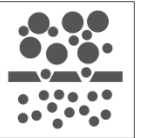


# STEINECKER Twin Flow System

High-efficiency filtration



## Utilising optimisation potential in filtration

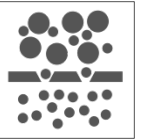
Filtration is one of the key processes in brewery operations. Technological requirements include the need for a bright, shiny filtrate with optimum turbidity and improved physical stability of the beer. This achieves high microbiological safety for the filled product.

Yet the obvious goal is also to achieve high efficiency – perhaps through a lower consumption of filter aids, water and cleaning media. In addition, beer losses during type change-over are to be minimised while simultaneously maintaining flexibility in the choice of filter aids.

### At a glance

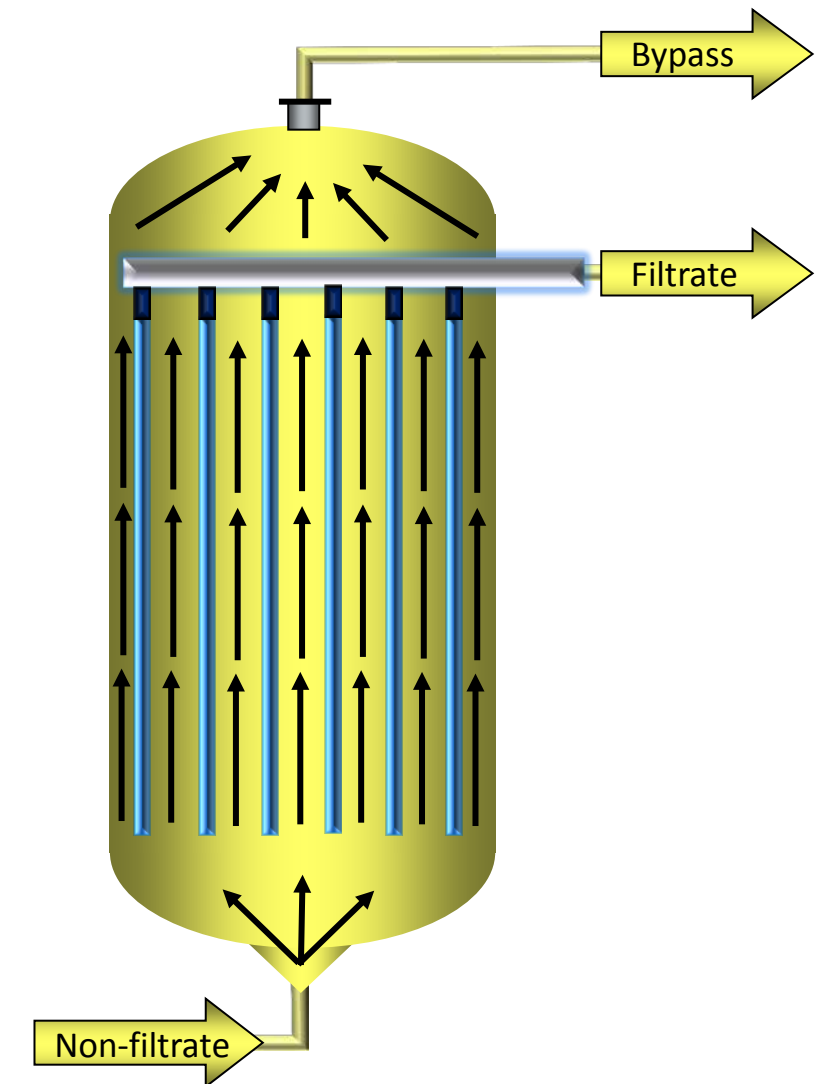
- Optimum distribution of different filter aids along the complete filter candle with the bypass system
- Long filter service lives with a simultaneously lower filter-aid consumption
- Reduced beer losses thanks to a short mixing phase during displacement after precoating

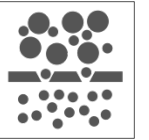




## Process basics of the Twin Flow principle

- Register piping replaces the head plate required in conventional filter systems. The entire vessel is used as a non-filtrate area.
- The bypass allows a homogeneous flow to be controlled within the tank.
- A wide range of filter aids can be optimally precoated by varying the bypass flow.
- The filter aid is distributed evenly over the entire length of the candle. For a consistently good filtration sequence can only be guaranteed through the optimum distribution of the filter aid.

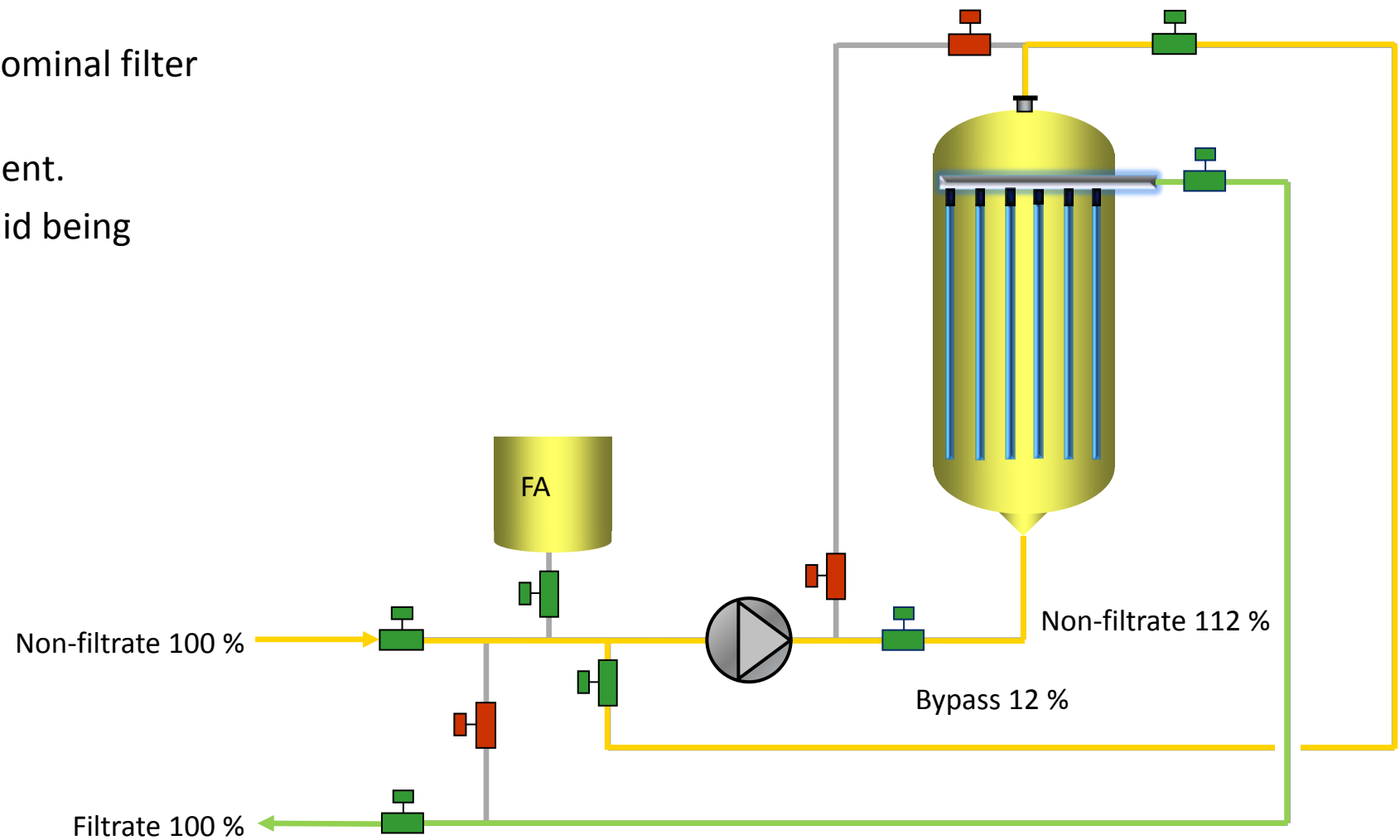




## Process basics of the Twin Flow principle

### Configuration of the bypass flow

- For kieselguhr, a bypass flow at 12 % of the nominal filter performance is recommended.
- The non-filtrate flows in the filter at 112 percent.
- The bypass flow is adjusted to suit the filter aid being used.



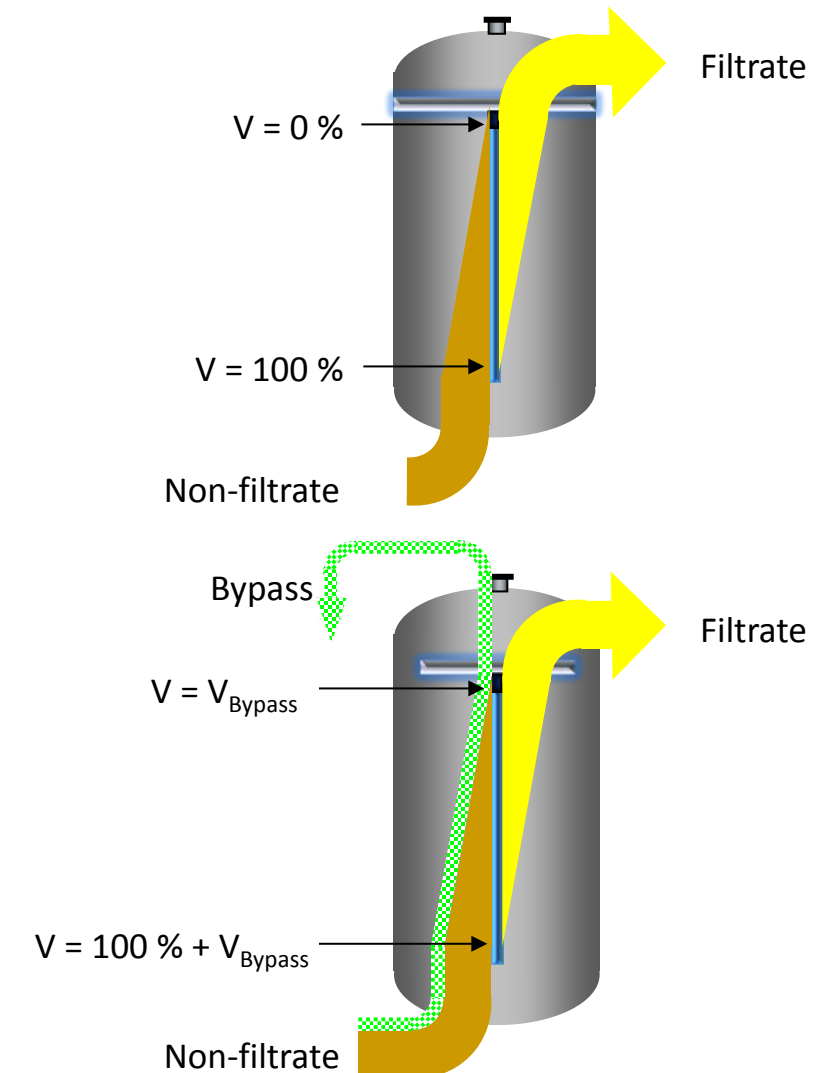
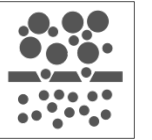
## Conventional candle filter and Twin Flow principle compared

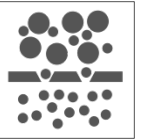
### Conventional candle filter

- The overflow speed slows down along the length of the candle, from the bottom upwards.
- There is practically no flow at all in the top candle area.
- There is no even distribution over the filter aid.

### Twin Flow system

- The overflow speed is increased via the bypass.
- Depending on the filter aid used, its own settling rate must be counterbalanced. This allows even precoating to be controlled along the entire length of the candle.
- By adjusting the bypass flow, the filtrate flow can be slowed down to 10 % of the nominal filter performance.





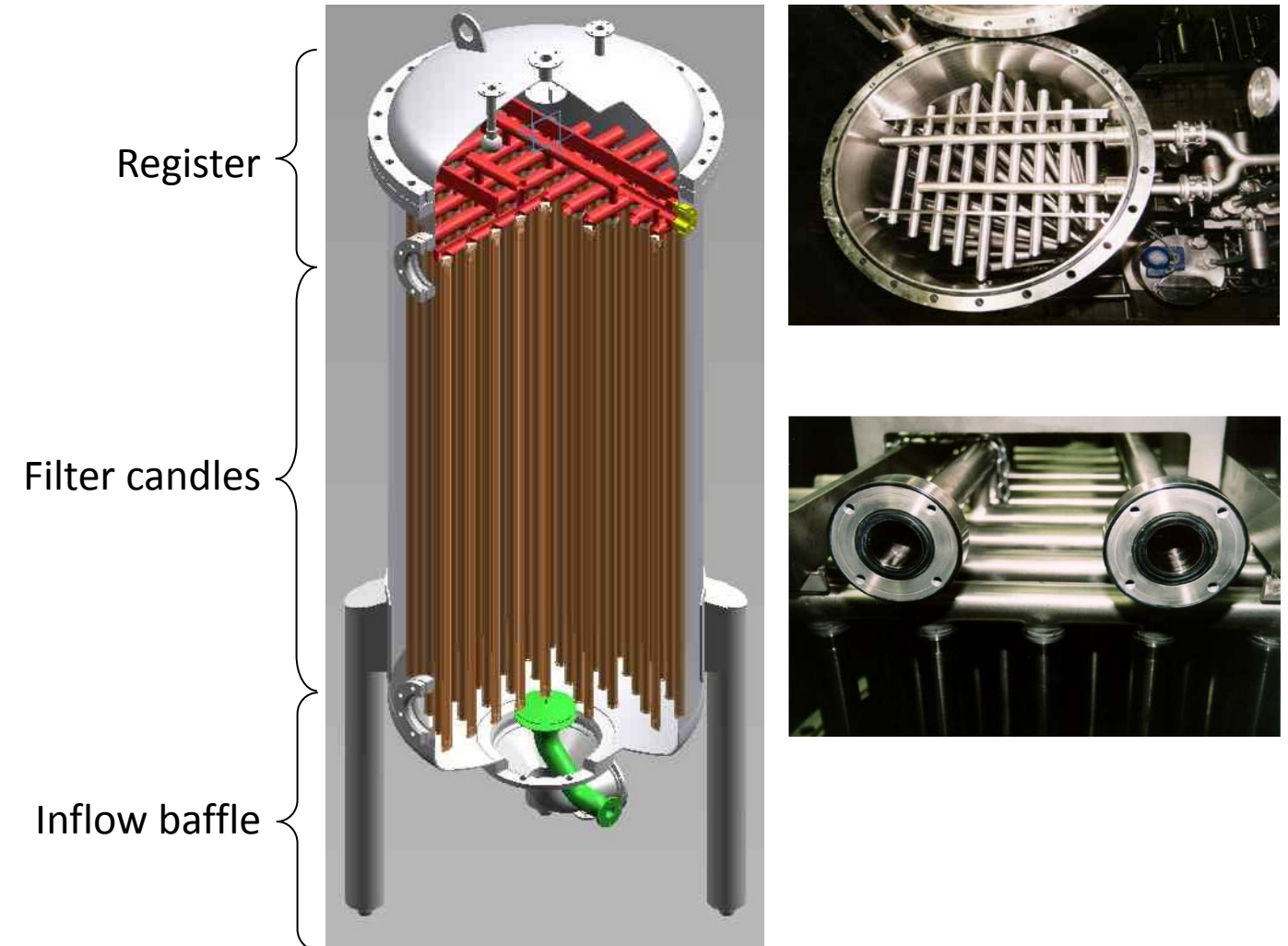
## TFS equipment and technology

### Register – design

- The central element of the TFS filter is the register, thanks to which the separation between the filtrate and non-filtrate area can be omitted.
- New filter candles equipped with inner pipes were manufactured for the Twin Flow principle.
- The specially constructed inflow baffle allows the non-filtrate to be distributed evenly - which is essential for a homogeneous flow in the tank.

### Register – configuration

- The concept with the register allows a specific design to be used for different filter aids.
- The register is designed with two or three discharges, depending on the filter capacity.
- The discharges are operated at intervals during backflushing and CIP – for a greatly increased rinsing output in the register and in the candles.
- The candle density of the register is configured depending on the area of use (kieselguhr or PVPP filtration).



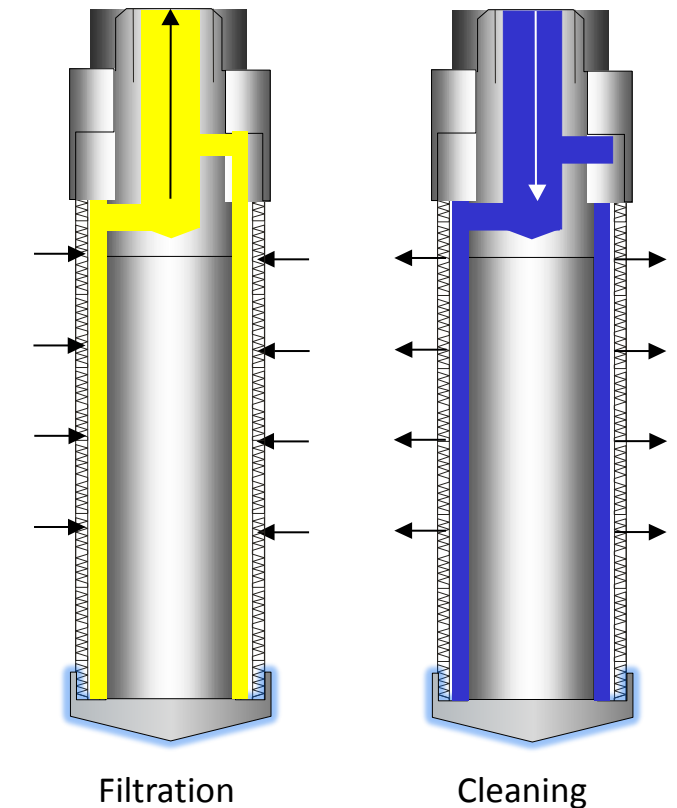
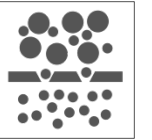
## TFS equipment and technology

### Filter elements

- The candles have been equipped with an inner pipe for increasing stability and reducing the volume.
- The flow speed is increased considerably in the gap between the candle coil and the inner pipe.
- This means that the kieselguhr is rinsed easier out of the candle with the circulation during the precoating procedure and the cleaning and rinsing effect is greatly increased.
- The candles can also be designed longer thanks to their improved stability, which improves the filter capacity.

### Inflow baffle

- In TFS filters, a homogeneous plunger flow is indispensable for the twin flow principle.
- With the inflow baffle, the non-filtrate is distributed evenly to all sides. A homogeneous flow can be created through the separate control of filtrate and bypass outputs.

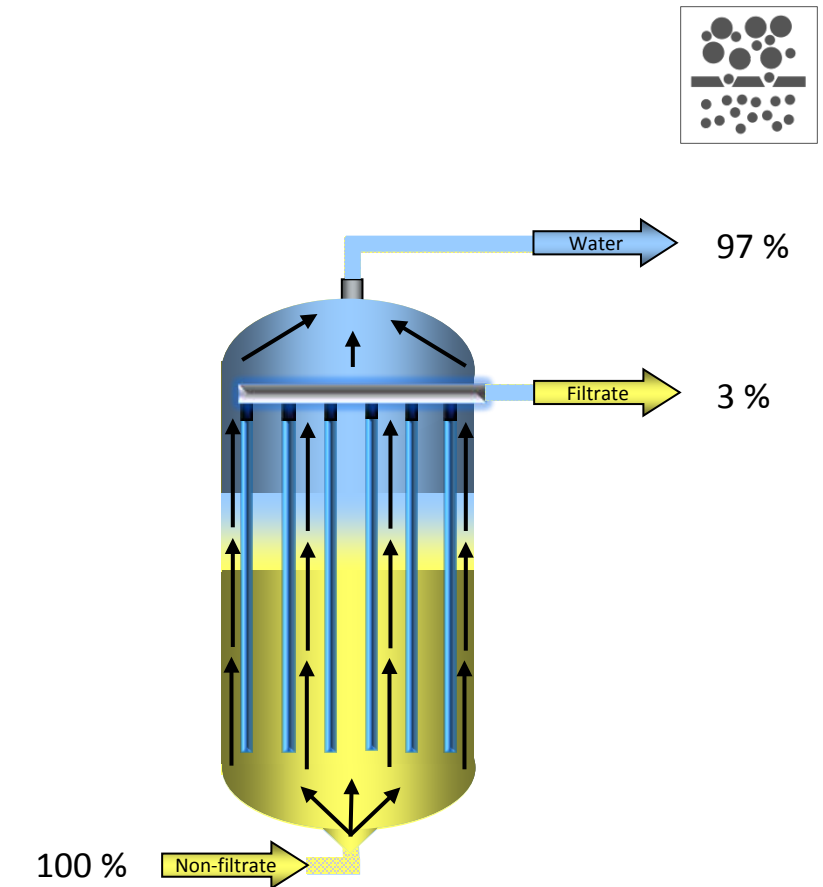


## TFS equipment and technology

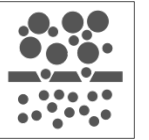
### Displacements and type change-over

The Twin Flow principle minimises the losses which occur during filtration.

- The Twin Flow principle allows the content of the tank to be displaced with a very small mixing zone.
- During the displacement, the majority of the flow is diverted through the bypass.
- The mixing zone is less than 10 percent of the content of the vessel during displacement by water.





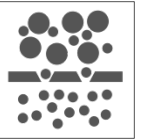


## TFS equipment and technology

### Precoating behaviour

- Perfect precoating provides the basis for efficient filtrations.
- Thanks to the Twin Flow principle, it is possible to distribute the most diverse filter aids over the entire length of the candles.
- Samples of the kieselguhr are taken to determine the distribution of the different particle sizes and confirm the homogeneous precoating behaviour.
- The even thickness of the filter layer is the basis for achieving a longer filter service life and larger filtration loads.



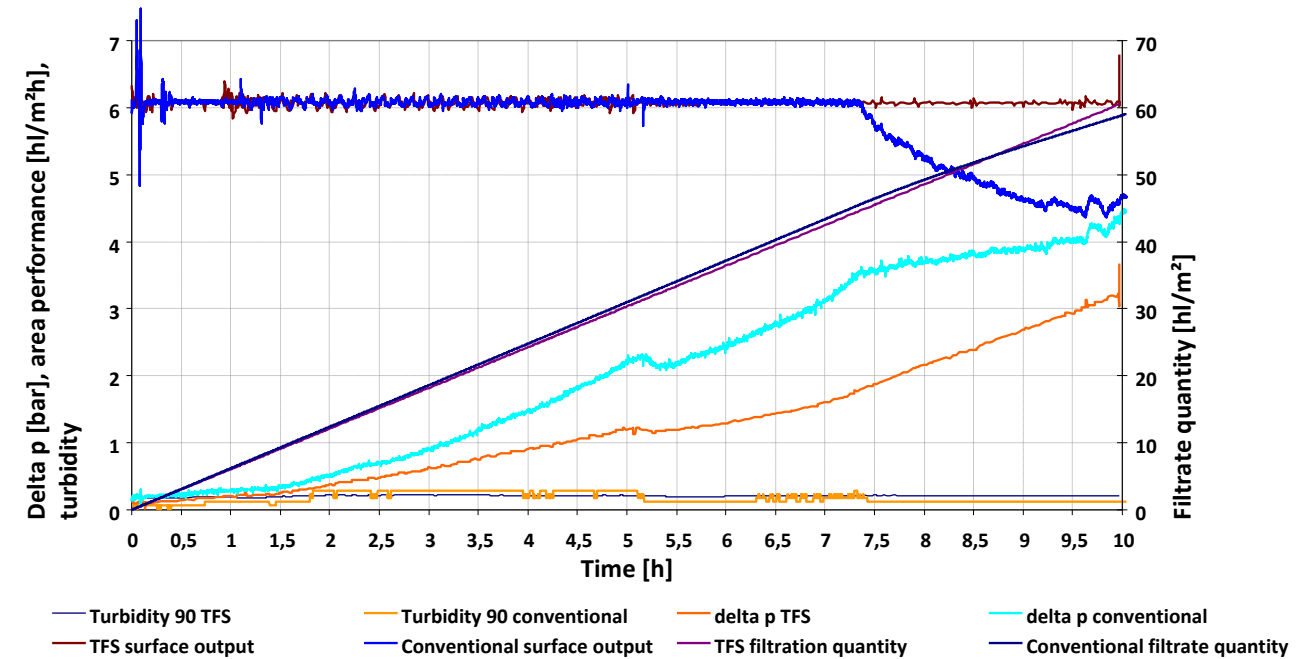


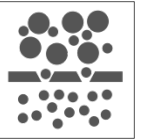
## Your benefits in figures

With the use of TFS filtration concept:

- The average 10 percent lower differential pressure increase enables longer filter service lives and thus creates savings of between 10 and 30 filtrations per year.
- Allows the volume of backflushing water to kieselguhr removal to be reduced by up to 30 percent.
- The number of CIP cleaning sequences is reduced thanks to the longer filter service life. An approximately 20 percent saving can be achieved here.

Filtration characteristics compared





## Benefits to you

### High efficiency

The register concept enables an optimum distribution of different filter aids along the entire filter candle.

### Low losses and high quality

The very short mixing phase during displacement after precoating reduces the beer losses. In addition, the variably adjustable filtration output achieves an optimum quality in special beers.

### Gentle care of resources included

The concept is distinguished by its 25 percent lower consumption of filter aids for precoating and continuous dosing. The TFS also stands out thanks to its water and cleaning-media savings achieved through reductions in the filtration processes.

### Retrofitting

A retrofitting kit is available for existing filtration systems: The register is integrated as an intermediate flange in the existing filter housing.



## Everything from a single source

### **EVOGUARD – excellent valve technology all along the line**

The valve series of EVOGUARD comprises a modular system with hygienic and aseptic components which contributes to every point of the production line with increased performance and which has the perfect solution for every process step.

### **EVOGUARD – pumps for absolute process safety**

In addition to the separation and locking of a line, one thing is particularly important - and that is the reliable conveyance of your product. This is why EVOGUARD also offers innovative centrifugal pumps in addition to high-quality valves.

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