

The comeback of
clean solutions.

GARANT.
Filter





The comeback of clean solutions.

People and Company

Will and ambition are always at the starting point for any venture. It is extremely important for successful entrepreneurs to carry over the inspiration of wanting to be the best to everyone in the company.

Pages 4–5

Industries

Human understanding of environmental concerns has increased over the years. Our products and systems support this and can be deployed in nearly all industries.

Pages 6–7

Products

GARANT-Filter focuses on the manufacture of the flat bag filter type S, shown in detail on **page 8**.

Pages 8–13

Service

GARANT-Filter offers your company **24-hour service** covering all aspects from the supply of spare parts and inspection, to a full maintenance contract.

Pages 14–15

GARANT-Filter

The business initiative GARANT-Filter GmbH has brought together branch specialists from the sector of industrial air pollution control as well as from the sector of gas purification.

Our company philosophy focuses on the highest product quality, employees who identify with GARANT-Filter, and our constant improvement of products in terms of dust collection technology.

A future-oriented corporate group came into being supported by further advanced products from the ENTECCO group, mother organisation of GARANT-Filter, and a far-reaching network of established research and development institutes as well as well-known industry organisations. Based on the rich experience, which unites the knowledge carriers in this enterprise, accompanied by the broad range of products, we present ourselves as a supplier of global solutions in the field of industrial air pollution control as well as in terms of ventilation technology.

With this brochure we endeavour to bring the concepts of this enterprise closer to you and introduce you to the product and service portfolio.

The GARANT-Filter Team

People and company



The whole industry of environmental technology consists of small to medium sized companies with highly qualified employees.

Brand names stand for quality and success in specific industries. The ENTECCOgroup has the strategic aim to accumulate know-how, utilise synergies and thereby offer the ideal platform as supplier of global solutions in environmental technology with its focus on air pollution control.

The ENTECCOgroup is owner managed.



Experts in the manufacture of filters founded the company in 1997. LHS clean-air-systems have developed further in recent years and have become a specialist in the subject area of dust collection technology, industrial ventilation technology and surface technology.

Following its integration into the ENTECCOgroup, the company continued to lead the enterprise with its successful management team and established brand name.



GARANT-Filter's greatest value is its employees' expertise. We feel responsible for offering our customers the service they expect, for achieving our company targets and also for the protection of our environment.

After many years of experience in the filter industry it is now possible to select the appropriate product and the right system for a specific application in a variety of industries.



To form an innovative union, employees and managers must be open and authentic. Everyone must become enthusiastic supporters of the company. The "WE" feeling and the co-workers must form the centre of the company philosophy. Values such as trust and respect must be in harmony with the leading principles of commercial activity. Only stable work and business relationships, enjoying one's work and sharing success with colleagues will bring about above average commercial success.

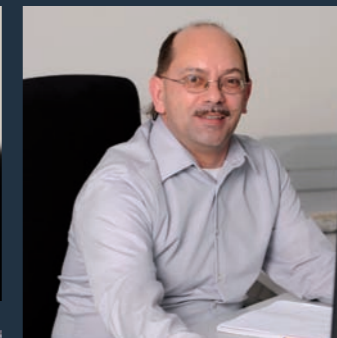
Siegfried Bleul
CEO of the ENTECCOgroup



Mario Bayer



Klaus Willaredt



"I like the combination of the familiar atmosphere and highly professional work ethics at GARANT."

Michael Rothmann
Manager IT/CAD



"I see GARANT as one of the best placed brands in environmental technology, which is constantly improving."

Marianne Sommer
Business Management



"Right from the beginning I enjoyed the enormous spirit of optimism at GARANT."

Sylvia Uhl
Project Planning



Frederik Mussler



Heinrich Dumin



Helmut Kurz



Foundry

The annually produced amount of foundry products has exceeded the 60 million tonne mark for many years.

GARANT-Filter hereby covers the following areas of application:

- Capture of emissions in smelters.
- Removal of dust from sand preparation
- Ventilation technology and removal of dust for after-treatment of casting
- Energy efficient aeration and ventilation systems to optimise atmospheres in the workplace
- Ventilation systems for cooling castings



Minerals

We have been building houses, roads and bridges ever since man can remember. Appropriate, technologically sophisticated and economic processing plants are needed to manufacture the necessary building materials.

GARANT-Filter supplies the necessary dust collection technology for this and ensures that this is done in an environmentally friendly and energy efficient way. Our systems are used in the following processing stages:

- Extraction of raw materials
- Transport of raw materials
- Treatment
- Processing
- Loading / packaging



Asphalt

The produced volume of asphalt worldwide amounts to more than 1,300 million tonnes annually. Dust loading of untreated gas with up to 250g/m³ exhaust fumes and temperatures of up to 180°C are the challenges for robust treatment of exhaust emissions.

For this we supply state-of-the-art dust collection systems with the most varied types of construction:

- Stationary GARANT-Filter
- Semi-mobile GARANT-Filter
- Mobile GARANT-Filter

Our filters have the following benefits:

- Reduced risk of corrosion
- Highly durable
- Easily maintainable
- Low energy consumption



Energy

Alternative and renewable production of energy is becoming increasingly important worldwide.

GARANT-Filter supplies ready to use flue gas cleaning systems with the highest efficiency level for:

- Biomass fired systems
- Waste incineration plants
- Waste-to-energy systems / refuse-derived fuel – (RDF)
- Material recycling

Dry or almost dry adsorption processes are used here. Commercial adsorbents such as calcium hydroxide or sodium bicarbonate are applied as needed. They are added via stationary or dynamic reactors. This allows the best dispersion of additives and a high level of chemical sorption.



Metal

The annual consumption of steel products and non-ferrous metals is steadily increasing. Recycling systems have been gaining importance for years to increase resource efficiency.

GARANT-Filter dust collection and gas cleaning systems serve to protect the environment in the following industries:

- Aluminium (primary)
- Aluminium (recycling)
- Galvanizing plants
- Non-ferrous metals
- Metal processing
- Steel mill



Wood

Wood is one of the oldest raw materials in human history. It must be processed in order to make ready-to-use products. GARANT-Filter together with LHS clean-air systems supply the dust collection and ventilation technology needed for the entire production chain.

- Preparation of raw wood and cutting
- Production systems for chipboard, OSB and MDF products
- Furniture industry
- Window and door production

Our comprehensive service includes the necessary filter systems, the separator technology, the conveying technology, cyclones, silos and piping systems, but also wet washers.

GARANT-Filter Type S



Benefits

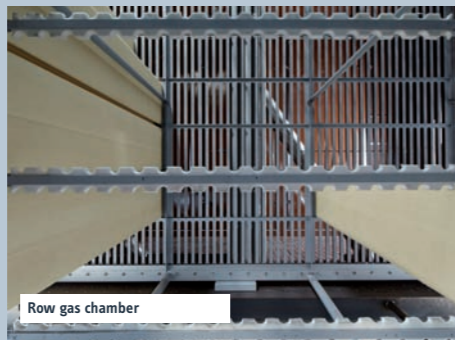
GARANT-Filter Type S

The flat bag filter works with horizontally arranged, flat filter elements. The fully welded raw gas chamber, conveniently mounted pure gas chamber, creates a totally air tight compact filter, also suitable for hot gas applications. A variety of filter media for the relevant application guarantee pure gas values well beneath statutory requirements.

Our modular construction with variable tubing lengths ensures individual planning considerations with flow-rates of up to 450,000 m³/h per filter unit.

GARANT-Filter supplies three alternative construction units for this:

1. Type S with low pressure extraction
2. Type P with mobile pneumatic extraction
3. Type D with stationary pneumatic extraction



Raw gas chamber

- Energy efficient filter
- Optimised adsorptive filtration area
- Inspection in a Quasi Penthouse
- Service optimised accessibility
- Cost efficient assembly
- Minimised maintenance requirements



Extraction System TS

The new extraction system GARANT TS with off-line cleaning

Conventional filters work with compressed air to peel off filter cakes. Apart from high-energy consumption the filter material also suffers due to high mechanical stress, which ultimately results in a reduction of durability.

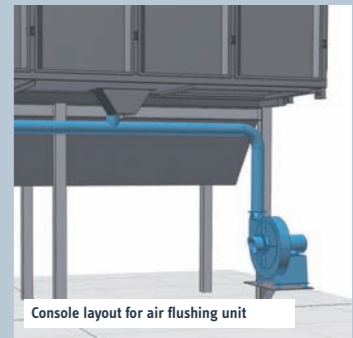
Our new TS System interrupts the flow of gas in 3 series of filters and thereby puts them "off-line". Two series of jets then carry out a careful extraction process. One series of filters is not flushed with air, so that the filter cake and especially fine dust particles are carried downwards to the dust collection hopper in a "down-flow" mode. This avoids the absorption of respirable dust by neighbouring filter series. The result is a total reduction of residual dust, significantly below statutory regulations.



Slotted wall with distance mat

Energy efficient filter with reduced operating costs

- Flushing with air reduces electricity consumption
- New insulating systems / reduction of heat loss
- Optimized air flow by open supporting mesh
- Extraction with multi-phase motor and parameter control
- Improved surface / volume ratio



Console layout for air flushing unit

Flanged pure gas chamber optimises filter operating surface

The GARANT-Filter S optimises the ratio of actual filter surface to the applied transport volume. This significantly reduces costs for special transport and packaging.



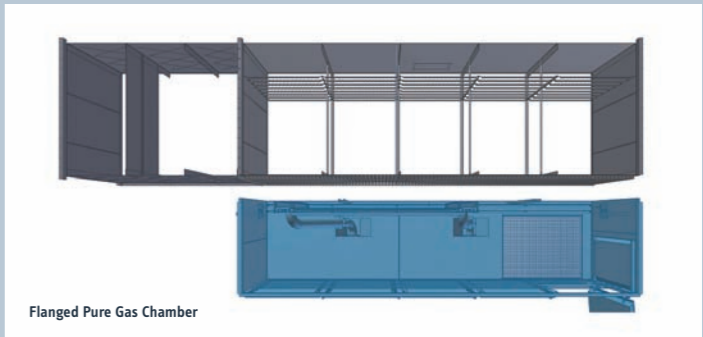
Pure Gas Chamber

High level of pre-fabrication achieves cost effective assembly.

The modular construction of filters ensures quick and simple installation of the system. All modules are fully pre-fabricated and wired. They only need to be screw connected on-site. This reduces the cost of assembly to a minimum and the system can be started up quicker.

User friendly inspection in the Quasi-Penthouse

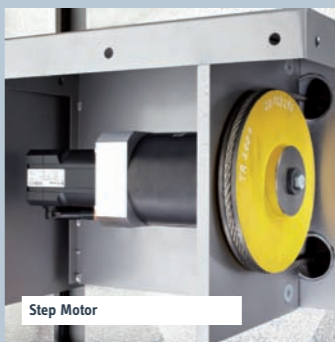
The walk-in pure gas chamber facilitates safe and comfortable maintenance and inspection work. All filter hoses can be exchanged without any additional safety measures and in any weather conditions. This also obviously applies to all other possible work, which needs to be carried out in the filter extraction system TS.



Flanged Pure Gas Chamber

Service optimised accessibility of all motors and components

Anyone who has had to exchange the starter motor of an air flushing system at a height will be impressed by GARANT-Filter's benefits. Our air flushing system stands on the floor, is convenient to reach and practical. All other components, which should be accessible for servicing, are also placed in the best position for inspection and maintenance.

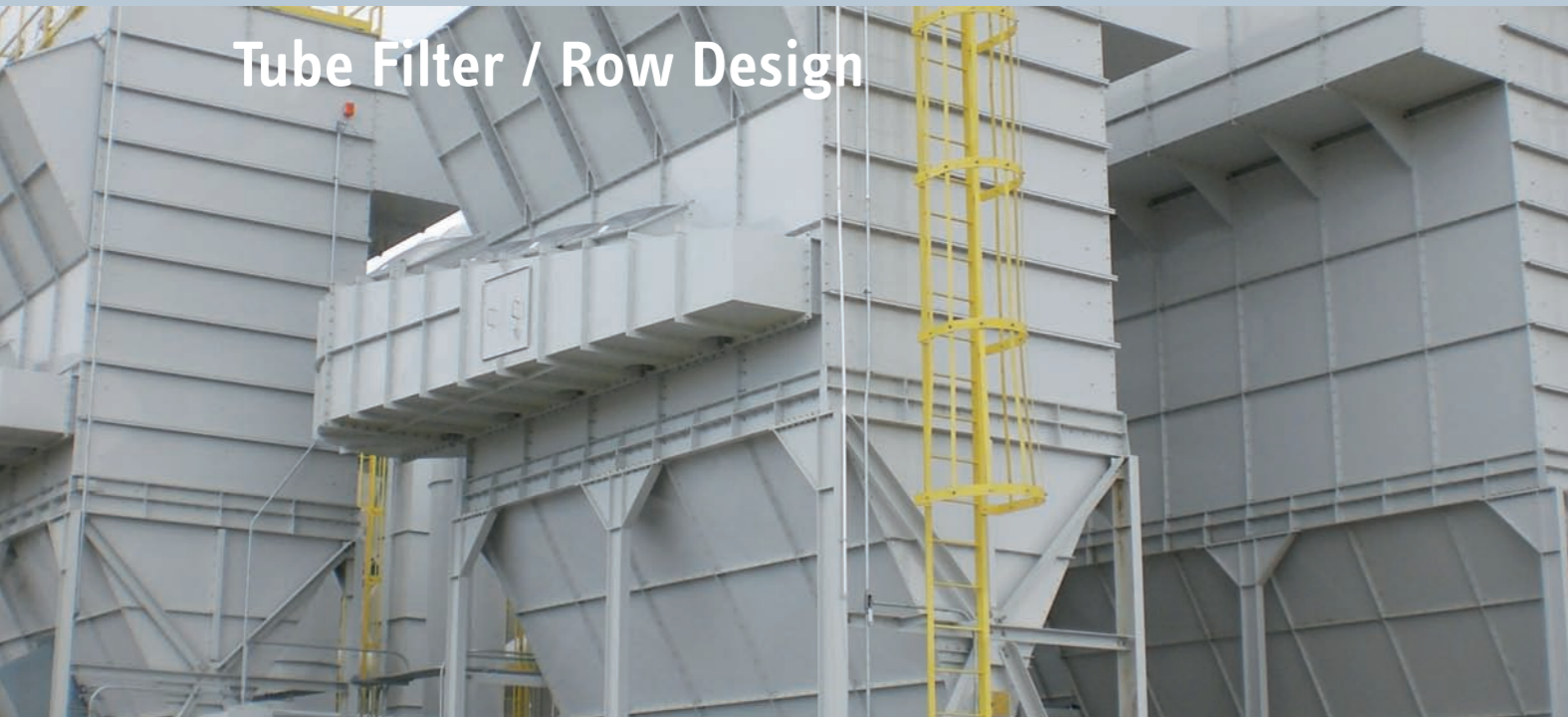


Step Motor

Fewer expendable parts minimise maintenance costs

The new generation of GARANT-Filter Type S uses an intelligent step motor. Many mechanical components, which may be prone to faults, can therefore be avoided.

Tube Filter / Row Design



Tube Filter / Row Design

This is a tube filter, which is pneumatically cleaned. The filter hoses are arranged in a row, and the housing is made of smooth interior panels. We can also supply wear-resistant and explosion-proof designs according to ATEX-regulations.

The combination of special air-jets with a venturi nozzle jet at the entry to the filter hose ensures that the air pressure pulse carries away a large amount of pure gas (injector effect). The strengthened pressure wave inflates the filter hose suddenly, and the filter cake drops down.

By a sophisticated damper-chamber system off-line and semi off-line concepts can easily be realized



Circular Filter with Pulse Mode

Circular Filter with Pulse Mode

The circular filter works to the same principle as our line filters. It does, however, have special features. The raw gas enters at a tangent inlet, which achieves separating efficiency similar to a cyclone in the lower part of the cabinet.

Part of the material is thereby already separated by centrifugal force before the gas flows through the filter media. This design is deployed together with special medium and high vacuum units and high material loads of the crude gas, which is being treated.

System Benefits:

- Optimum impact on extraction for longer duration
- Minimum consumption of pressurised air
- On-line filter media exchange

Filter Tubes – Lengths:

1125mm / 2250mm
3375mm / 4500mm

Industrial Aeration and Ventilation Systems



Industrial Aeration and Ventilation Systems

It is important in modern production processes to ensure controlled air exchange for people and technology.

Intelligent air supply and extraction to and from the working environment and that with the best and most constant air conditions, is our challenge.

GARANT-Filter and LHS clean-air systems realise energy efficient ventilation systems with integrated heat recovery. But we also have tried and tested and economic solutions for a clean air supply at any volume needed. Heating is provided with the usual energy supply.

Low investment costs as well as excellent controllability speak for this system.

Surface Technology / Painting Systems

We offer an extensive portfolio of systems for surface coating processes:

- Cleaning cabins
- Adhesion water dryers
- Paint spray cabins
- Drying booths
- Combined paint spray cabins and drying booths



Paint Spray Cabin

Intensive exploration of customer requirements and their circumstances form the basis for individual and flexible total solutions.

Features, which are relevant to a spray paint system such as emissions, fire danger and risk of explosion, need intensive contact with authorities and employee protection agencies when concepts are designed, and especially when they are put into practice. This is our challenge, and it also reduces the burden on our customers.

Our Strengths:

- Heat recovery
- Master computer for climate control
- Sections of the system can be switched off – only the parts, which are needed at any one time are operated
- Fully automatic paint finishing lines
- Engineering
- Service and after sales

Additional Filter Products

Pipeline Construction

GARANT-Filter conceptualises, plans and manufactures different types of pipelines and ductwork concepts for all types of use in air and dust separation technology, whether it be simple piping for factory ventilation or strong, welded steel pipes for extremely abrasive exhaust gases. Alternatively we supply detailed manufacturing and assembly documentation, which allows you to carry out on-site assembly of pipelines that are good for your budget and to your satisfaction.



Filter Cartridges

We manufacture filter cartridges in angular and round designs as well as in various sizes.

The volume of air, the type of material that is to be extracted, system pressure and the assembly conditions are decisive for making the choice.



Rotary Airlock

Rotary airlocks serve to separate system compartments with different air pressures.

As always the type of requirement will determine its use. Our airlocks can be supplied in standardised nominal values NW315 to NW2000. Material consistency, pressure values and equally important questions of safety such as fire and explosion protection must be considered.



Silos

Nowadays, silos are needed everywhere where bulk materials must be stored quickly, efficiently and safely at best price/performance ratio.

Appropriately zoned, our silos and/or plant components are built according to the regulations of the ATEX-guidelines.



Additional Filter Products

Cyclones

Our high performance cyclones are individually designed and feature minimum loss of air pressure. They are used as pre- and spark-separators, which reduce the material load in the air which increases the performance and lifetime of the filter unit.

The equipment can be fitted with pressure relief areas upon request.



Classifier

This type of separation is not used for purifying air, but for the capture of particles of a certain consistency from a mixture of materials.

Classifiers are used for the classification of materials e.g. in the areas of wood, stony soil or building materials.



Conveyor Technology

We offer products and systems for material transport. Our supply scope also includes worm and screw conveyors as well as pneumatic conveyor systems. The latter is also supplied in low and high-pressure versions.

Wet Washers

The raw gas flow is jetted through the wet washer. Impure aerosols and particles are wetted in the contact with recycled water and then separated centrifugally in the following cyclone and discharged. Sludge is removed via scrapers underneath and water reserves are also stored here.



Ventilators

Our know-how for the appropriate technical application of all types of ventilators reduces our customers' operating costs. Premium design and planning as well as issues construction and size contribute to the creation of a perfect system concept.





The Life Cycle of a Filter System

Our service contracts focus on general performance, whereby our specialists look after your system throughout its full life span and constantly optimise it. Operating times, care and maintenance strategies are already determined in planning and this forms the basis of our comprehensive service concept together with operational data collection and regular inspections. With this, we increase your system's operational safety and availability and reduce your operating cost at the same time.

Matthias Hupfer, Manager of Service Department

Expansion / Performance Adaptation

Changed production processes often make it necessary to expand a filter system. Our modular manufacturing technology makes it possible to increase filter performance after years of service.

Conversion measures are co-ordinated and carried out by our team. Older systems often up-dated by means of a Retro-Fit-Package. At the same time, this gives our customers an expansion to their system as well as the latest technology with state-of-the-art components developed by GARANT.



Inspection Contract

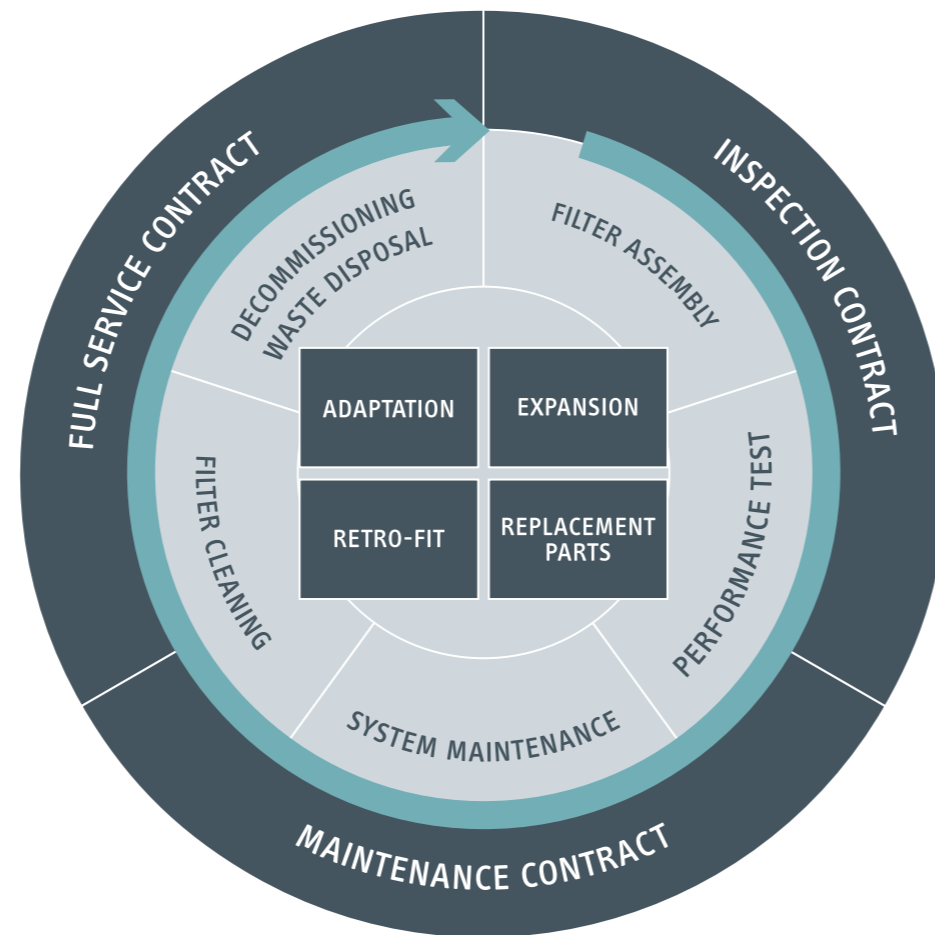
The range of our performance starts with working out a comprehensive maintenance and diagnosis concept specific to each filter system. Continuous inspections, carried out at regular intervals by our experienced service personnel, increase the life span of the system. Inspection reports and suggestions for maintenance work to optimise the system are provided and are mutually discussed.

Maintenance Contract

The maintenance contract builds on the basic service provided by the inspection contract. The main difference is that our trained GARANT Team carries out upcoming maintenance work. The service level and the necessary replacement parts for this are agreed in advance. In addition, we promise a preferential premium service -the response time is reduced to a minimum. A technician arrives at the site within an agreed response time.

Full Service Contract

This type of contract offers the best possible maintenance of your system and supply assurance. The reason for this is that, in addition to the services of the inspection and maintenance contract, the customer receives all expendable and replacement parts at an annual fixed price. This applies to the contractually agreed time frame irrespective of how often we exchange filter bags or inspect the system. It allows you to calculate your system and operating costs (TCO) exactly.



Retro-Fit

Modernisation of your system with the latest technology – fast, reliable and durable! A careful on-site analysis of the filter system marks the start of every Retro-Fit project.

Replacement Parts

GARANT-Filter manufactures all filters and the most important components in its own production facility. Replacement parts and components, which are made by partners, are strictly quality-controlled. This ensures that all GARANT replacement parts conform to the highest requirements. We manufacture external components according to drawings, samples or upon agreement.



Readings

Regular readings ensure the detection of potential developments in the condition of the filter system. Performance measurements, gas analyses, dust readings, and dust analyses are also part of our service together with testing filter materials. GARANT-Filter does this with the latest diagnostic measuring instruments.

Service-Hotline:

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or via e-mail:
service@garant-filter.de

You also find your personal contact under 'service' at
www.garant-filter.de



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