HYDAC INTERNATIONAL

Filtration in Industrial Processing.

E 7.700.10/10.13

Contents

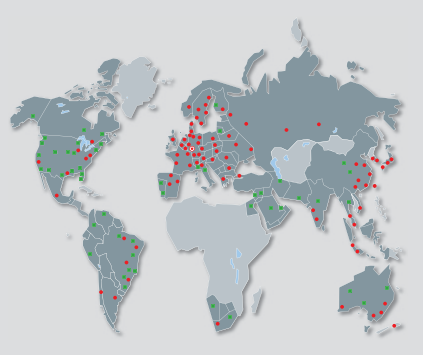
Note

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.

Subject to technical modifications.

Your Partner in the Filtration of Process Media



HYDAC – Worldwide and local

With over 7,000 employees worldwide, HYDAC is one of the leading suppliers of fluid technology, process technology, hydraulic and electronic equipment. With 45 overseas companies and more than 500 sales and service partners, HYDAC is your trusted and competent partner.

Our wide range of products, combined with our expertise in development, manufacturing, sales and service meets the vast range of requirements in the filtration of process media worldwide.

Our quality and environment certification to ISO 9001/2000 and ISO 14001 denote first class quality and responsible management of our resources.

HYDAC Process Technology GmbH

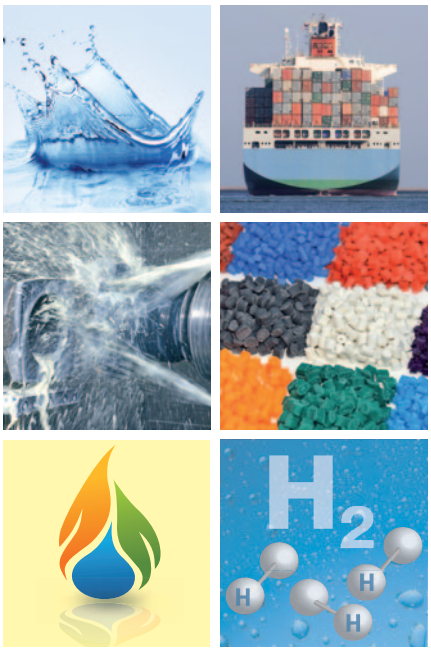
HYDAC has been a leading manufacturer of hydraulic components for well over 50 years. Within the HYDAC Group, HYDAC Process Technology GmbH is your contact for filtration solutions and element technology for the process technology, chemical and plastics processing industry.

Today, HYDAC Process Technology GmbH is in a leading market position with world-wide service and sales.

The Product Range

The product range includes components for filtering low to high viscosity as well as gaseous media:

- Automatic back-flushing filter in the AutoFilt® series
- Inline and screen basket filters in single and duplex versions
- Gas filters
- Filter elements (also customized designs)
- Filter systems and customized solutions

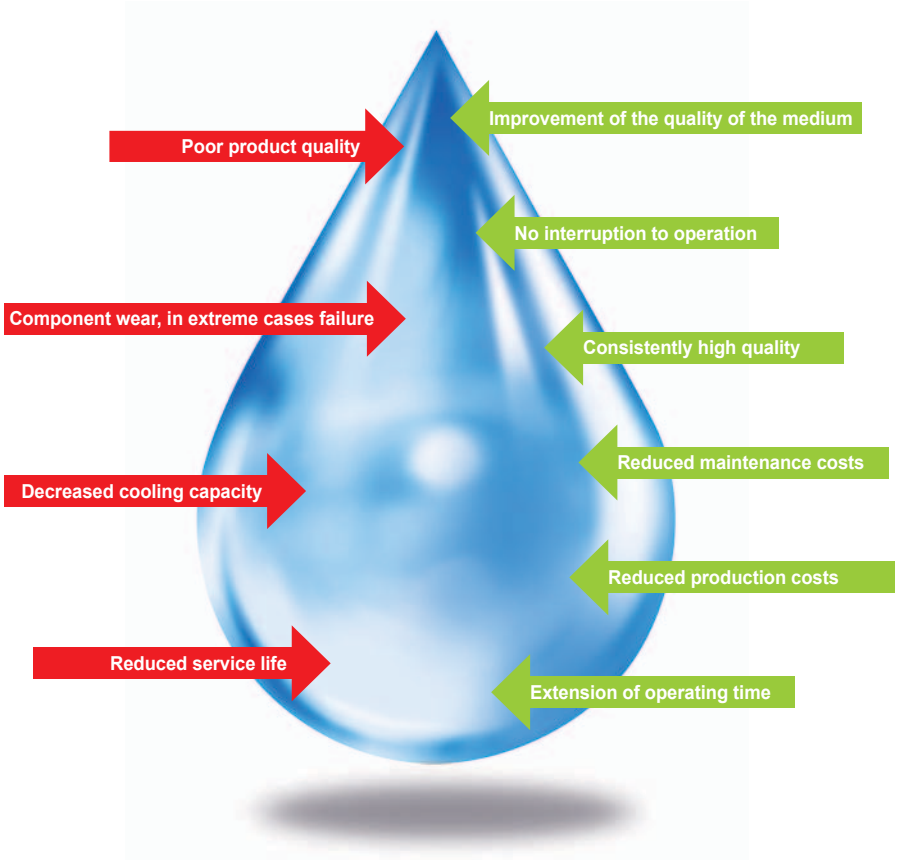


Neat Solutions for High-purity Media

The products which you will find in this catalogue are the culmination of numerous field tests, research in HYDAC's own laboratory and decades of experience.

Our aim is to become your partner in the field of filtration. Our expertise in filtration technology, high quality products and experience with filtration solutions for virtually all industries explains why we also hope to be your first point of contact.

1 Leading by Filtration



You too can benefit by installing HYDAC process filters!

HYDAC filters for process technology are high quality products which make a significant contribution to the safe function and to the extension of the service life of components, system and machines.

HYDAC FluidCareCenter Sulzbach/Saar

The HYDAC FluidCareCenter

You can count on top quality and innovation.

Development at HYDAC is characterised by designs based on test results from our research and test laboratories as well as field analyses. These designs are incorporated into application-orientated filtration systems and take the requirement profiles of users and providers into account.

In the HYDAC FluidCareCenter, in collaboration with our customers, we develop innovative projects in a wide range of industries.
A skilled development team, using state-of-the-art computer-aided analysis, measuring and testing equipment and test rigs, ensures prompt implementation of the project.
(see brochure on the FCC 7.128.1)

With us your Process Medium is in Good Hands ...

The specialists at HYDAC have a good knowledge of the fluid you use and will gladly take care of its filtration. You will see for yourself the clear benefit of having a system that works perfectly, leaving you to concentrate fully on your area of expertise.

In deciding for a HYDAC product, you will benefit at the same time from the HYDAC network of expertise and service available worldwide:

Inspection – Classification – Certification

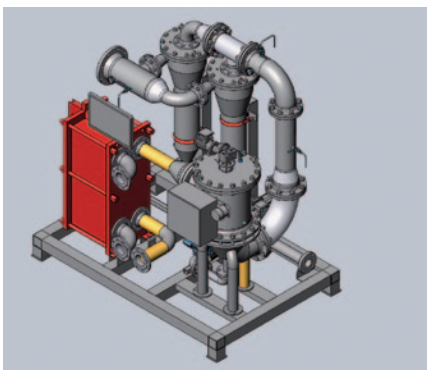
Collaboration with inspection, classification and certification bodies is part of our daily business.

Our products are developed and manufactured according to their specification, as required. Additional certification can of course be undertaken on request.

ATEX Products

HYDAC also has products which are suitable for use in potentially explosive atmospheres.

We will be pleased to send you our ATEX specification questionnaire.



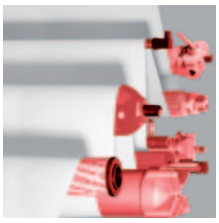
Customized Solutions

- Flexible flange connections (JIS, DIN, ANSI)
- Various design pressures available
- RAL or other colour code
- Wide range of power supplies
- Digital or analogue signals to customer interfaces

Industries and Applications

Steel industry

- Filtration of the process water to protect the nozzles and pumps in high pressure descaling
- Water conditioning for cooling blast furnaces and rolling mills
- Emulsion filtration in cold rolling mills



Paper industry

- Protection of all types of nozzles on paper machines.
- Treatment of fresh water (e.g. river water) to be used for cooling
- Seal water filtration for vacuum pumps

Power plants

- Conditioning of industrial water for generator cooling
- Filtration of seal water to increase the service life of the turbine shaft rotary seals in hydropower stations
- Protection of heat exchangers in thermal power plants

Automotive industry

- Filtration of cooling lubricants and washing fluids to extend service intervals
- Treatment of cooling and process water for different applications

Machine tools

- Improving the quality of cooling lubricants
- Extension of service lifetimes
- Protection of tools, consistent quality of the manufactured parts

Mining

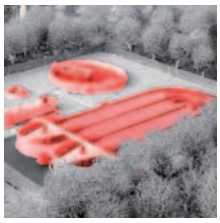
- Filtration of water for sprinkling the shield and cutting machines
- Treatment of cooling water for mine ventilation
- Protective filtration for water hydraulics underground
- Filters for filtering HFA fluids

Oil and gas industry

- Filtration of injection water
- Filtration of cooling and service water
- Filtration of flushing water (pipeline flushing)
- Filtration of seal gas for dry gas seals

Marine

- Pre-filtration for ballast water treatment systems



Water / waste water conditioning

- Protective filter before membrane systems
- Conditioning of service water in sewage treatment plants
- Increase in service life

Chemical industry

- Cooling water and waste water filtration
- Filtration of a wide variety of chemicals

Plastics industry

- Polymer melt filtration

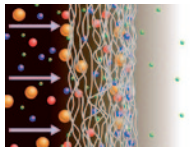
Further applications

- Water pre-filtration for snow-making equipment

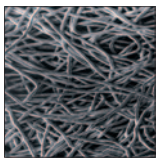
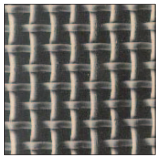
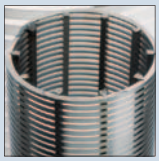
... and much more

2 Filter Materials

The core of each filter is the filter element. To a large extent, they determine the efficiency. For this reason, HYDAC filters are made using only the best filter materials which meet the highest standards in respect of stability, long life and cleanability.

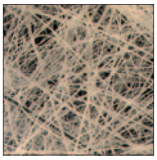
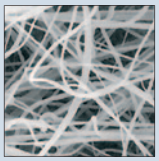
Filter materials	Characteristics	Retention rate
Surface filtration: 	Particle are separated primarily at the surface of the filter material. Once a pre-set pressure drop is achieved or according to fixed intervals, the filter materials are cleaned and the filtration process can continue continuously or intermittently.	**Nominal:** The test filter must retain 90 – 95 % of all particles larger than the given filtration rating.
Depth filtration: 	The operating fluid being cleaned penetrates the filter structure. The contaminating particles become trapped in the deeper layers of the filter. The flow resistance increases as the media becomes more and more clogged, which means that the filter element must be replaced.	**Absolute:** The test filter must retain at least 99 % of all particles larger than the given filtration rating.

Cleanable Filter Materials

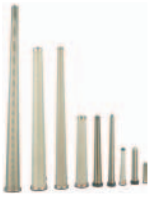
Material	Description	Filtration: Surface ○ / Depth ◆	Material	Filtration rating in µm	Retention rate: Nominal ■ / Absolute ▲	Temperature in °C	Used in following HYDAC filters
	Chemicron® metal fibre	◆	Stainless steel	1 to 100 0.5 to 25 for gases	▲	400	Inline filter
	Wire mesh (Dutch weave)	○	Stainless steel	25 to 60	■	400	Inline filter Automatic back-flushing filters
	Wire mesh Square mesh	○	Stainless steel	100 to 500	■	400	Inline filter Automatic back-flushing filters
	Slotted tube	○	Stainless steel	50 to 3,000	■	400	Inline filter Automatic back-flushing filters
	Perforated plate	○	Stainless steel	3,000 to 10,000	■	400	Screen basket filter

Filter Materials

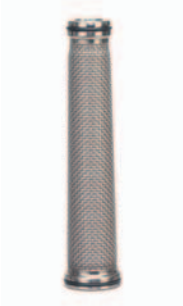
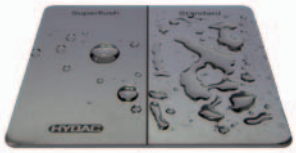
Non-cleanable Filter Materials

Material	Description	Filtration Surface ○ Depth ◆	Material	Filtration rating in µm	Retention rate Nominal □ Absolute ▲	Temperature in °C	Used in following HYDAC filter
	Betamicron®	◆	Glass fibre	3 to 20	▲	95	Inline filter
	Synthetic non-woven material	◆	PP / PES / Nylon	1 to 100	▲	95	Inline filter
	Filter bag	◆ ○	PP / PE / Nylon	1 to 1,000	□ ▲	80	Inline filter

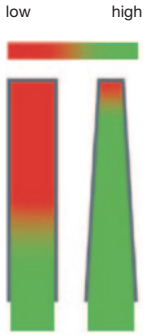
2 Filter Elements

Description	Features	Type	Filtration rating in µm
Conical filter elements for HYDAC AutoFilt® 	• Low viscosity fluids • Isokinetic filtration and back-flushing • Residue-free cleaning • Fewer back-flushing cycles • Lower back-flushing losses • Even flow characteristics	Slotted tube, conical	50 – 3,000
		SuperMesh, conical	25, 40, 60
		Slotted tube, conical, SuperFlush coating	50 – 3,000
		SuperMesh, conical, SuperFlush coating	25, 40, 60
Inline and pressure filter elements 	• Low to high viscosity fluids • Standard and customised models • Excellent differential pressure stability • High porosity • Pressure filter elements up to 210 bar Δp	Slotted tube, cylindrical	50 – 3,000
		Chemicron®	3 – 20 (absolute)
		Wire mesh	25 – 500
		Flexmicron®	1 – 90
		Betamicron®	3 – 20 (absolute)
Filter elements for gas filters 	• High level of defined filtration efficiency • Low pressure drop • High contamination retention capacity • End caps and connection adaptors crimped – no bonding agents • No electrostatic charging	Chemicron®	0.5 – 25 (absolute)
Screen basket filter elements 	• Low viscosity fluids • Pre-filtration • Coarse filtration • Filtration direction from inside to outside • Cleanable filter materials	Wire mesh	25 – 1,000
		Slotted tube	50 – 3,000
		Perforated plate	3,000
PELF Inline filter elements 	• Low viscosity fluids • Very large filter area per element >5 m² • Low pressure drops • High contamination retention capacity • High filtration efficiency	Polyester, pleated	1 – 90
Flexmicron Inline filter elements 	• High contamination retention capacity • Long service life • Compact housing with high flow rates	Flexmicron Economy®	1 – 90
		Flexmicron Standard®	1 – 90
		Flexmicron Premium®	1 – 90
Betamicron® Inline filter elements 	• High contamination retention • High level of particle removal over a wide differential pressure range • High resistance to fluctuations in pressure and flow rate	Betamicron®	3 – 20 (absolute)
Filter bag 	• Low viscosity fluids • Continuous removal of solid particles • Flow direction from inside to outside	Filter bag PP/PE/Nylon	1 – 1,000

2 Special Features of Filter Element Technology

Description	Features
SuperMesh conical filter elements 	• Suitable for low viscosity fluids • Used for applications with the highest cleanliness requirements • Filtration ratings from 20 µm to 120 mm • 3 layers of sintered wire mesh • Element technology for HYDAC AutoFilt® automatic back-flushing filters • No additional support structure • Large open filter area • Highly efficient cleaning due to optimal velocity distribution in the element layers • No adhesion or "build-up" of particles between the element layers • Consistent pore structure • Low pressure drop • Very good cleaning • Isokinetic filtration and back-flushing
Special elements according to customer specification 	• Suitable for low to high viscosity media (polymer melts, acids, alkalis, water, superheated steam, gas) • Used in industrial processing, the chemical industry and the plastics processing industry • Filter materials: Chemicron® metal fibre, wire mesh or mesh combination • Sizes according to customer specification • Connection according to customer specification • Differential pressure up to 210 bar • High contamination retention capacity • High porosity up to 90 %
SuperFlush coating  **with** **without**	• Suitable for low viscosity fluids • Can be used in virtually all sectors of industry • Unique coating technology • Available as an option for conical filter elements • Standard in HYDAC ballast water applications • Prevents particle build-up on the filter element surface • Gel-like particles do not adhere to the filter element surface • Prevents biofouling • Increased service life • Increased efficiency

Efficiency of back-flushing



cylindrical vs. conical

3 Automatic Back-flushing Filter AutoFilt®

HYDAC automatic back-flushing filters AutoFilt® are designed for continuous or intermittent filtration in all areas of industry and in water treatment. HYDAC AutoFilt® automatic back-flushing filters are self-cleaning systems for the removal of solid particles from fluids. They make a great contribution to operational reliability and reduce operating and maintenance costs.

- Temperatures up to 90 °C
- Pressures up to 350 bar
- Filtration ratings from 15 to 10,000 µm
- Flow rates up to 10,000 m³/h

	Flow rate Qmax	Operating pressure Pmax	Filtration ratings	Filter element type
AutoFilt® RF3 	10,000 m³/h	100 bar	25 to 3,000 µm	• Conical slotted tube • Wire mesh • SuperMesh • SuperFlush coating optional
AutoFilt® RF4 	220 l/min	16 bar	25 to 1,000 µm	• Conical slotted tube • Wire mesh • SuperMesh • SuperFlush coating optional
AutoFilt® RF5 	4,200 m³/h	10 bar	200 to 3,000 µm	• Conical slotted tube
AutoFilt® RF7 	7,500 m³/h	10 bar	25 to 3,000 µm	• Conical slotted tube • Wire mesh • SuperMesh • SuperFlush coating optional
AutoFilt® RF10 	3,000 m³/h	6 bar	40 to 3,000 µm	• Conical slotted tube • Wire mesh • SuperMesh • SuperFlush coating optional / Standard in ballast water applications
AutoFilt® ATF 	400 m³/h	16 bar	200 to 3,000 µm	• Conical slotted tube • SuperFlush coating optional
AutoFilt® RFH 	800 l/min	350 bar	25 to 500 µm	• Slotted tube • Wire mesh

3 Inline and Screen Basket Filters

HYDAC inline filters are designed for the toughest applications in process technology. They provide effective filtration of all types of solid contamination. Numerous designs and filter materials ensure the best fit to the filtration task and the given process conditions.

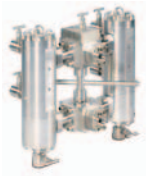
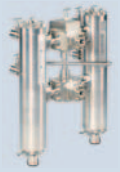
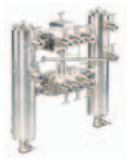
- Temperatures up to 400 °C
- Pressures up to 1,000 bar
- Filtration ratings from 1 (absolute) to 10,000 µm
- Flow rates up to 3,600 m³/h

	Flow rate Qmax	Operating pressure Pmax	Filtration ratings	Filter element type
PRFL / PRFLD 	3,600 m³/h	64 bar	3 to 3,000 µm	Betamicron®, Chemicron®, Wire mesh, Slotted tube
PRFS / PRFSD 	3,600 m³/h	16 bar	25 to 3,000 µm	Wire mesh, Slotted tube, Perforated sheet
PMRF / PMRFD 	1,200 m³/h	40 bar	1 to 90 µm	Flexmicron Economy®, Flexmicron Standard®, Flexmicron Premium®
PFM / PFH / PFMD / PFHD  	120 l/min	100 bar	1 to 2,000 µm	Chemicron®, Wire mesh, Slotted tube

Inline and Screen Basket Filters

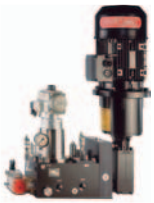
	Flow rate Qmax	Operating pressure Pmax	Filtration ratings	Filter element type
EDF 	300 l/min	400 bar	3 to 250 µm	Betamicron®, Chemicron®, Wire mesh
PBF 	500 l/min	10 bar	1 to 1,000 µm	Filter bag
PLF1 	1,440 l/min	16 bar	1 to 90 µm	PELF

Gas Filters

	Operating pressure Pmax	Operating temperature	Filtration ratings	Filter material
GCF Gas Coalescer Filter 	up to 500 bar	-35 °C to +225 °C	0.5 to 25 µm	Chemicron®
GCF with cyclone 	up to 500 bar	-35 °C to +225 °C	0.5 to 25 µm	Chemicron®
GCF Double Block & Bleed 	up to 500 bar	-35 °C to +225 °C	0.5 to 25 µm	Chemicron®
GPF Gas Particulate Filter 	up to 500 bar	-35 °C to +225 °C	0.5 to 25 µm	Chemicron®
GDS Gas Demister Filter 	up to 250 bar	-35 °C to +225 °C	>15 mm*	Stainless steel
GCS Gas Cyclone Separator 	up to 250 bar	-35 °C to +225 °C	Aerosols >7 mm* Particles >3 mm*	-
GF1 High Pressure Filter 	700 bar	-40 °C to +85 °C	1 to 25 µm	Chemicron®

* depending on the particular operating conditions

System Solutions

Type	Description	Technical Details
Process Booster Block PBB 	Cooling lubricant supply for machine tools in the minimum amount of space: • Protective filter – Automatic back-flushing filter AutoFilt® RF4-1 • Process monitoring • Pressure control • Pressure boost	Flow rate: 80 l/min for cooling lubricants Filtration ratings: 20 to 100 µm Max. operating temperature: +80 °C Max. operating pressure: 70 bar
BTU Backflush Treatment Unit 	Back-flush treatment unit: • HYDAC AutoFilt® automatic back-flushing filter for main filtration • Process twist sieve for the treatment of the back-flushed volume • Buffer tank with components • Control	BTU 1: Add-on unit (incl. buffer tank, tank volume 150 l) BTU 3: Tank-top unit (for retrofitting to existing tank) Filtration ratings for process twist sieves: 25 to 150 µm SuperMesh mesh Filtration ratings for bag filters: 25 to 150 µm Filtration ratings for RF: 25 µm to 150 µm
AutoFilt® TwistFlow Strainer ATF Skid 	In order to filter high flow rates, the TwistFlow Strainer AutoFilt ATF can also be supplied as a skid solution. Special models also possible with back-flushing incorporated	Example: Flow velocity: approx. 600 m^3/h Filtration rating: 200 to 3,000 µm Materials: stainless steel, carbon steel
	**Individual system solutions on request and to customer specification**	

Clogging Indicators

HYDAC clogging indicators are designed to indicate visually and/or electrically when the filter elements must be changed or cleaned.

- Differential pressure indicators
- Visual, electrical or analogue differential pressure signal
- Wide range of pressure settings
- Optional electrical ATEX indicator

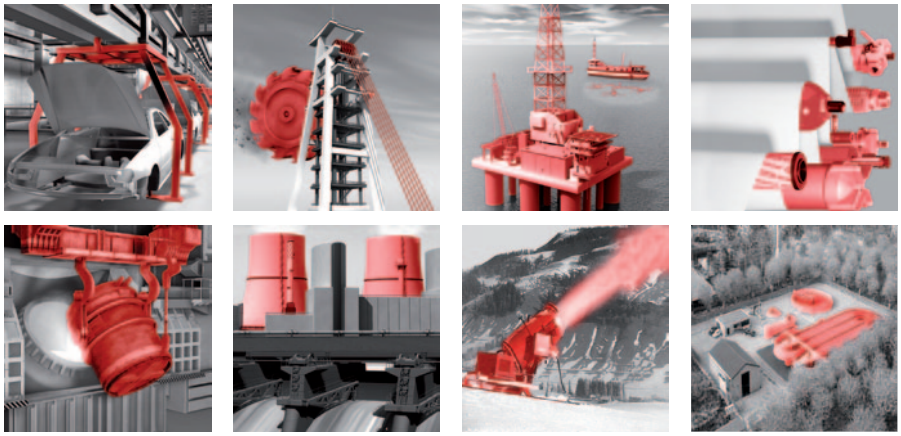
	P_{max} [bar]	Pressure setting [bar]
PVD x B.x 	420	1, 1.5, 2, 3, 5, 8
PVD x C.x 	420	1, 1.5, 2, 3, 5, 8
PVD x D.x/-L 	420	1, 1.5, 2, 3, 5, 8
V01 x VZ.x 	160	0.8, 2.0, 4.3
DS11 	25, 40 on request	0 - 1.6, 0 - 4
PVL x GW 	25	0.5, 1, 1.5, 2, 3, 5
HDA 4xxx 	on request	-
EDS 3xxx / 8xxx 	on request	-

4 Process Media

Water

Many industrial companies require different types of process and service water for their production and manufacturing processes. These include, for example, water for cooling purposes, washing and flushing water, seal water for rotary seals, service water to prepare chemical solutions etc. The use of drinking or mains water for such applications is too expensive as a rule and so ground or surface water is utilised for these purposes. Depending on the application and the quality of the raw water, more or less complex treatment is required for the water to obtain the required water quality.

Invariably in all water treatment processes, filtration of the solid particles suspended in the untreated water is required to guarantee operationally safe recovery of process and service water. Owing to its broad product range of automatic back-flushing filters as well as inline and screen basket filters, HYDAC can provide the correct process filter for virtually all areas of application and industries.

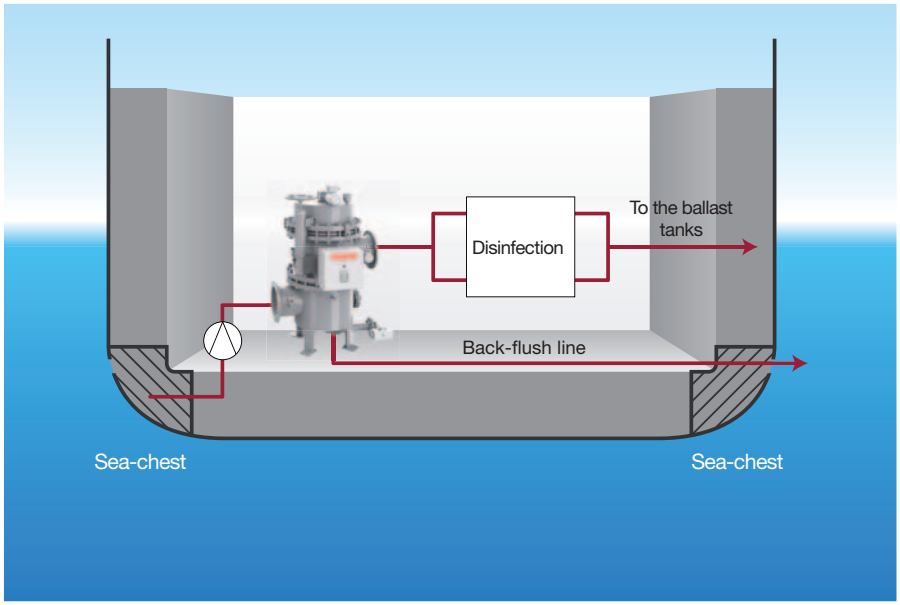


Ballast Water

Water is required to provide ballast depending on the load condition of the ship. Up to now, there has been the risk of sea-life being transported to areas causing damage to the ecosystem as a result of the exchange of ballast water.

For this reason, so-called ballast water treatment systems are to be installed on ships in future. By using mostly two-stage systems which consist initially of a pre-filtration stage followed secondly by disinfection (such as electrolysis, UV irradiation or ozonation systems) harmful microorganisms and viruses are killed.

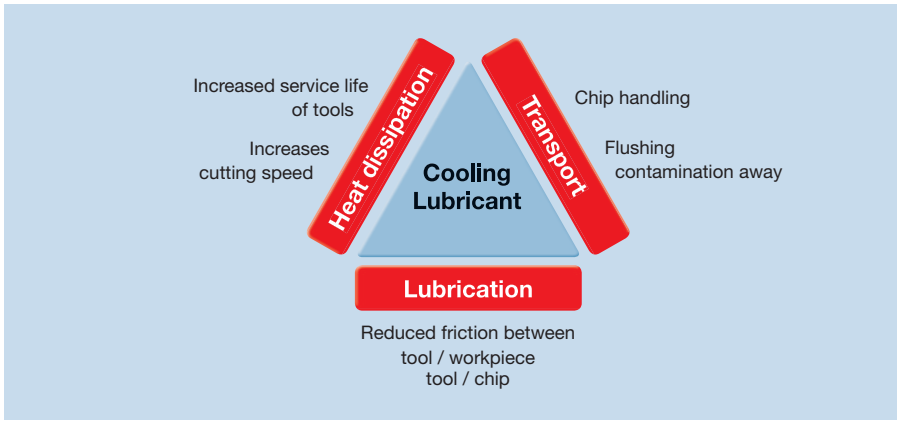
The automatic back-flushing filter AutoFilt® series from HYDAC is ideally suited to pre-filtration and already has a proven track-record in numerous installations.



Cooling Lubricant

Functions of cooling lubricants

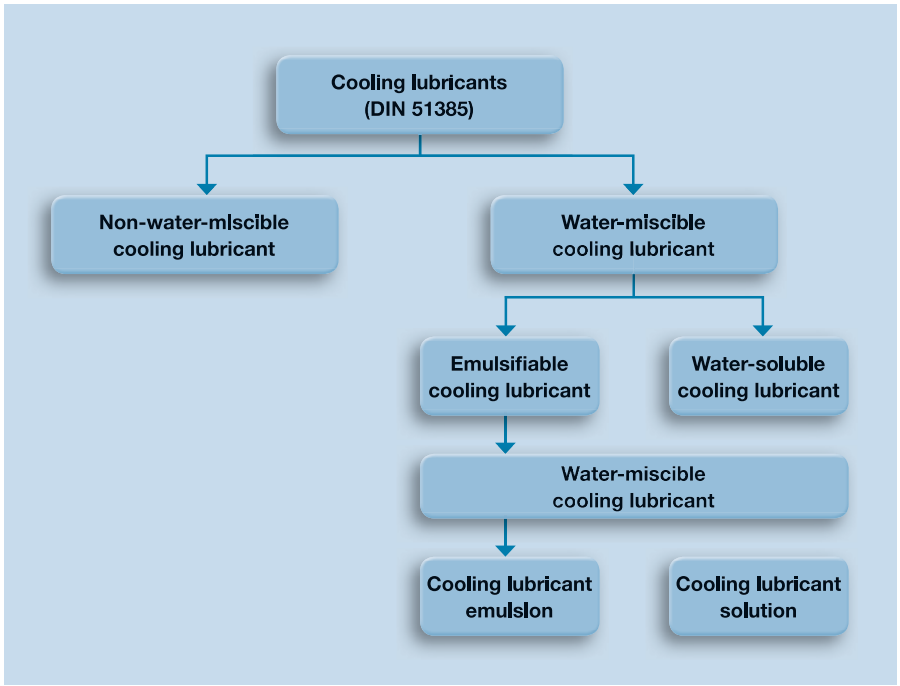
Cooling lubricants are used in modern manufacturing for cutting and forming with machine tools and primarily for the following tasks.



The relative importance and emphasis of the individual criteria are dependent on the particular machining process. In addition, all cooling lubricants for metal machining are optimally tailored to numerous secondary requirements which also have positive implications for the user:

- Consistent stability for long term use due to perfect filtration
- Excellent corrosion protection
- Neutrality towards compatible elastomers, machine coatings
- Reduced outlay for machine failures and maintenance due to continuous conditioning
- Easy disposal

Range of cooling lubricants

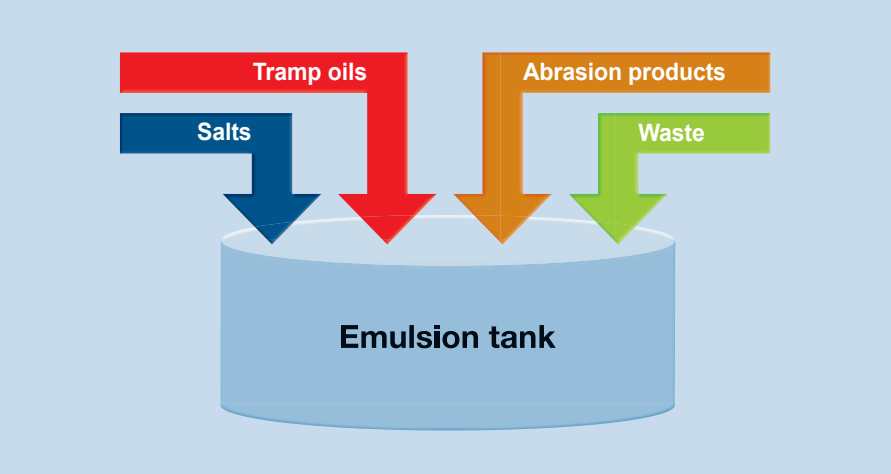


Process Media

Filtration of cooling lubricant

Even the best cooling lubricant will not function without conditioning!

In order to be able to obtain maximum usage from the cooling lubricant over a long time period, effective filtration is essential.
All contamination which enters the system must also be removed from the system by filtration.

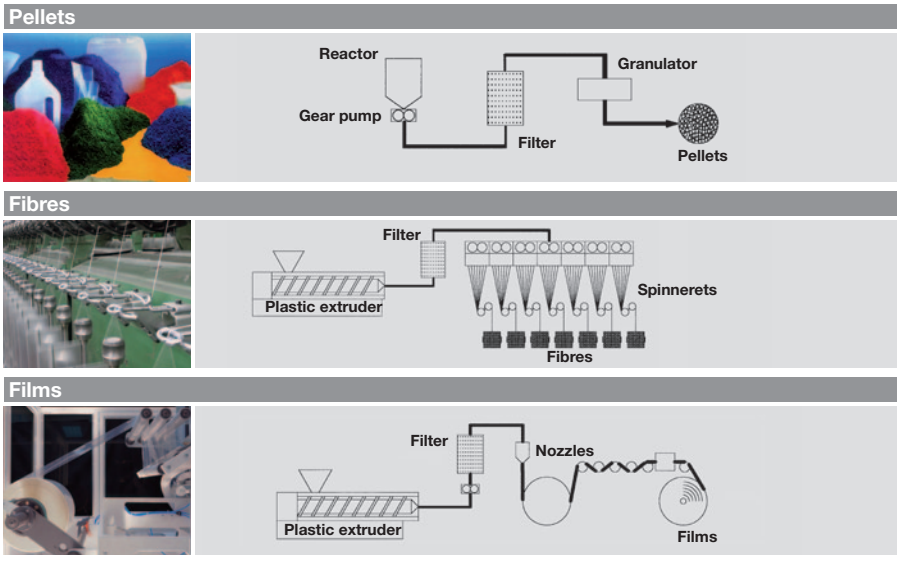


Polymer Melts

A specialist area of fluid filtration is in the production and processing of plastics.

In addition to the impurities brought in from outside and caused by the manufacture of raw materials, the presence of gels and specks often causes further problems in production quality assurance.

Filtration using special filter elements in Chemicron (metal fibre), in filtration ratings of between 1 and 100 µm absolute, has proven most effective in this field. The filter elements are supplied in pleated form as standard or customised elements.



Application diagrams showing manufacture of pellets, fibre or film

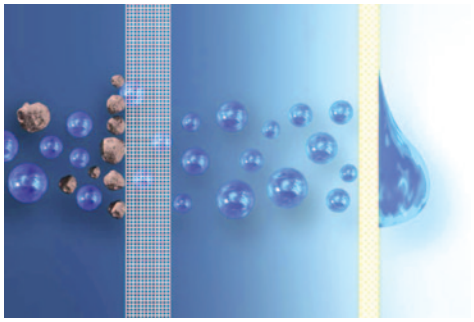
Process Media

Seal Gas

HYDAC gas filters have been specially developed for use in dry gas seal systems for turbo compressors.

Dry gas seals of turbo machines are very complex systems and extremely sensitive to contamination by solid particles, aerosols and condensates. As the shaft rotates, a tiny gap of just 3 µm forms on the seal through which the seal gas flows. To protect these seals, the seal gases must be filtered appropriately to ensure the seal has as long a service life as possible.

Filter elements with a coalescing action (coalescer elements) are invariably used in all HYDAC seal gas filters.
All the elements consist of pleated filter materials which define the micron rating and the contamination retention capacity, and coalescer materials which cause the fluid phase to coalesce.



The design criteria for HYDAC seal gas filters are clearly described in the API. The customer requirements take precedence, and these can be different to the API. HYDAC has developed special design software for sizing and matching the filter to the particular application.

Hydrogen

The European Union has committed itself to converting its transport and energy systems, by 2050, into low-carbon systems and to decoupling economic growth from resource and energy consumption.
In combination with a fuel cell, hydrogen can provide a safe energy source which is flexible, decentralized and without emissions. It therefore represents a key technology to achieve these objectives.

Particularly in the automotive industry, hydrogen is gaining increasing importance as an alternative fuel. The cleanliness of the hydrogen is vitally important here for the lifetime of the fuel cell powered vehicles.

Following the launch of the PSA-H70 (HYDAC Accessories), which is a measuring cell for monitoring the H_2 cleanliness on 700 bar hydrogen fuel pumps, remarkably high levels of particle contamination could be detected irrespective of the compressor design or fuel pump manufacturer.

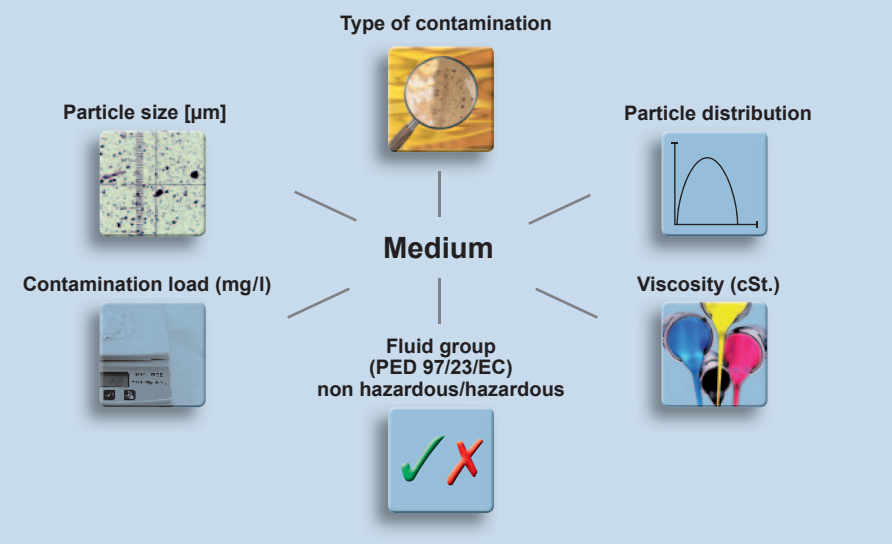
With the gas filter GF1, specially developed by HYDAC Process Technology for hydrogen fuel pumps up to 1,000 bar , it has been possible to draw on the knowledge and experience gained in the dry gas seal filtration sector.
All filter elements consist of pleated filter materials which define the filtration rating and the contamination retention capacity and thus fulfil the requirements of hydrogen fuel pumps for the first time.

4 Selecting the Correct Process Filter

The Nature of the Medium being Filtered

Unlike hydraulic media the solid contamination of process media is not classified according to ISO. No two applications requiring process media filtration are alike. Nevertheless, various parameters can be identified from which it is possible to make the best selection to match the filter to the particular process.

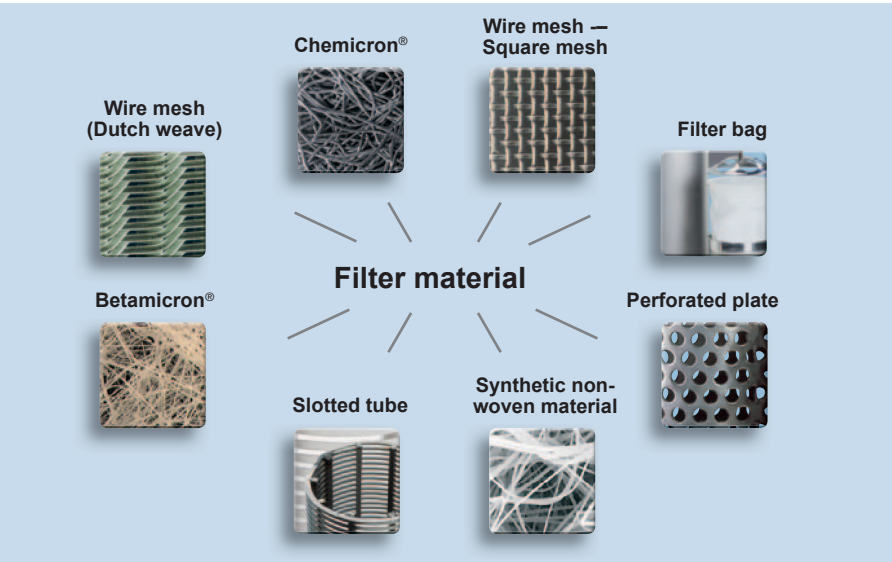
In addition to having an exact description of the application, one of the first steps in selecting the correct filter is the classification and analysis of the intended medium.



Selecting the Filter Material and Filtration Rating

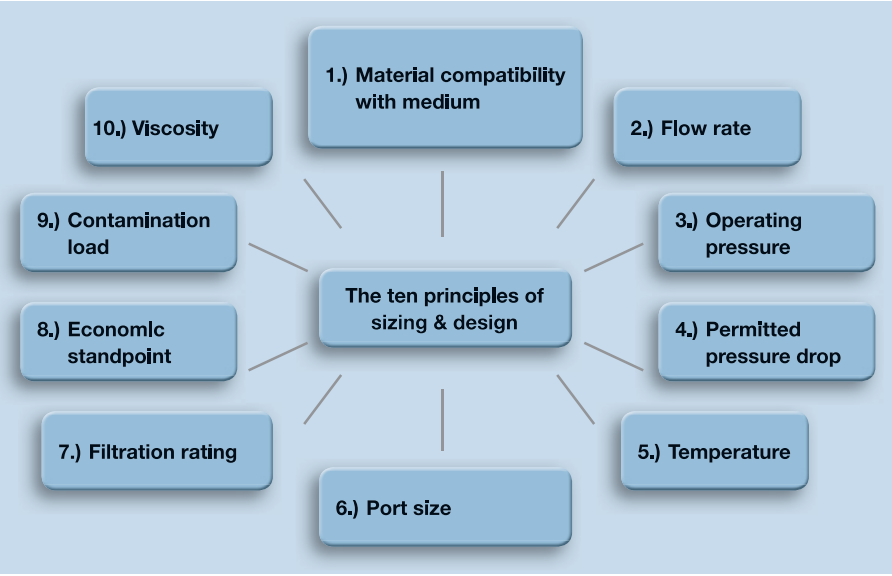
The selection of the filter material and the filtration rating is determined by the existing system and the components requiring protection. In some cases coarse filtration is sufficient, in others, however, very fine filtration must be provided; complete cascade solutions are also possible. Therefore, it is important to follow the principle: fine enough, rather than as fine as possible!

Put your trust in a professional partner with more than 40 years experience in filtration.



Sizing Process Filters

Although there are no standards for selecting the appropriate process filter, there are nevertheless some helpful calculation principles which should be followed. We will be pleased to send you our filtration specification questionnaire and devise with you a filtration solution which is specially tailored to your requirements. HYDAC also offers products which are suitable for use in potentially explosive areas.



5 Filter Specification Questionnaire

Company: _____ Telephone: _____

Name: _____ Fax: _____

Address: _____ Mobile: _____

_____ E-mail: _____

Description of application (if necessary, enclose sketches):

_____

_____

Medium:

Medium _____ Viscosity _____ cSt.

Type of contamination _____ Contamination load _____ mg/l

Fluid group (PED 97/23/EC) Group 1 (hazardous) ☐ Group 2 (non-hazardous) ☐

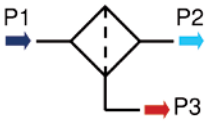
Safety data sheet / CAS No.: _____ (only if applicable)

Operating data:

P1: Operating pressure / Pressure at inlet _____ bar

P2: Pressure at outlet*** _____ bar

P3: Back-flushing line pressure*** _____ bar



Operating temperature* _____ °C Flow velocity _____ m³/h

Design data:

Design pressure _____ bar Design temperature _____ °C

Flow velocity _____ m³/h Filtration rating _____ µm

Connection inlet/outlet _____ Materials _____

Required filter type Single filter ☐ Duplex filter ☐ Automatic filter ☐

Filter material Single use ☐ Cleanable ☐

Clogging indicator** Visual ☐ Visual-electrical ☐ Electrical ☐

Type of control*** Electropneumatic ☐ Electrical only ☐ Pneumatic only ☐

Compressed air*** Yes ☐ No ☐ If yes, please indicate pressure: _____ bar

Power supply voltage*** _____ V _____ Hz Neutral wire Yes ☐ No ☐

Required approvals/Certificates _____

Quantity _____

* If the maximum operating temperature of the fluid exceeds its boiling point, please contact Head Office

** Not required when using an automatic back-flushing filter

*** This information is only required when using an automatic back-flushing filter

5 ATEX Check List

Customer: _____

Project: _____

Which product is to be used? _____

Equipment Groups According to EC Directive 94 / 9 / EC, Annex I

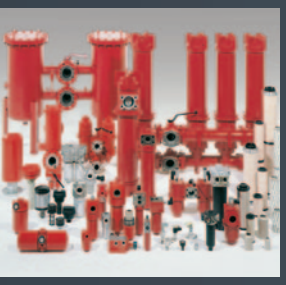
Please tick Group / Category	Group I (Mines, methane and / or combustible dust)		Group II (Potentially explosive atmosphere of gas / air or dust/air mixtures, vapours or mists)					
	Category M		Category 1		Category 2		Category 3	
	1	2	G (Gas) (Zone 0)	D (Dust) (Zone 20)	G (Gas) (Zone 1)	D (Dust) (Zone 21)	G (Gas) (Zone 2)	D (Dust) (Zone 22)
▶								
	Equipment designed to ensure a very high level of safety. Operation guaranteed even in the event of a rare malfunction.	Equipment designed to ensure a high level of safety. Intended to be de-energized in event of explosive atmosphere.	Equipment designed to ensure a very high level of safety. Designed for environments where a potentially explosive atmosphere is to be expected frequently or for long periods.		Equipment designed to ensure a high level of safety. Designed for environments where a potentially explosive atmosphere is to be expected.		Equipment designed to ensure a normal level of safety. Designed for environments where a potentially explosive atmosphere is rarely expected and then only for a short time.	
	Annex II/No. 2.0.1 or 2.0.2		Annex II/No. 2.1		Annex II/No. 2.2		Annex II/No. 2.3	

Medium	▼	**Explosion group**	
Medium		II A	
Safety data sheet		II B	
Flash point		II C	
Ambient temperature		…	

Temperature class	▼	**Max. surface temperature in °C**
T1		450
T2		300
T3		200
T4		135
T5		100
T6		85

Types of ignition protection (only for electrical units)	▼	
		Without ignition protection
p		Pressurisation
c		Constructional safety
d		Flameproof enclosure
k		Liquid immersion
…		

Speichertechnik 30.000

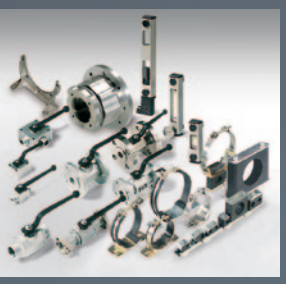


Filter Technology 70.000

Process Technology 77.000

Filter Systems 79.000

Compact Hydraulics 53.000



Accessories 61.000

Electronics 180.000

Cooling Systems 5.700

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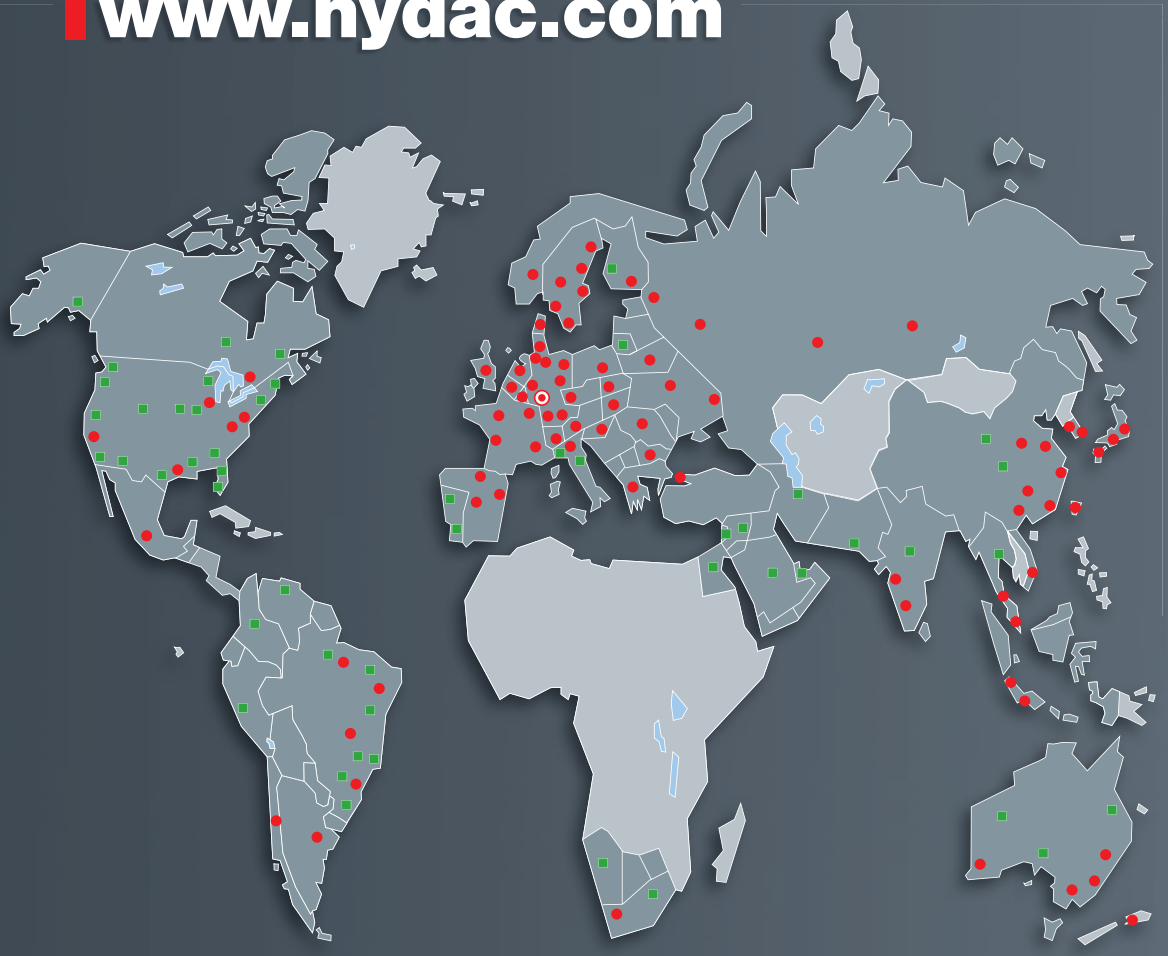

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- HYDAC Companies
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