Accumulator Technology 30.000

Filter Technology 70.000

Process Technology 77.000

Filter Systems 79.000

Compact Hydraulics 53.000

Accessories 61.000

Electronics 180.000

Cooling Systems 57.000

Global Presence.
Local Expertise.
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NOTE

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

All technical details are subject to change.

EN 10.131.3/02.18

HYDAC INTERNATIONAL

Systems, Components and Fluid Engineering / Service for Cleanliness Technology

EN 10.131.3/02.18

HYDAC
Your Professional Partner for Industrial Part Washers.

HYDAC has been one of the leading suppliers of fluid technology, hydraulics, electronics and cooling equipment for more than 50 years and has over 9,000 members of staff worldwide.

The width and depth of our range of products, combined with our recognized expertise in development, manufacturing and service, has allowed us for some years now to solve the most demanding challenges associated with cleaning technology and cleanliness in our customers' production plants worldwide.

In addition to standard products, HYDAC has a wealth of special components and system solutions from the filtration, cooling, sensor and monitoring sectors to ensure technical cleanliness. This range of products is supplemented by a comprehensive range of services.

Our range of services:

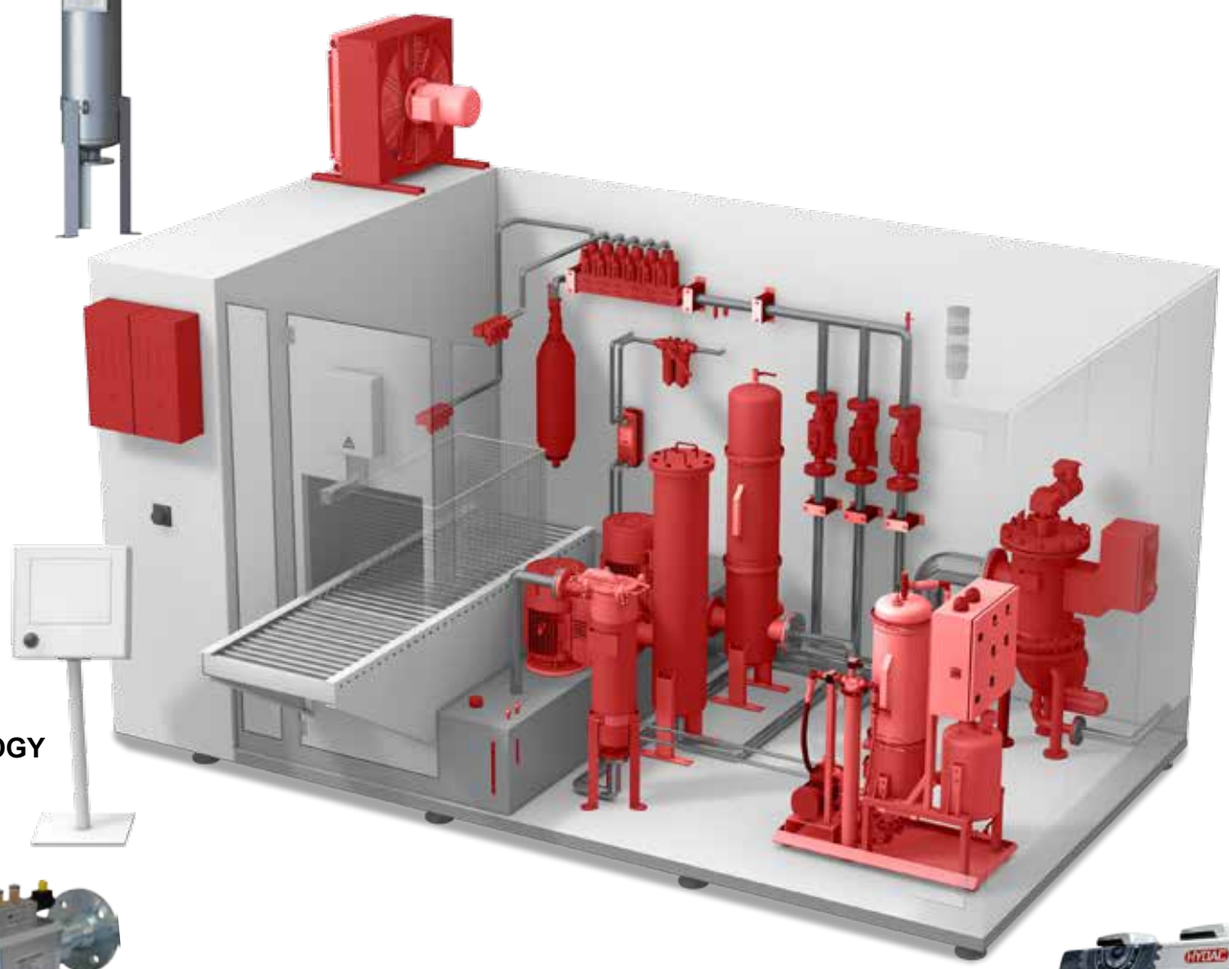
- Consultation
- System and process chain analyses
- Optimizing existing systems
- Creating and improving filter concepts
- Developing overall system concepts
- Integral solutions for monitoring the technical cleanliness during production

Your Partner for the Highest Demands and Quality

HYDAC offers you a comprehensive technical range of components, systems and services - fluid engineering / service. The aim is to optimize the availability and process results of machines and fluid technology systems and to reduce operating costs. The system operator's needs and requirements are always paramount.

We therefore support you as a versatile system partner and offer comprehensive advice and solutions regarding technical cleanliness in cleaning technology. Cooperation with and trust of system operators and manufacturers is our top priority.

FILTER HOUSING



FILTER ELEMENTS

VALVES & MOUNTING TECHNOLOGY

TECHNICAL CLEANLINESS OF COMPONENTS AND SYSTEMS

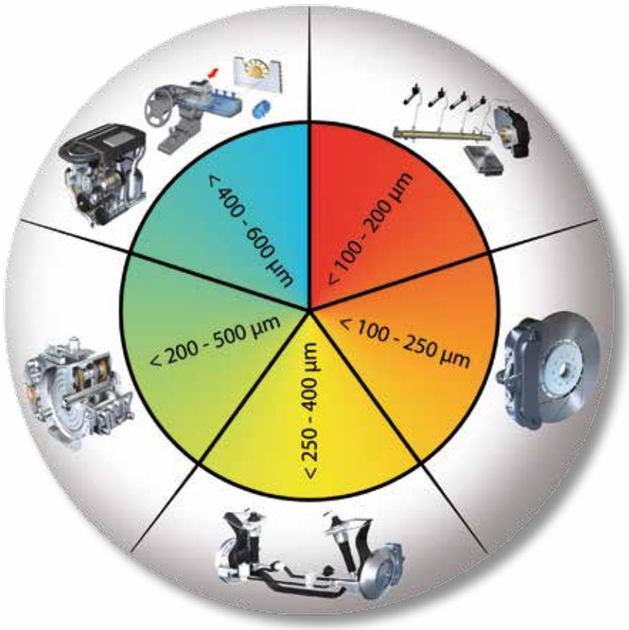
CONDITION MONITORING

MEASUREMENT TECHNOLOGY

COOLING SYSTEMS

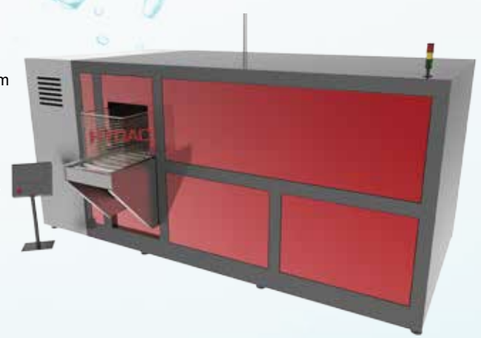
Cleanliness Technology and Your Requirements

Thinking in Processes.



Systematically getting to grips with challenges
Modern drivetrain technologies and higher power densities demand first-class quality in the production of components and systems. Among other things, stringent requirements for technical cleanliness ensure that failures during the warranty period are minimized. Therefore, the production of new system components is closely concerned with the requirements for technical cleanliness. Modern part washers must meet these requirements:

- Maintaining the required critical values of technical cleanliness
- Short cleaning cycles
- Fluid residues adhering to the components must be kept to a minimum
- Extended life of bath fluid
- Cleaning, flushing, deburring and drying in compact systems
- Energy-efficient design
- Filtration without consumables and / or extended filter lifetime with enhanced cleanliness requirements
- Securing the required system availability
- Monitoring operating media (quantity of particles, particle size, amount of residual oil), monitoring system parameters, e.g. pressure, temperature, level, flow rate, and many more.



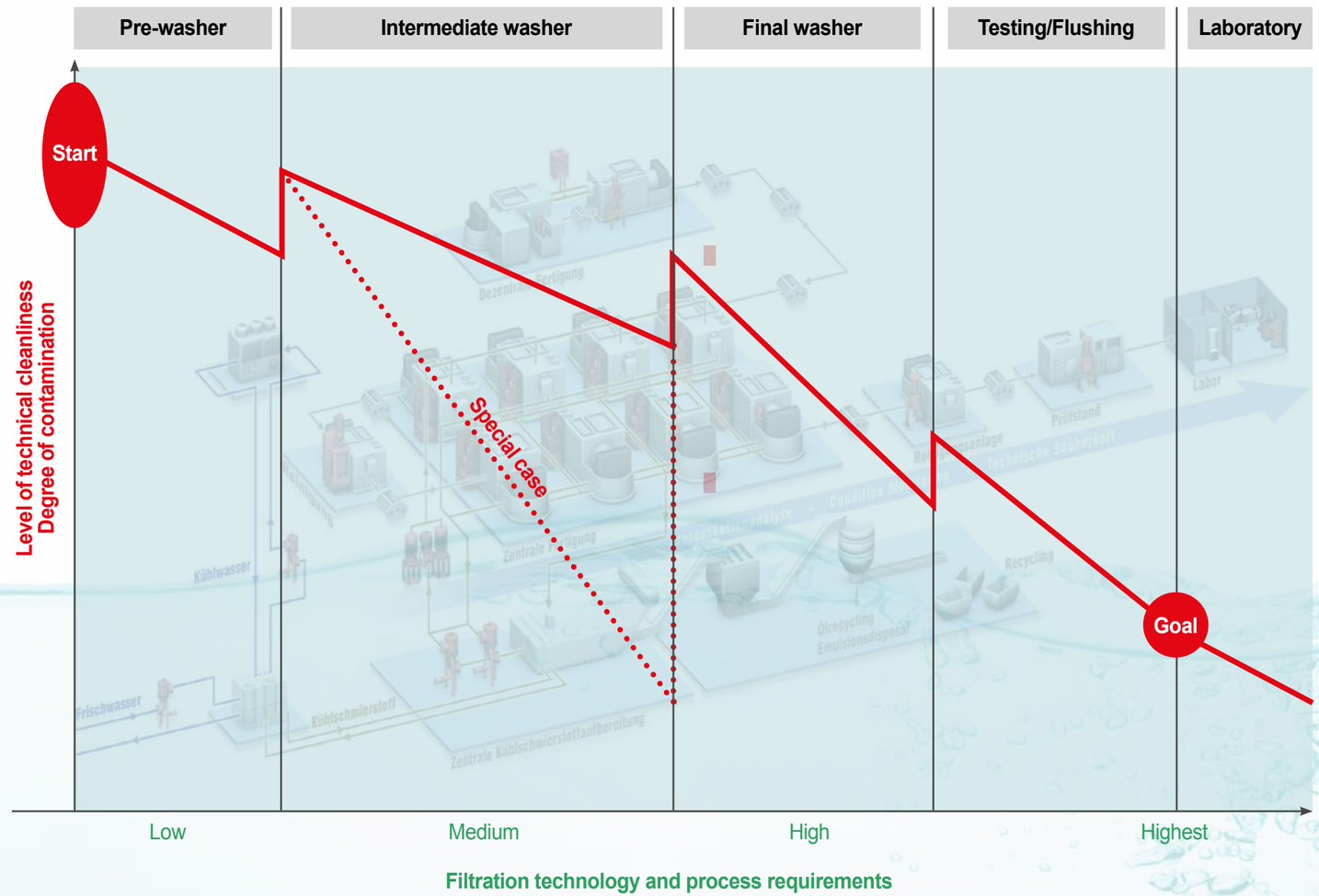
Technical cleanliness along the process chain

The automotive industry is the driving force for further development of technical cleanliness. Due to constantly rising quality standards, the demands on the quality and cleanliness of components are also increasing. Contaminated components entail costs because of faults, complaints and in some cases complete system shutdown.

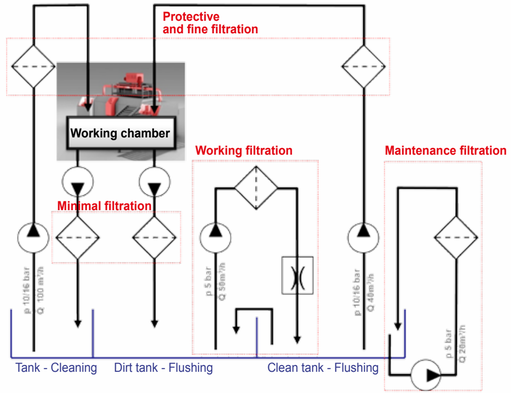
Wherever critical particles lead to machine and system failures, residues from production may be the cause. The reduction of production stage failures, rework and greater system availability are only some of the advantages of good cleanliness management.

Functioning cleaning and testing processes are crucial for maintaining technical cleanliness across the entire process chain up to the finished product. HYDAC pays close attention here to carefully coordinated filter concepts in all relevant systems and to optimizing their efficiency.

The required cleanliness of the final product determines and defines the requirements on the process and the respective individual steps. Cleanliness technology requirements can therefore be precisely formulated. Thinking in processes is important here. Using HYDAC components and system solutions, we help you bring the degree of contamination in industrial part washers, test rigs and devices relevant to cleanliness down below a predetermined critical value (e.g. no particle > 600 µm) and remove contaminants (e.g. particles, fats).



Filtration Concepts
Perfect Solutions to Your Requirements.



HYDAC back-flushing and candle filters ensure the continuous separation of particles from the cleaning fluids with a high level of efficiency. Failures in function-related components are therefore minimized as a result of the consistently high fluid quality. The optimized filter materials can be adapted flexibly to the operating conditions in minimal, working, maintenance and protective filtration.

Minimal filtration
- Directly capturing the contaminant load in the return line
- Coarse filtration which removes large volumes of contamination from the system

Working filtration
- Conveying the fluid from the dirt tank to the clean tank
- Removal of coarse and (some) fine contamination
- Ideally continuous conveyance

Maintenance filtration
- Maintenance and conditioning of the fluid in the tank
- Removal of finer contamination

Protective and fine filtration
- The (high) fluid purity required for constantly maintaining technical cleanliness is achieved between the supply pump and the industrial part washer
- Removal of ultra-fine particles from the fluid
- Longest possible chemical and physical resistance of the fluid
- Good retrofitting

Filter Housing
The Right Solution for Every Application.

Convincing diversity
Due to the wide range of filters offered by HYDAC, we can provide a suitable filter for every requirement, whether it is for handling heavy contamination loads, filtering machining chips or providing the purist cleaning fluids with the most stringent demands.

AutoFilt® ATF

Type:
TwistFlow Strainer

Filtration type:
Hybrid consisting of centrifugal separator and inline filter with guaranteed cut-offs

Flow rates:
Up to 400 m³/h

Filtration ratings:
Dependent on particle nature

Pressure ranges:
Up to 16 bar

Filter element type:
Conical slotted tube filter elements
Conical wire mesh filter elements
SuperFlush coating optional

Features:
- Particularly suitable for the separation of suspended solid particles up to several grams per litre
- Hybrid consisting of centrifugal separator and inline filter
- Coarse separation by centrifugal force with guaranteed filtration rating due to conical slotted tube filter element in the second stage
- Depending on particle nature, filtration ratings of < 200 µm may also be achieved

AutoFilt® RF3

Automatic Back-Flushing Filter

Surface filter

Up to 7,500 m³/h

25 - 3,000 µm

Up to 100 bar (on request)

Slotted tube filter elements
SuperMesh wire mesh filter elements
SuperFlush non-stick coating
New: Optional solenoid technology

Features:
- Self-cleaning system for the continuous separation of solid particles from low viscosity fluids
- Fully automatic function and intuitive operation thanks to the new filter control AutoFilt® Control Unit
- Isokinetic filtration and back-flushing
- Good flow characteristics lead to a compact design whilst achieving high filtration performance and low pressure drops when the flange is in a flexible position
- Optionally available with black-flush treatment unit BTU: Fully automatic filtration system with continuous separation of solid particles and treatment of the back-flush volume in a process twist sieve (PTS). A lifting pump returns the cleaning fluid via a buffer tank

AutoFilt® RF3 – JetFlush

Automatic Back-Flushing Filter

Surface filter with JetFlush technology

Up to 10,000 m³/h

25 - 3,000 µm

Up to 10 bar

Slotted tube filter elements
SuperMesh wire mesh filter elements
SuperFlush non-stick coating

Features:
- Self-cleaning system for the continuous separation of solid particles from low viscosity fluids
- JetFlush technology – special hydrodynamic suction effect
- Particularly suited for applications with low system pressures
- Sizing and application for improved energy efficiency of parts cleaning systems
- Can be retrofitted to existing AutoFilt® RF3 units while maintaining the advantages of the AutoFilt® RF3

Wombat Filter WBF

Wombat Filter

Bag filter / candle filter

Up to 25 m³/h

1 - 200 µm

10 bar / 16 bar

Filter bag (standard and economy)
Flexmicron (Economy, Standard and Premium)
Wombat filter element (premium)
Optional solenoid technology

Features:
- 2 sizes (standard size 1+2)
- Energy-efficient flow control
- Fulfills the most stringent cleanliness requirements
- Vertical inflow prevents bypass formation, also with filter bag use
- No dead spaces or undercuts
- Optimum sealing geometry

NEW
1 housing for 3 separator technologies
Filter bag, candle filter, wombat filter

PLF1-1 / PLF1-2

Process inline filter

Candle filters

up to 200 m³/h

1 - 90 µm

10 bar / 16 bar

Processmicron® HighFlow 6"
Processmicron® HighFlow 9"
Processmicron® HighLoadCascade 9"
New: Optional solenoid technology

Features:
- Suitable for applications with the highest cleanliness requirements
- High contamination retention capacity
- More flexibility and optional adjustment to the application as well as subsequent optimisation in retrofitting of the system by means of a replaceable support pipe (PLF1-1)
- Easy handling and shorter assembly times thanks to clamp connection
- Compact design with high flow rates, can be used as high-flow filter
- Protection of the clean side during filter element replacement thanks to fixed support tube
- Low pressure drops due to large filter area and large flow cross-sections
- Superior handling compared to disposable candle filter elements

MultiRheo® – AMRF

Automotive filter

Candle filters

Up to 1,200 m³/h

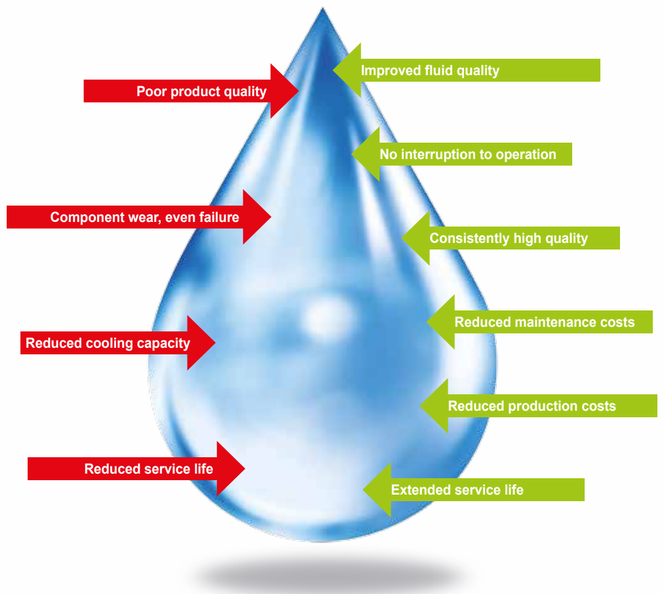
1 - 90 µm

10 bar / 16 bar

Flexmicron Economy
Flexmicron Standard
Flexmicron Premium

Features:
- For open systems subject to the continuous ingress of contamination from the outside
- The filter elements protect components such as nozzles, high pressure pumps or working filters, for example in industrial part washers
- Defined filtration rates and high separation values
- Compact housing with high flow rates
- Efficient system and component protection

High-Quality Filter Elements
Top Quality Pays Off in the Long Run.



The aim of the filtration is to keep the cleanliness of cleaning fluids at a continuous cleanliness level throughout the production process. The cleanliness of the cleaning fluid is determined by the cleanliness requirement of the component being cleaned.

Sustainable filter concepts for complying with the cleanliness requirements of the cleaning fluid are important elements of an entire system solution. It is crucial here to correctly choose high-quality filtration when it is required and to select more inexpensive solutions wherever this is possible. An incorrect filter concept or lack of filtration of an industrial part washer can lead to problems during system operation and in the process sequence. Make us the partner by your side and benefit from the advantages of optimum filtration.

Correct preselection
By selecting the correct filter material or by optimizing the existing filter concept, operating costs can be significantly reduced.

Surface filters are generally cleanable filters which can be operated automatically.
Downtimes due to filter exchange are ruled out because HYDAC back-flushing filters clean themselves during operation. These filters are particularly suited to handling heavy contamination loads.

Depth filters are generally non-cleanable filters which have to be replaced. They offer a defined filtration efficiency and are therefore also suitable for the most stringent cleanliness requirements of the cleaning fluids. In order to avoid downtimes, HYDAC offers these filters in duplicate so you can switch between the two. This ensures that one filter is always carrying out the filtration task, while the second filter is available for the exchange, even during full operation of the system.

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Filter Elements
The Right Solution for Every Requirement.

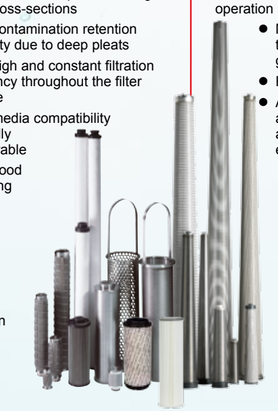
Continuous, defined, clean!
HYDAC manufactures filter elements for every requirement in line with the filter concept. When choosing the right filter element to suit you, we naturally take both technical and economic aspects into consideration and test new or challenging applications with you.

By using high-quality HYDAC filter elements with a continuous and defined filtration efficiency, absolute filtration of your cleaning fluids is guaranteed.

Candle filters		Bag filter	Bag filter	Processmicron® Candle Filters	Back-flushing filter
FM-E / FM-S	FM-P	FB-E / FB-S	WB	PM	K...S / K...D
Flexmicron Economy / Standard	**Flexmicron Premium**	**Bag filter Economy / Standard**	**Wombat Premium**	**Processmicron® HighFlow / HighLoadCascade**	**AutoFilt® Back-flush filter elements**
Filter material: Polypropylene, polyamide, spun spray	Polyester, (glass fibre) pleated	Polypropylene	Polyester, pleated	Polyester, pleated Polypropylene Spun Spray	Stainless steel wedge wire Stainless steel wire mesh SuperMesh
Filtration ratings: 1…90 µm	1…90 µm	1…200 µm	1…90 µm	1…90 µm	25…3000 µm
Filtration efficiency: 90 %…95 % (Economy) 95 %…99,8 % (Standard)	99.98 %…99.995 %	…90 % (Economy) …95 % (Standard)	> 99.98 %	PES: > 99.98 % PP: 90 %…95 %	85 %…90 % (nominal)
Differential pressure max.: 2 bar	2 bar	1.4 bar	2.5 bar	2 bar	2.5 bar
Temperature max.: Up to 60 °C	Up to 100 °C	Up to 60 °C	Up to 90 °C	PES: 90 °C PP: 60 °C	Up to 400 °C
Features: ● End caps welded, not glued ● All standard element geometries available ● Wide range of adapters (compatible with existing systems) ● Minimum-cost design **Additional for Standard:** ● High level of cleanliness due to graduated depth filter construction ● High contamination retention resulting from effectiveness of depth type filter material	**Features:** ● All standard element geometries available ● Wide range of adapters (compatible with existing systems) ● Stable filtration efficiency, also under pressure and flow rate pulsation ● High media compatibility ● High chemical resistance ● High contamination retention capacity thanks to pleated design ● Robust support for non-woven media to prevent material migration under mechanical stress	**Features:** ● Cost-effective 1-layer design for applications with low requirements ● Cleanliness-enhanced 2 and 3-layer designs for applications with high requirements ● Material compound with maximum safety during operation and optimum adaptation to the bag receptacle ● High degree of efficiency ● Sealing lip ensures bypass-free sealing ● No particle transfer to the clean side due to thermally welded seams ● Sealing collar made of polypropylene	**Features:** ● Very high fluid cleanliness ● Longer lifetime as filter bag ● High contamination retention capacity ● Lower pressure drop ● Robust element design ● High temperature stability ● Rapid filter element change due to conical design	**Features:** ● Very large filter area per element, 5.25 m² when 20" long ● Low pressure drops due to large flow cross-sections ● High contamination retention capacity due to deep pleats ● Very high and constant filtration efficiency throughout the filter lifetime ● High media compatibility and fully incinerable ● Very good handling	**Features:** ● Extremely durable and robust ● Flow-optimised design for minimum differential pressures during operation ● More efficiency thanks to conical element geometry ● Fully cleanable ● Adaptation to customer application thanks to availability of different element designs

Filter retrofitting

For optimizing your filtration processes, HYDAC can offer you suitable alternatives, various sizes, and premium and low-cost materials for existing filters.



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Filter Overview
The complete filter range at a glance.

Filter housing

WBF

BG 100 | BG 201 / 236 / 246

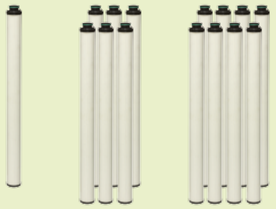
AMRF

BG 1 | BG 2 | BG 3

Filter elements

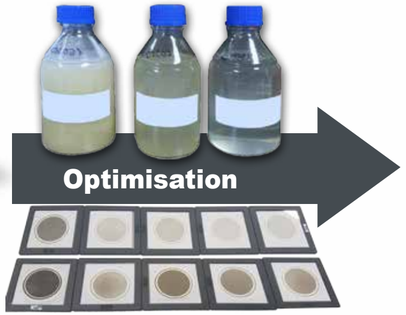
FB | WB | FB | FM | WB

FM 1 piece | FM 5 pieces | FM 8 pieces



Service
All-round carefree production with HYDAC.

Standard work and cyclical maintenance of systems at your site



Sizing and optimisation on filter concepts including experiment support

Conversion of systems and filtration upgrade

Global Service – Start Up and Repair

System Components
Proven Technology for Stable Processes and High Flexibility.

OffLine Separator OLSW

The OffLine Separator Water (OLSW) is a maintenance unit for water-based cleaning fluids contaminated with mineral oils (< 10 vol. % density < 900 kg/m3) and solid substances.
Ideally, the OLSW is installed as a separate unit in the bypass flow. You benefit from longer bath service life, improved cleanliness of fluids and technical cleanliness (residual contamination & film contamination).

This plug & play unit offers almost unlimited oil separation thanks to non-absorbing coalescence elements, high-quality stainless steel housing and an automatic oil drain.

Cooling systems

Whether you are adjusting the temperature of a cleaning bath or cooling electrical cabinets, HYDAC offers various energy-efficient products.

We help you in your decentralised or central heat supply by developing concepts for using the process heat from machining centres or individual machines to heat cleaning baths.

Valves, Mounting Technology & Accessories

The wide range of valves, mounting technology and accessories means HYDAC can offer you a variety of product solutions. HYDAC coaxial valves and solenoid valves (membrane valves) made in stainless steel, are space-saving and low-maintenance. Special block solutions reduce the piping requirements for the cleaning systems. Low dead-space ball valves and extensive stainless steel mounting technology to suit all components and lines complete the range.

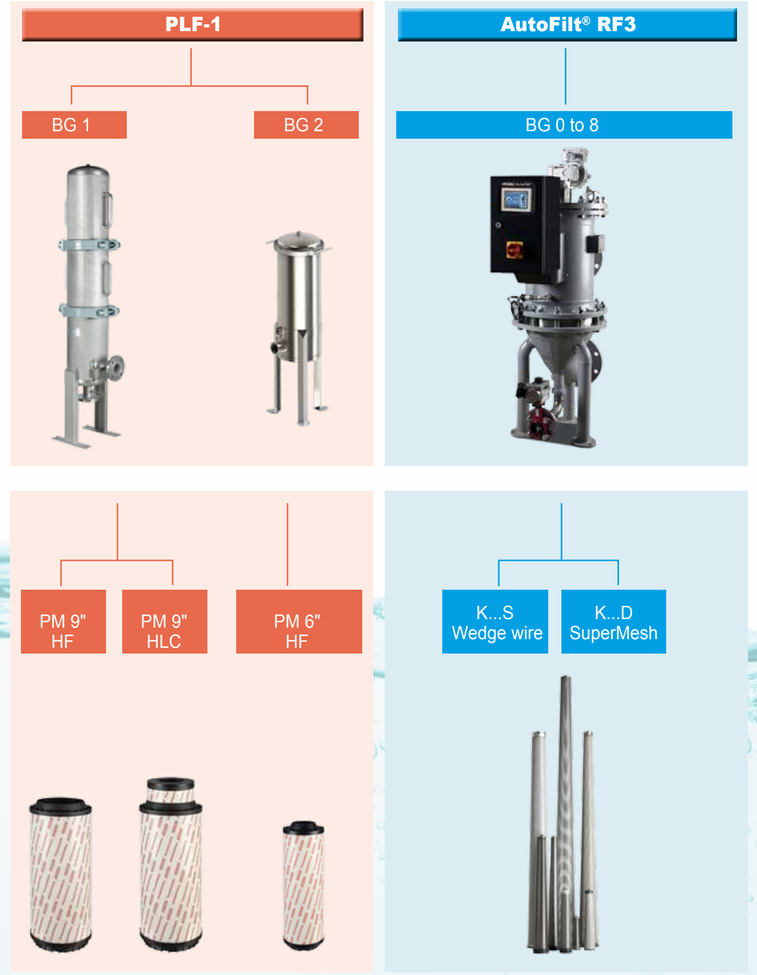
Measurement equipment

HYDAC offers a comprehensive range of easy-to-use measurement systems. HYDAC sensors are used for online monitoring, recording and diagnostics of fluid-related parameters such as contamination, pressure, filter differential pressure, overheating and fluid level.

With sensors available in a range of Analogue (0-10v & 4-20mA), Digital (Transistor & Relay) and serial communication (e.g. IO-Link) interfaces, Hydac is able to offer advice on the right transducer for your application and to supply the product to meet that specification.

Condition Monitoring

By using CM-Expert, the condition of individual machines can be monitored throughout the production line clearly in one control centre and maintenance and repair measures can be planned preventively, in order to identify diminishing processes and avoid failures.



System Modules, Service & Components

Technical Cleanliness
Top Quality Puts You a Step Ahead.

Extraction Units

The extraction units developed specifically for analyzing technical cleanliness in accordance with directive VDA 19 (ISO 16232 or ISO 18413) have numerous applications in a wide variety of industries. Individually designed adaptations for carrying out cleanliness analyses provide solutions from a single source.

Analyzing the type, size and quantity of contamination enables quality standards to be verified and documented, and the requisite optimization measures to be implemented. With HYDAC extraction units from the CTU and CTM module range, you get reliable and reproducible analysis results.

ContaminationTest Unit CTU

The HYDAC ContaminationTest Unit CTU 1000 is used to determine the technical cleanliness of components.

ContaminationTest Module CTM

The ContaminationTest Module CTM is a modular system designed to analyze the technical cleanliness of components.

- **Supply module CTM-SC:** (supply and control): Module for fluid supply, control and data storage.
- **Extraction module CTM-EB**: Module for component examination. The modules vary according to the scale / model and extraction process. They feature four types of extraction in different combinations.
- **Extraction Flushing CTM-EF:** By adapting to the geometry of the components being sampled, the module can be used for flushing components in contact with fluid.

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Flushing Rigs

You achieve the highest level of cleanliness with the semi-automatic flushing rigs designed by HYDAC. Targeted flushing of cleanliness-relevant components or sections (e.g. internal bores or lines) distinguishes the HYDAC flushing rigs from conventional cleaning processes and therefore means that challenging cleanliness requirements are ultimately achieved.

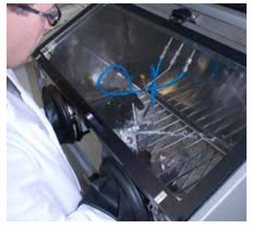
When designing flushing rigs, HYDAC places great value on meeting customers' needs to give them complete satisfaction. This is why the flushing rigs consist of two modules. The standard supply module serves to prepare the flushing fluid and the housing of the control technology. Customized work modules provide optimally designed work stations, including component adapters and adaptations optimized for cleanliness.

The HYDAC flushing rigs is used at the end of a production process chain between the part cleaning system and cleanliness testing. Due to precisely defined drying steps, it can be guaranteed that the components are drip-proof after the flushing process.

The flushing rigs are developed in-house. This allows us to easily meet our customer's requirements. Whether this is a wish for special component adapters, adaptation to the control or integration of the customer's internal processes, such as component recognition by using bar codes, DMC or even RFID.

Transparency in technical cleanliness with HYDAC

Technical cleanliness is becoming increasingly important in many sectors. More efficient motors and systems and increasing warranty claims are steadily driving up the demands for cleanliness management. Technical cleanliness analyses are designed to record the current condition and monitor the cleanliness of manufactured components, as well as to check and optimize the production process.



Laboratory analysis

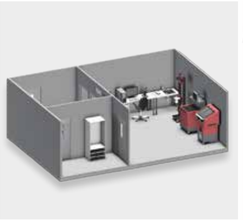
In the HYDAC laboratories, we offer you the service of analysing your components, filters and fluids.

Experienced laboratory staff guarantee expert analyses of component cleanliness based on established standards (ISO 16232 or VDA Volume 19, internal company standards and customer specifications) and media analyses.

As a member of the industrial association for "Technical Cleanliness" (TecSa), HYDAC played a leading role in developing the VDA 19.1 and 19.2 / ISO 16232 guidelines for cleanliness testing in the automotive industry, as well as in the further development of these publications. HYDAC supports the automotive industry with products and services to implement the objectives of technical cleanliness.

In order to flexibly and quickly respond to your enquiries, HYDAC works Germany-wide with partners in the field of technical cleanliness. This allows us to meet the current requirements to support you, also in the future, as an excellent laboratory partner.

Partner für HYDAC Technische Sauberkeit



Laboratory Design and Turnkey Laboratories

To achieve and maintain high quality standards, preventive process control is necessary. Having a laboratory specifically for regular cleanliness analysis is often a cost-effective alternative in such cases. HYDAC is your reliable partner for designing, planning and implementing tailor-made solutions.

As a specialist in technical cleanliness, HYDAC can provide support if you are setting up a new laboratory to monitor technical cleanliness. HYDAC offers everything from individual extraction units, to laboratory design through to the fully fitted laboratory.

Mobile Laboratory

On-site analysis

With our mobile laboratory we provide expert advice and proactive support for the various questions about technical cleanliness. Cleanliness analysis of sensitive components based on VDA Volume 19, ISO 16232 or customer specifications directly on site.

Process chain analysis

HYDAC also offers to professional production process chain analyses to optimize the production processes in view of technical cleanliness.

You profit by saving time and money thanks to the direct on-site analysis. We can give a striking analysis of the actual condition of your production process. A further advantage is that the influence of logistics on the analysis result is minimized. You can count on the extensive knowledge of our experts who are ready with a suitable solution for every requirement. This includes the different production steps such as logistics, manufacturing and cleaning.

Given HYDAC's experience, we can provide support in the automotive industry, the agricultural, construction and commercial machinery industries, aviation and aerospace technology, the electrical industry and many other industries.

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Technical Cleanliness - Units, Systems and Services

Fluid Conditioning
Quality Assurance with the Perfect Strategy.

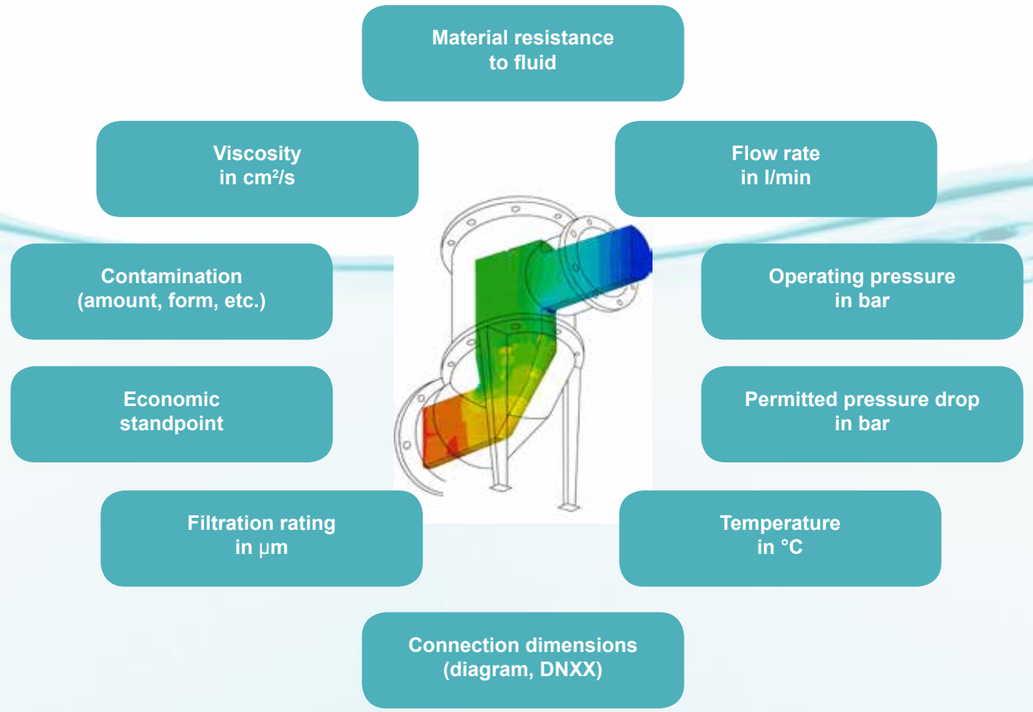
At first glance, the initial investment in high-quality HYDAC filtration often seems to be the more costly option. However, numerous practical examples show that our customers have had very positive experiences during operation with the use of HYDAC components and systems. Considering the significantly increased filter lifetimes, the extended life of bath fluid, the reduction of wear on system components and the maintenance savings, the additional investment often seems to pay off within just the first year of use. Our aim is to significantly reduce your running costs and expenditure in accordance with the TCO approach by using high-quality technology.

What top quality means for you

- Increased machine and system availability due to condition-based monitoring
- Improvement of quality image and compliance with quality standards
- Avoidance of recalls
- Reduction of production stage failures
- Lowering of warranty claims
- Reduction of operating fluid consumption due to more intensive media maintenance
- Cost reductions through lower production waste
- Detection and elimination of weak points
- Internal and external process optimisation
- Customized documentation of the technical cleanliness of components

The ten principles of sizing & design

Correctly choosing the right filter for your application depends on many different factors and is of vital importance for determining the optimum solution for your system. The ten principles of sizing and design form a checklist of what information we require from you so we can provide a suitable solution:



HYDAC
All From a Single Source and Present in Your Production Process.

For over five decades, HYDAC has been working on solutions to extend service life and protect components. HYDAC is responsible for a large proportion of the cooling, energy storage and filtration of fluids used in production, including hydraulic, lubrication and testing oils, cleaning fluids and cooling lubricants. Filtering, cooling and fluid monitoring are vital factors in making fluids last as long as possible and thus to increasing machine and system availability. HYDAC, your reliable partner for expertise in production.

Reduced power consumption and CO_2 emissions due to

- Variable-speed drive systems and hydraulic start/stop technology
- Energy-efficient machine cooling and heat recovery
- Optimised components and systems (e.g. hydraulic accumulators, filters and filter elements, ball valves, valves and control blocks)

Energy efficiency

Reliable production processes and product quality due to

- Optimisation of industrial part washers and cleaning processes (e.g. filtration concepts)
- Services for technical cleanliness (e.g. process chain analysis, laboratory service, mobile laboratories, training, consulting)
- Products and devices for the technical cleanliness of components and systems (e.g. extraction units, flushing rigs)

Process reliability

Conservation of resources

Extended service life of fluids and wear parts due to

- High quality and specific filters and filter elements for a wide variety of applications
- Repair and conditioning of fluids (e.g. removing varnish, dewatering and degassing fluids)
- Expert fluid analysis and fluid optimisation of systems

System availability

Increased system availability and increased productivity due to

- Sensors for monitoring fluids (e.g. particle contamination, oil condition, pressure, temperature, distance measuring systems)
- Mobile and stationary measuring and display devices for condition monitoring of systems
- Maintenance contracts and service concepts

Cost savings and economic efficiency thanks to:

- Reduced energy consumption
- Reduced operating fluids
- Increased productivity
- Technical Cleanliness
- Reduced CO_2 emissions
- Reduced component wear
- Reduced maintenance
- Prevention of initial damages

Your consultation notes: