

VOKES

Oil Mist Eliminators



A McLeod Russel Company

Filtration Technology

Oil Mist Eliminator Systems

INTRODUCTION

Large volumes of lubricating oil are necessary to cool and protect the internal working surfaces of rotating machinery. These conditions can create an oil mist that has traditionally been vented to atmosphere.

VOKES Oil Mist Eliminators are designed to capture this mist to help meet increasingly demanding environmental and safety legislation.

Failure to deal with oil mist can in worst cases represent a significant explosion hazard or, at the very least, the oil can condense on surfaces to subsequently attract dirt.

Applications include:-

Diesel engines
Crankcase breathers

Gas turbines
Gland vents, Lube oil tank vents

Steam turbines
Lube oil tank vents

Compressors
Glands

Gearboxes
Vents

WHAT IS OIL MIST?

Oil within a machine is subjected to high temperatures and pressures during operation, which can result in the creation of oil mist. The mist typically consists of oil droplets ranging in size from 10µm down to 0.03µm and when vented into the atmosphere is normally visible as a blue-white smoke.

VOKES has researched the factors influencing oil mist emissions with the aim of satisfying the ever evolving and tightening environmental legislation that frequently refers to 'no visible emissions'. We have developed an efficient and cost effective solution to oil mist control.

VOKES Oil Mist Eliminators are available for airflow rates from 12m³/h (7cfm) to 3000m³/h (1750 cfm) as either fan assisted or naturally vented units. Selecting which type depends on whether a back pressure is acceptable within the machine.

PRINCIPLES OF OIL MIST ELIMINATION

VOKES Oil Mist Eliminator cartridges remove entrained oil by a coalescing process. The cartridge contains an oleophilic (oil attracting) media which is designed to maximise oil removal while minimising differential pressure.

Droplet Formation and Breakdown

The contaminated air stream is directed through specially developed VOKES cartridges, which consist of multiple layers of dense coalescing media. The oil attracting characteristics of the media ensures that oil droplets passing through the cartridge are attracted to the fine fibres. The depth of the media ensures that each oil droplet will find a fibre, even though the space between the fibres may be larger than the diameter of the oil droplet itself. Further droplets attach themselves to the fibres, joining together to form larger droplets with the continued removal of oil from the air stream. Eventually, either due to the force of gravity or the velocity of the air stream, these larger droplets breakaway, drain through the coalescer and eventually accumulate as free oil at the bottom of the eliminator.

Cartridge Saturation and Equilibrium

During operation oil mist eliminator cartridges reach a state of saturation or equilibrium. This is the point at which the rate of oil removed from the air stream equals the rate at which it is drained away. Saturation is the normal operating condition and will continue until the cartridge is blocked by particulate contaminants released by the machine into the oil mist stream.



MMF850



MM3000



MMF12DC



VOKES RANGE OF OIL MIST ELIMINATORS

VOKES Fan Assisted Oil Mist Eliminators

compensate for the differential pressure across the oil mist eliminator cartridge and can create a small depression within the machine if required. This eliminates unwanted pressurisation of the lubricating oil system itself. Fan assisted units are typically utilised for gas turbine lubricating systems and diesel engine crankcase breather applications. VOKES has developed an automatic control unit for these critical applications where it is essential to maintain a constant pressure within the oil system. The unit continually monitors system pressure and automatically adjusts the airflow to compensate immediately when there is a change in conditions.

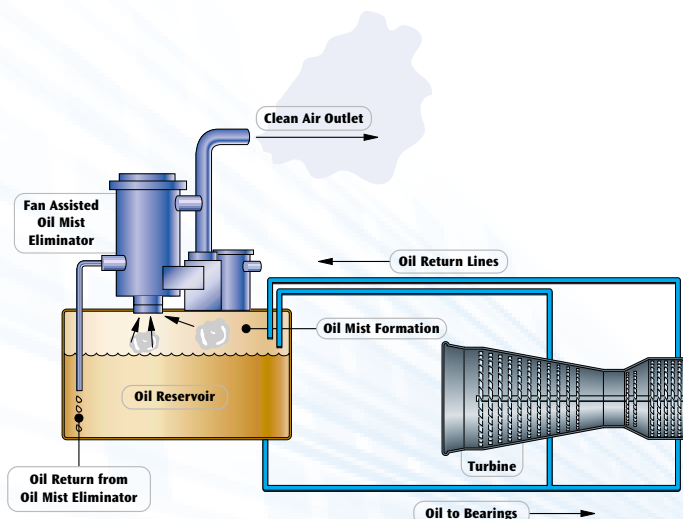
VOKES Naturally Vented Oil Mist Eliminators are suitable for retrofit applications where fan assistance is already provided or, more unusually, where machines can operate with a positive back pressure.

Rated Air Flow (m ³ /hr@82°C)	Naturally Vented Oil Mist Eliminators		Fan Assisted Oil Mist Eliminators	
	Model	Part Number	Model	Part Number
12	-	-	MMF12	A6373024
			MMF12DC	A6373025
50	-	-	MMF50	A6371228
100	MM100	A6371211	MMF100	A6371218
250	MM250	A6371212	MMF250	A6371219
500	MM500	A6371213	MMF500	A6371220
850	MM850	A6371214	MMF850	A6371221
1275	MM1275	A6371215	MMF1275	A6371222
1700	MM1700	A6371216	MMF1700	A6371223
3000	MM3000	A6371217	MMF3000	A6371224

The sizing of VOKES Oil Mist Eliminators is based on the air flow through the module. The required air flow for an application can be calculated by measuring the air velocity through a tube of known diameter exiting from the outlet to which the Oil Mist Eliminator is to be connected. For advice and assistance in selection and specification please contact the VOKES Fuel and Lube Sales Team.



MMF100



TYPICAL FAN ASSISTED APPLICATION

SERVICING AND CARTRIDGE REPLACEMENT

VOKES Oil Mist Eliminators have been designed to be quick and easy to service, with the cartridge(s) readily accessible for changing.

VOKES Oil Mist Eliminator cartridges are capable of giving an extended service life, which is only limited by particulate contaminants released by the machine into the airflow. Differential pressure gradually increases until a predetermined level is reached as particulates accumulate within the cartridges.

QUALITY BY DESIGN

Quality assessed to ISO9001, covering all aspects of design, manufacture and quality control, VOKES Limited utilises its laboratory and development facilities at Henley Park to constantly evaluate and develop its range of Oil Mist Elimination products and systems.



BENEFITS OF EFFICIENT CONTROL

The need to vent lubricating oil systems to the atmosphere and the resulting plume of oil mist has long been recognised as a source of pollution. Although in the past it has been acceptable to simply control oil mist, legislation in many countries now defines control as ‘no visible emissions’. While recognising the need to meet Environmental Protection & Safety legislation, the efficient control of oil mist can also reduce operating costs and improve the reliability of equipment.

‘No Visible Emissions’

To meet the objective of ‘no visible emissions’ all VOKES Oil Mist Eliminator cartridges are designed to a high performance specification with an initial efficiency of 99.98%@0.3µm.

Environmental Legislation

Increasingly stringent environmental legislation has come about as a result of public concern over the effects of emissions from industrial sources. VOKES Oil Mist Eliminators remove potential health hazards, minimise unpleasant odours and generally improve the quality of the environment.

Health & Safety Legislation

The control of oil mist emissions with a VOKES Oil Mist Eliminator is good health and safety practice, avoiding the accumulation of oil deposits inside and outside the installation. Oil deposits are a potential fire risk, especially adjacent to exhaust pipes and unprotected electrical equipment, and a hazard to people using walkways. Mist generated from a flammable oil is itself an explosion hazard.

Efficient Operation & Cost Savings

The operating efficiency of diesel engines and turbines is reduced when oil mist is sucked back into the air intakes. This can block the air filters and coat the internal surfaces with oil. A VOKES Oil Mist Eliminator improves the air quality in the vicinity of the air intake, which in turn helps to maintain power output and reduces the frequency of air filter replacement as a result of oil fouling.

Thousands of litres of oil can be lost from an installation over a period of a year due to oil mist emissions. The cost of replacement oil can be greatly reduced by returning the recovered oil back to the system.

A VOKES Oil Mist Eliminator helps to reduce general maintenance costs by recovering oil, which would otherwise cause unsightly staining on buildings and in engine rooms. The absence of oil mist also helps to improve the reliability of electrical and electronic equipment, by avoiding the accumulation of a fine oil film on critical components.

Selecting a VOKES Oil Mist Eliminator reduces the capital cost of an installation by minimising the need for complex venting and pipework installations.

With in excess of 70 years experience in filtration and separation technologies, the extensive range of high quality VOKES products and systems are proven in diverse commercial, industrial and process applications throughout the world.

VOKES systems service four main areas:-

Fuel and Lube Filtration

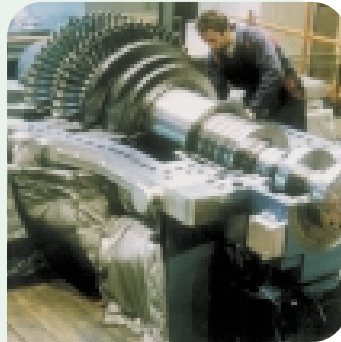
Liquid Filter Coalescers

Oil Mist Eliminators

Electrical Insulating Fluid Treatment

VOKES is quality assessed to ISO9001 covering all aspects of design manufacture and quality control. Utilising state of the art technology, VOKES carries out continuous testing and improvement of media and filter construction at Henley Park, to ensure that VOKES products and systems will continue to meet and exceed the future filtration standards demanded of them.

Henley Park is a self contained site in rural Surrey close to Guildford in England. It is the centre for research, manufacture and sales for VOKES products and systems with dedicated research and development, laboratory and cleanroom facilities.



Fuel and Lubricating Oil Filtration

Filtration systems designed to protect critical equipment, including diesel engines, gas turbines, gearboxes, steam turbines, pumps and compressors as utilised by the power generation, marine and locomotive industries.

Liquid Coalescer Modules

VOKES coalescer modules ensure high efficiency, low cost contaminant removal and water content reduction in the fuel and lubricating oils utilised by the power generation, marine and locomotive industries.



Oil Mist Eliminator Modules

VOKES Oil Mist Eliminators are capable of removing the visible oil mist emitted from the breathers on the lubrication systems of diesel engines, gas turbines, gearboxes, steam turbines, pumps and compressors.

Insulating Fluid Treatment

VOKES Stream-Line equipment is capable of rejuvenating insulating fluid through an integrated process of filtration, vacuum degassing, dehydration and deacidification. This ensures that the transformers and switchgear, utilised by power generators and distributors, operate at optimum performance levels.



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The company reserves the right to change specifications without notice. Freedom from patent restrictions must not be assumed.

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