



AEROSOL SEPARATORS

EFFICIENT TECHNOLOGY AGAINST DANGEROUS CONTAMINATED AIR

Mechanical and coalescer separation for cleaning
cooling lubricant mist in machine tools



Filtration Group®
Industrial

TOGETHER WE ARE MAKING THE WORLD



safer

as our aerosol separators prevent over 99% of metal particles and aerosols from entering the ambient air, where they become a danger to humans



healthier

as our filter systems reduce residual aerosol concentration down to 0.1 mg/m^3 and thus adhere to limit values and in some cases even significantly undercut the legal regulations for air pollution control



more productive

as our solutions for the separation of cooling lubricant mist in the long term is to protect the performance of expensive machines plus other capital goods with low maintenance costs with a service life of up to 2 years

TWO METHODS, ONE AIM: CLEAN AIR

COOLING LUBRICANTS USED IN MACHINING AND METAL WORKING PROCESSES

generate oil mist when exposed to heat and high pressure. In order to comply with statutory requirements for maximum workplace concentration (MAK) and workplace limits (AGW), to protect expensive systems and to provide a permanently high performance level of the machines, the cooling lubricant mist must be extracted and cleaned directly from the machine's work area.

There are five different methods to extract and clean the cooling lubricant mist. Combining their advantages, the mechanical separation and the coalescence-based principle provide the best results. Allowing a specific selection within the two systems, Filtration Group's product portfolio contains the perfect solution concerning application, space, amount of raw gas and composition of the cooling lubricant.



ADVANTAGES AT A GLANCE:

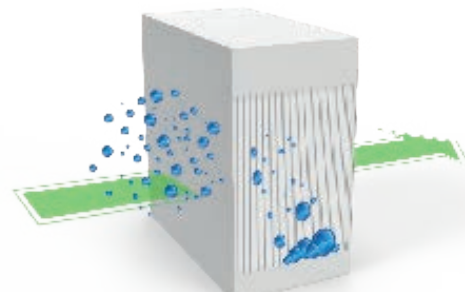
- low investment costs
- low energy requirement
- good separation efficiency at low raw gas concentration
- simple installation and commissioning
- insensitivity against coarse contamination

MECHANICAL SEPARATION:

Aerosol separators of the ASL series use mechanical separation to clean the air which is contaminated with cooling lubricant mist. With the help of a fan the raw gas is extracted from inside the tooling machine. Flowing through the separator, the air passes various filter stages, where all particles and aerosols contained in the air are separated one after the other - from coarse metal chips or dirt particles, which are already separated by the first pre-filter stage, to fine aerosols up to a size of 6 µm, which collect in the 19-layer Miofilter structure of the second pre-filter stage and sink downwards. The finest aerosols are separated in the main filter stage. The aerosols separated from the raw gas collect as droplets at the bottom of the unit and flow through the drain hose into a container. For optical maintenance the manometer indicates the differential pressure across the filter element.

COALESCENCE SEPARATION:

In the separators of the LGA series, the extracted raw gas passes a fiberglass fleece. Thereby the cooling lubricant aerosols attach to the fibers. On their way through the glass fiber structure, the microscopically small aerosols form larger droplets. This process is called coalescence. The air flow transports the droplets to the outside of the filter where gravity forces them to sink down along a drainage fleece to the bottom of the housing. In this way, the filter element cleans itself and contributes significantly to prolonging the service life of the aerosol separator. Due to its excellent separation performance the coalescer process is an ecologically and economically reasonable investment: The air blown out of the system through a silencer is so clean that post-filtration with a High Efficiency Particulate Airfilter (HEPA) is not necessary.



ADVANTAGES AT A GLANCE:

- excellent separation efficiency even at high raw gas concentration
- low maintenance requirements, long service life
- no HEPA secondary filter stage necessary for recirculation operation
- easy and quick replacement of the filter element



ONE SHOP, ONE STOP

DELIVERY INCLUDES: OUR DRIVE TO INSPIRE YOU

Filtration Group's service concept aims to support a company's process reliability, operational reliability and productivity. Maximum efficiency filter systems and separation solutions make a significant contribution to increasing the performance and service life of expensive machines while at the same time meeting all environmental and occupational safety requirements.



GOAL-ORIENTED CONSULTING

Decades of experience and technical expertise in every area of application guarantee technical advice to the point. A comprehensive analysis of the needs and requirements is the basis for recommending the optimal filter solution. This can also lead to a replacement or supplementation of existing system depending on the case diagnosis.



RELIABLE MAINTENANCE AND SPARE PARTS DELIVERY

A sophisticated logistics concept and a dense network of service teams ensure fast and professional maintenance and repair of filter systems and components. The service package also includes the processing of complaints on site. Additional security is provided by tailor-made maintenance contracts that ensure optimum performance of the filter systems.



PROFESSIONAL INSTALLATION AND OPERATING INSTRUCTIONS

Qualified service staff and excellent time management ensure that the filter and separation systems are set up, connected and integrated into the existing process sequence in a timely and expert manner. Filtration Group offers hands-on training on proper handling and function control to maximize the efficiency of filter systems.



COMPREHENSIVE LABORATORY AND TECHNICAL ANALYSES

Technical knowledge, practical experience and appropriate equipment in the laboratory and application engineering enable detailed chemical and technical analyses which deliver important measurement results on key filtration parameters. Above all, they serve as the basis for optimum adaptation of the filter system to specific customer requirements and legal standards.

REFERENCES

GOOD SOLUTIONS

” Convertible modular design as key to success



So-called multi-spindle machining centers combine several machining processes in one machine. During milling and drilling, a water-miscible cooling lubricant used at the individual machining stations is extracted directly at the machine and processed in a filter system.

Filtration Group supplied ASL filter systems in all four sizes for double-, triple- and quadruple-staffed spindler plants, with the processing chambers having a volume between 1.5 m³ and 4.5 m³. At the same time, the ASLs were installed in machines where only minimal amounts of machining oil were used for cooling and lubrication. The aerosol concentration in this case is rather low, whereby the exhaust air can also contain components from burned oil extracted as smoke. The customer, an East German machine tool manufacturer with a long tradition, welcomed the modular design and uncomplicated installation of the Filtration Group systems, which are supplied as standard with the appropriate connections. The customer also benefited from the possibility of using different filter cartridges, as this in turn enabled him to respond more easily to the individual customer demands without having to adapt his own machine design. He also mentioned the “good price-performance ratio” as a further positive point.

” One investment, multiple profits

In the manufacture of injection pumps for diesel engines, the individual parts are manufactured on various machining centers. Oil is used as coolant and lubricant for the milling machines, which is atomized at high speeds. LGA aerosol separators from Filtration Group extract this oil mist from the machine and reliably process air and oil.

The customer, a well-known manufacturer from Homburg, had previously chosen electrostatic extraction systems which had extracted the aerosols at the machining centers but had not separated them sufficiently well. Filtration Group's new filter solution helped: To prevent the harmful oil mist from spreading inside the hall, Filtration Group service technicians installed LGA aerosol separators on several machining centers. The technical service included the piping and control integration of the filter systems. After commissioning, the advantages of the separation method based on the coalescer principle quickly became apparent: The breathing air in the factory hall was clean, thanks to the complete recovery of the separated oil, consumption fell and the machines no longer had to be cleaned. This in turn had a positive effect on productivity: the machines had to be switched off much less frequently, and the absence of oil mist also increased performance and service life. The investment in Filtration Group's LGA separators also paid off in the long term due to the extension of maintenance intervals from 3 to 12 months.



A PERFECT EXAMPLE OF STRENGTH AND ENDURANCE

OIL AEROSOL SEPARATORS OF THE LGA-SERIES pay off quickly because they are extremely efficient, achieve top results over the long term even in continuous operation and rarely require maintenance. The coalescer process used in Filtration Group's LGA systems guarantees separation efficiencies of 99 % for particles larger than 0.5 µm in diameter and even 100 percent for particles larger than 0.7 µm in diameter. This not only ensures safe compliance with all limit values of the Federal Emission and Occupational Health and Safety Acts, but also highly contributes to operational safety.

All units of this series are equipped with a flow sensor and a frequency converter to ensure constant extraction performance and energy-efficient operation. If the volume becomes too low, the unit emits an electrical signal indicating that maintenance work is due. The modular design allows all LGA devices to be individually adapted to the respective space conditions. All connections are already prepared for installation on the respective machine upon delivery. Filter systems of the LGA series are particularly suitable for applications with high raw gas concentrations.



LGA FILTER ELEMENTS AT A GLANCE:



PREFILTER



COALESCER FILTER



LGA 601 FUW

- Volume flow: max. 1,440 m³ / h
- Operating volume flow: 600 m³ / h
- Dimensions (L x W x H): 930 x 555 x 875 mm
- Sound level (at 1 m distance): < 69 dB (A)
- Processing area of the machine tool up to 3m³



LGA 1201 FUW*

- Volume flow: max. 2,150 m³ / h
- Operating volume flow: 1,200 m³ / h
- Dimensions (L x W x H): 1,155 x 640 x 1,040 mm
- Sound level (at 1 m distance): < 72 dB (A)
- Processing area of the machine tool up to 6m³

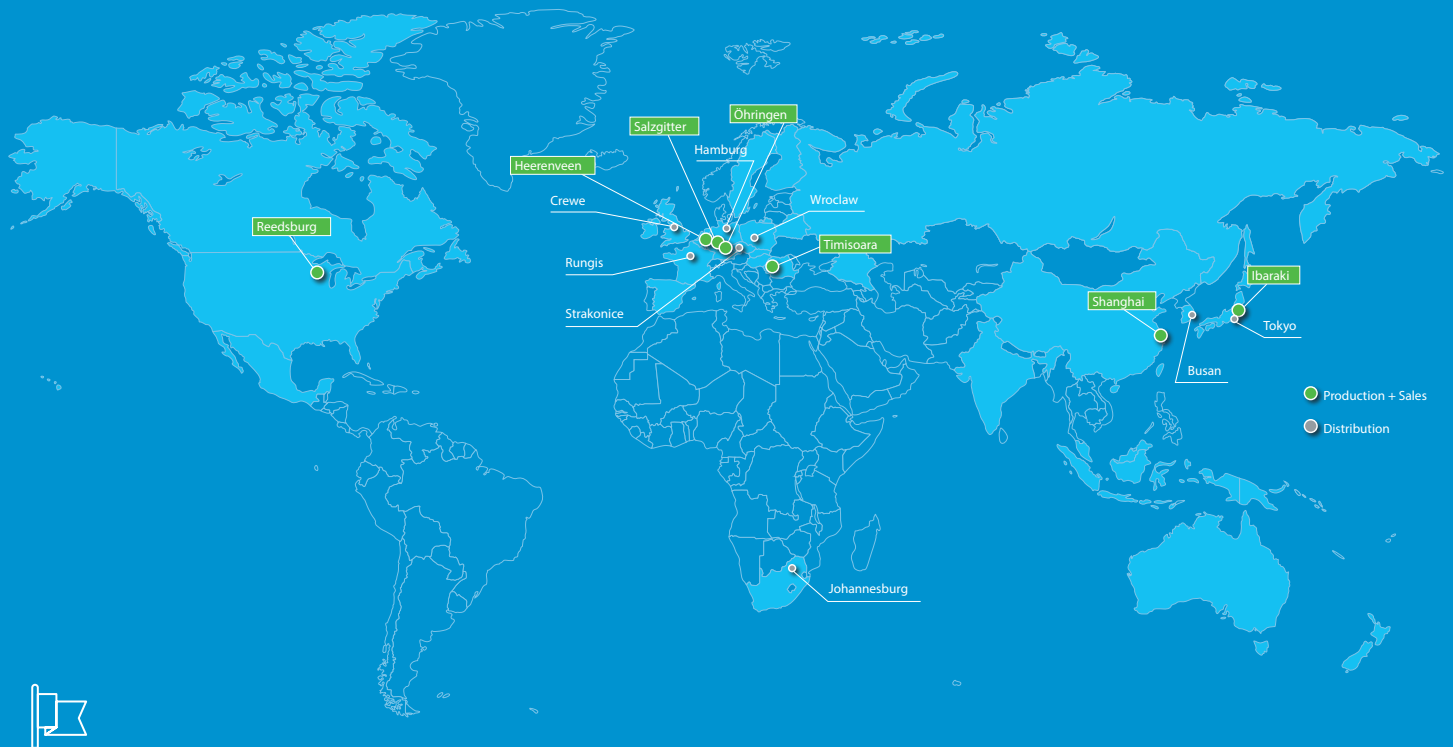


LGA 2400 FUW

- Volume flow: max. 3,650 m³ / h
- Operating volume flow: 2,400 m³ / h
- Dimensions (L x W x H): 1,600 x 1,175 x 1,850 mm
- Sound level (at 1 m distance): < 79 dB (A)
- Processing area of the machine tool up to 12m³

* LGA variant for an operating volume flow of 2,000 m³/h and up to max. 10 m³ is available on request

WORLDWIDE AT OVER 100 LOCATIONS IN 28 COUNTRIES



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