with equal airflow and thrust in each direction.

Reversibility

The truly reversible fans provide 100% reversibility in thrust.

Efficiency

AXIJET fans are designed for high efficiency and thrust. A wide range of diameters is offered allowing the optimum size fan to be selected for each project.

Quality

Engineered to the highest standards, our design and manufacturing systems also carry BS EN ISO 9001.94 accreditation. AXIJET fans have a two year ex-works warranty as standard.

Reliability

Our experience gained from installations throughout the world assures our reliability.

Product life cost

AXIJET combines high efficiency, low operating costs and a low maintenance requirement to ensure a low life cycle cost.

Designed for Installation

The AXIJET is designed for ease of installation. The fan is delivered as a complete unit allowing quick and easy installation in the tunnel.



AXICENT - axial tunnel fan range

Performance

The AXICENT range of tunnel fans have been designed and developed using the latest design tools for aerodynamics and acoustics. Tested in accordance with ISO 5801 and ISO 5136 giving guaranteed performance.

Products

The AXICENT is available as either a high efficiency unidirectional fan or fully reversible fan with the same performance in both directions of flow. AXICENT Fans are available in horizontal and vertical arrangement.

Reversibility

The truly reversible AXICENT fans have the same performance in both directions of flow.

Efficiency

AXICENT Fans are designed for high efficiency in both directions of flow. A wide range of diameters is offered allowing the optimum size fan to be selected.

Quality

Engineered to the highest standards our design and manufacturing systems also carry BS EN ISO 9001:2015 accreditation. AXICENT fans have a 2 year ex-works warranty as standard.

Reliability

Our experience gained from installations throughout the world assures our reliability.



Product Life Cost

AXICENT combines high efficiency, low operating costs and a low maintenance requirement to ensure a low life cycle cost.

Designed for Installation

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Applications



Tunnel and Underground Construction

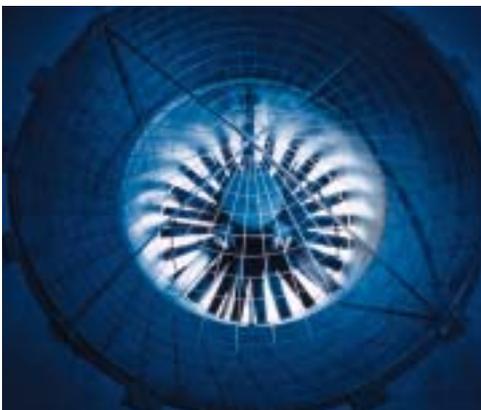
Fläkt Woods products provide safe ventilation during the construction of tunnels. Our underground ventilation product range provides fresh air and removes pollution, heat, humidity and dust caused by blasting.

Road Tunnels

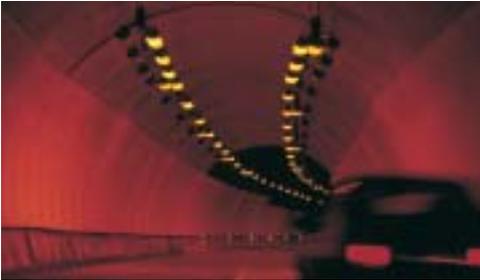
Fläkt Woods' AXIJET and AXICENT fans are ideal for the efficient ventilation and removal of pollution and smoke in all types of road tunnels.

Metro and Underground Railways

High levels of heat are generated by trains and electrical equipment and Fläkt Woods' AXIJET and AXICENT fans are used throughout the world to effectively ventilate metros. Heat removal, fire smoke control and ventilation are just some of the features provide by our innovative fans.



Applications



Ventilation

AXIJET and AXICENT fans are designed for successful underground ventilation and provide safe environments, maintain acceptable temperatures, extract pollution and heat and help to remove fire smoke to enable safe evacuation.

Wind Tunnels

Using our extensive knowledge and experience in aerodynamics, acoustics and mechanical design, Fläkt Woods is an ideal partner for wind tunnel applications. Fläkt Woods has fans for aeroacoustic, climatic, aerodynamic or other types of wind tunnels, regardless whether the impeller diameter is 500 mm or 8 metres.

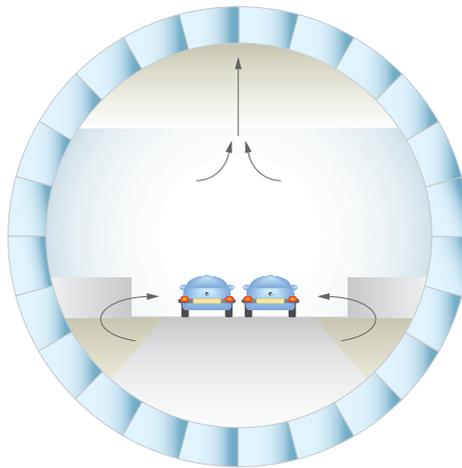


Tunnel Ventilation Methods

There are a number of different types of ventilation methods for tunnels and these can either be used independently or in combination. Fläkt Woods can advise you in all aspects of tunnel ventilation.

Fully Transverse System

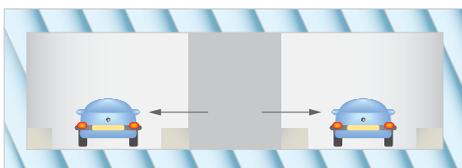
A fully transverse system supplies fresh air from a low level, normally from a duct underneath the roadway. The hot, polluted air rises and is extracted at a high level normally through a ducted system above the roadway. This is the most exact system generally requiring large, fixed pitch, AXICENT fans in parallel.



FULLY TRANSVERSE

Semi Transverse System

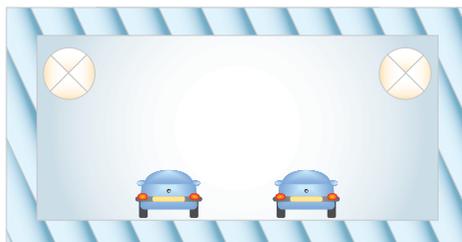
This system is similar to the fully transverse system in the supply and extraction of air and is used for long, congested two-way tunnels. Semi-transverse systems rely on longitudinal air movement along the tunnel and require a higher ventilation rate.



SEMI-TRANSVERSE (supply)

Longitudinal Ventilation Systems

The simplest solution for tunnels as air movement is created along the length of the tunnel by large fans, jet fans or a combination of the two. The air can enter at one portal and leave at another, or be supplied or extracted at points within the tunnel.



LONGITUDINAL

Tunnel Research Centres



Expertise in Tunnels and Metros

Our Tunnel Centres are located at Växjö, Sweden and Colchester, England where we are constantly developing and testing new ideas and materials for the tunnel fans of the future. At these extensive laboratories we use state of the art computer modeling techniques to improve the performance of our fans in every area from high efficiency dynamics to low sound power acoustics.

This experience and expertise is also available to our customers. The Tunnel Centres are the strongest sources of up to date information for specifiers in underground ventilation.



Tunnel Projects

Stockholm South Link Road

The Stockholm south link road has several tunnels totalling 16,000 metres in length. Fläkt Woods Group has delivered 168 tunnel ventilation fans of different sizes providing good air quality and ensuring control of smoke in the event of a tunnel fire.



Bergen Light Rail Tunnel

The Bergen Tunnel Project was a rehabilitation and ventilation update of a tunnel constructed early in the 20th century that presented some unique challenges with respect to space limitations and fan performance. FlaktWoods responded with a new deflection vane profile for the project that optimizes deflection, thrust and low noise generation. The resulting design reduced thrust loss associated with the vanes by 50% compared to single thickness plates and did not add significantly to the sound power level of the jet fan.



Huang Tuling Tunnel in Zhejiang Province

Five Axijet fans positioned at the new, enlarged profile, tunnel entrance. The original tunnel relied upon a natural ventilation system but ever increasing traffic volume required extra ventilation. The existing tunnel profile was too small to install fans and a new tunnel entrance with increased height was built to incorporate 5 Jet Fans.



Shan Xi Yan Men Guan Tunnel in Shan Xi Province - China

The 5.2 km long twin tube tunnel is the longest road tunnel in operation in China today. The tunnel is ventilated by 18 Truly Reversible Jet Fans 1120 mm dia and 12 axial fans with diameters up to 2.8 m dia, supplied by the Fläkt Woods Group.



Channel Tunnel Fans

The ventilation system of the Channel Tunnel consists of two individual systems – the normal ventilation system (NVS) and the supplementary ventilation system (SVS). Each system has two axial fans on the English side and two on the French side. All fans are fully reversible with controllable pitch in motion.

The NVS Fans are 2m dia designed for 80m³/s and the SVS Fans 4m dia designed for 300m³/s.



Jubilee Line

The ventilation engineering and application expertise of Fläkt Woods enabled a very effective and proactive input into the success that is the JLE.

The conception, design, manufacture and implementation of this project demonstrated the benefits to end clients of interactive partnering between world class contractors, consultants and equipment suppliers such as Fläkt Woods.



We Bring Air to Life



Fläkt Woods Group provides a full range of products and solutions for buildings ventilation, air treatment and industrial air movement

Contact details for Tunnel Ventilation

Fläkt Woods AB
Tunnel Research Centre
SE-351 87 Växjö
Sweden
Tel: +46 (0) 470 87800
Fax: +46 (0) 470 86558

Fläkt Woods Limited
Tufnell Way
Colchester, CO4 5AR
United Kingdom
Tel: + 44 (0) 1206 544122
Fax: + 44 (0) 1206 574434

Fläkt Woods Fan Group
PO Box 338
Niles, Michigan 49120
USA
Tel: + 1 (269) 683-1150
Fax: + 1 (269) 683-2622

Sales Offices available World Wide - See our website for details

www.flaktwoods.com

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