

## THE ADVANTAGES

Economically and ecologically trend-setting

In economic terms, the best is always the result of "as much as possible" for "as little as necessary". Where the use of lubricating oil is concerned, this means: consistent, precise filtration and regeneration of the lubricant with minimal losses, a requirement for a forward-looking business. One-off investment in high quality filter systems becomes more cost-effective with increased service life and improved protection of rotating machinery. And even in the majority of existing plants, expansion and improvement is possible when replacement time comes along.

BOLLFILTERS consistently remove dirt particles from contaminated liquid and recycle cleaned liquid back into the process. They help to ensure the plant's operational safety continuously over a long period. This saves resources, protects the environment and reduces costs. BOLLFILTERS are the best insurance for the product and the process.



BOLL automatic filters are characterized by the following particularly advantageous properties:

- Large filter surfaces
- Long service life
- Long maintenance intervals
- Easy and quick cleaning and maintenance
- Precisely functioning backflushing device
- Exactly defined grade of filtration thanks to precision wedge wire candles
- Modular system with many possible variants
- Effective removal of the contamination
- Simple handling
- Compact design
- Low pressure losses
- Low operating costs
- Low backflushing quantities



A new addition to the lubricating oil automatic filter range is the TYPE 6.64, whose special features include differential-pressure control and external medium supported backflushing.

For further information, see the BOLL automatic filter TYPE 6.64 brochure.

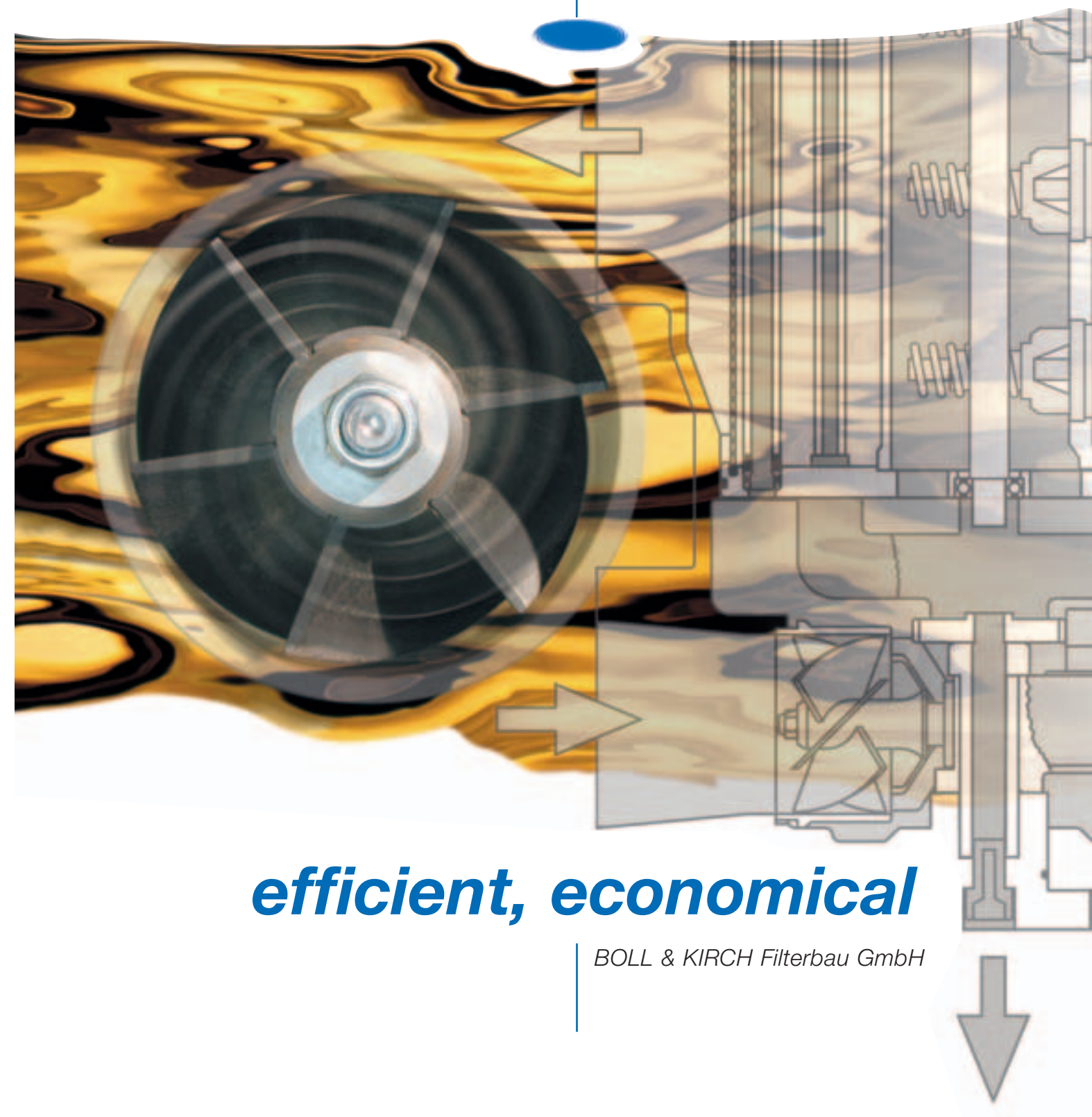


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Marine & Power

## BOLL Automatic Filter TYPE 6.46



**efficient, economical**

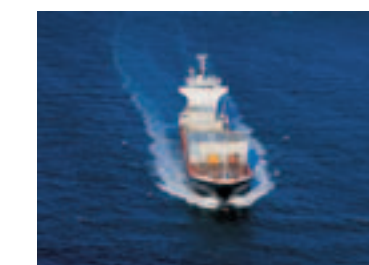
BOLL & KIRCH Filterbau GmbH

## THE TASK

Effective lubricating oil cleaning in heavy oil operation

The economic operation of small and medium-sized diesel engines and generators with heavy oil over a long period makes increased demands on the cleaning of lubricating oil. The quality of filtration of the lubricating oil is one of the factors determining its useful life, smooth engine operation and hence also the level of operating costs. The filters used for this purpose must

- have a precision that will guarantee a specific degree of cleanliness of the circulating lubricating oil,
- have a reliability that will ensure uninterrupted and trouble-free engine running during operation over a long period even in the case of variable engine and lubricating oil conditions,
- prolong the life of the engine, by protecting engine bearings and reducing wear on bearings,
- help to keep operating costs low, being maintenance-free, with long service lives,
- reduce the costs of the consumable materials used up to now,
- be more economical than double filters with paper cartridges.



*Trusted by shipbuilders and marine engineers the world over: BOLLFILTERS.*



*The BOLL automatic filter TYPE 6.46 is equally suitable for vertical ...*

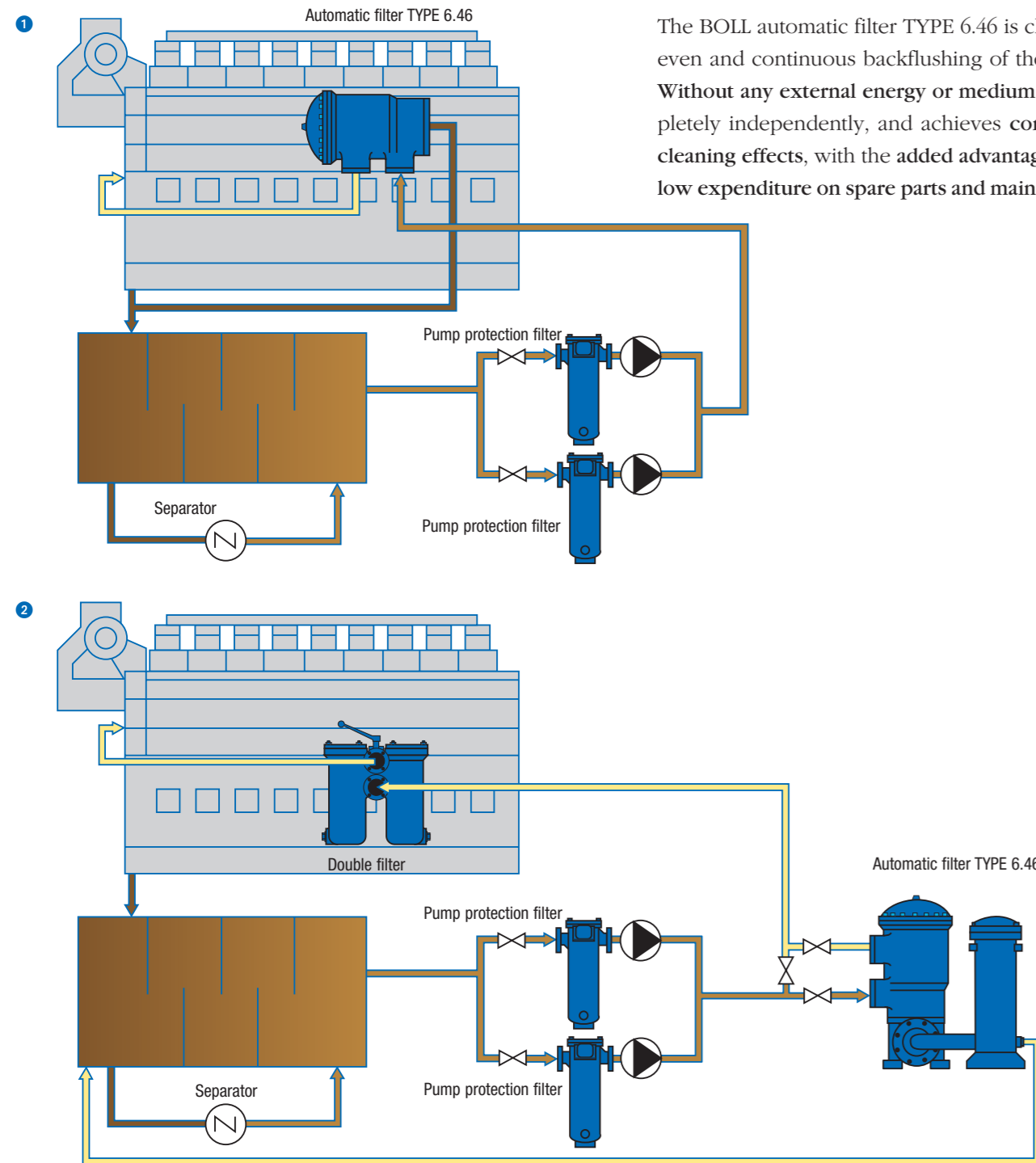


*... and horizontal fitting and installation*

## THE CONCEPT

### Separation of filtration and lubricating oil care

The BOLL Concept separates filtration from lubricating oil care. The BOLL automatic filter TYPE 6.46 fulfils the task of lubricating oil filtration in the best possible way. It can be fitted directly to the engine as a main flow filter ❶. Another solution is to incorporate it in the plant's pipe system, possibly with additional flushing oil treatment. A double filter fitted directly onto the engine takes over the



function of an indicator filter ❷. In both cases, the BOLL automatic filter TYPE 6.46 keeps all solids away from the bearings. Removal of combustion residues from the lubricating oil, on the other hand, it is carried out by a separator or another auxiliary flow treatment section. This solution has proved to be advantageous both with regard to operational safety and from the point of view of economy.

The BOLL automatic filter TYPE 6.46 is characterised by even and continuous backflushing of the filter candles. **Without any external energy or medium**, it works completely independently, and achieves **consistently good cleaning effects**, with the added advantage of **extremely low expenditure on spare parts and maintenance**.

## THE SOLUTION

### Uninterrupted filtration, automatic backflushing

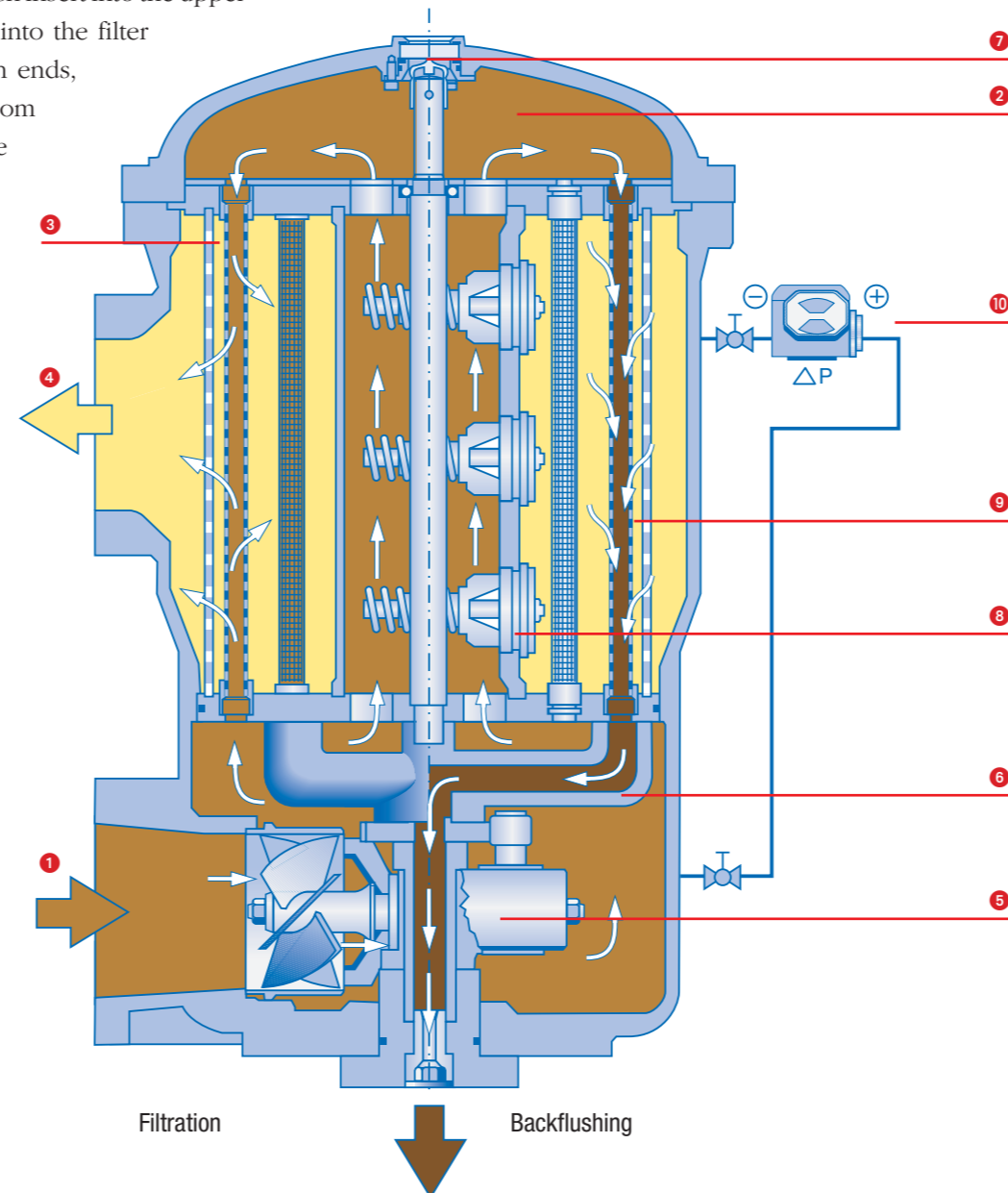
The BOLL automatic filter TYPE 6.46 demonstrates its superiority not only by a perfect filtration result, but also by the best possible operating behaviour. Its high-precision construction is convincingly simple and robust. The BOLL automatic filter TYPE 6.46, which can be mounted horizontally or vertically as an attachment or plug-in filter, has a housing made from grey cast iron. The BOLL automatic filter TYPE 6.46 is available in various sizes with nominal diameters up to 150 mm and can be easily adapted to engine manufacturers' special requirements.

During the filter operation, the lubricating oil to be filtered passes through the inlet flange into the housing section ❶. A partial flow of ca. 50% of the unfiltered oil is fed via the central riser pipe in the mesh insert into the upper part ❷ of the filter housing and into the filter candle ❸, which is open at both ends, from above. The other half flows from below into the filter candle. The candles' filter mesh makes it possible to have filtration grades of up to 25 micron. The cleaned lubricating oil passes through the additional protective mesh to the filter outlet and is fed back to the engine ❹.

The candles are cleaned continuously and in sequence, without interruption to the filtration process. A turbine ❺ mounted in the inlet flange drives the backflushing mechanism. It moves the flushing arm ❻ continuously from filter candle to filter candle. A high surface cross-flow occurs on the inside of the candles which are separated throughout the flushing process. In addition the reduced pressure inside the candles produces a counter-flow of the cleaned oil from the outside of the filter candle back to the inside. These flows effect a thorough

cleaning of the layer of dirt which has built up on the inside of the candle, whilst protecting the filter mesh. Even backflushing over a long period is achieved with small quantities of flushing oil and prevents any drop in the operating pressure. Inspection glass ❷ in the cover is provided for operating check of backflushing.

If the filter candle cleaning operation is disturbed or interrupted, once the differential pressure reaches 2 bar, the overflow valves ❸ open and the lubricating oil is filtered via a protective mesh ❹ incorporated as a second filter stage. However before this stage is reached, the differential pressure indicator ❷ will register the disturbance and trigger an alarm if it continues.



## THE DETAILS

### In summary form

BOLL automatic filter TYPE 6.46	
Automatic filter with cross-flow back flushing	
Areas of application	filtration of lubricating oil for small and medium-sized diesel engines
Operating pressures	2 – 10 bar
Differential pressure resistance	up to operating pressure
Operating temperature	Max. 100 °C
Housing material	grey-cast iron
max. grade of filtration	25 micron
Filter candle type	candles open at both ends
Backflushing medium	own medium
Backflushing control	continuous, turbo-driven
Cleaning mode	individual candles - cross-flow/counter-flushing
Optional accessories	built-in oil outlet valve; integrated regulating valve housing; preparation for measuring attachments, consoles, mounting supports and pipes

DESIGN							
In-/Outlet		DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
Output m³/h	min.	3	5	7	10	22	22
	max.	18	32	48	78	130	179
Flushing quantity in m³/h at 2 bar operating pressure		1.2	1.2	1.3	2.5	4.5	4.5

## THE COMPLETE OFFER

### Quality thanks to specialization

BOLL & KIRCH concentrate exclusively on the design and manufacture of liquid/solid separation filters. Most BOLL-FILTERS are the result of our own research and development and are protected by patents. Customers can take advantage of our knowledge by involving our technicians and engineers in the early phases of their projects. Focusing the knowledge of both partners in simultaneous en-

gineering ensures a perfect result. The global presence of BOLL & KIRCH in the all important industrial centres guarantees customers world-wide reliability and service expected of a supplier of technologically advanced filter systems. Service includes dispatching BOLLFILTER genuine parts all over the world within 24 hours.



Commercial production on CNC and DNC controlled machine tools.



Various storage and logistics systems support smooth and effective production.



BOLLFILTER genuine parts leave the factory within 24 hours.