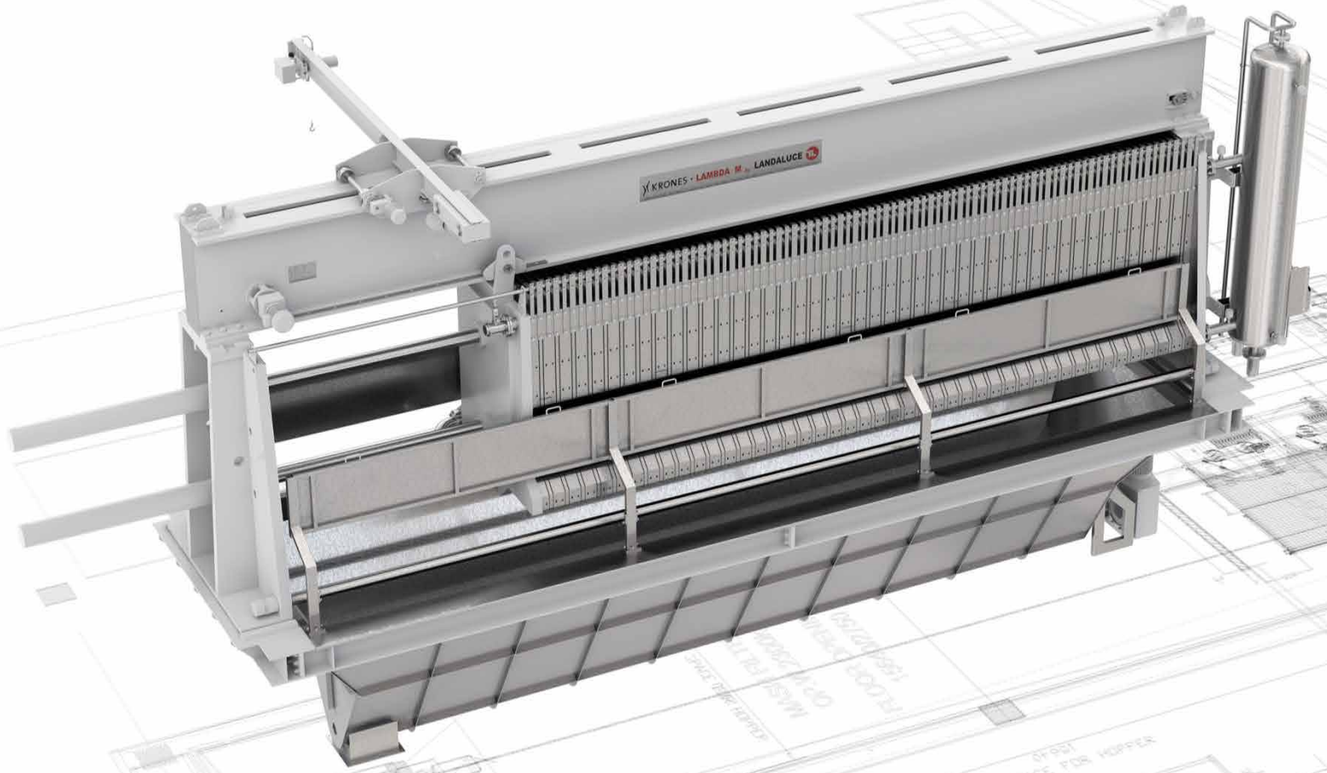
STEINECKER
mash filter

Efficient lautering technology



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Lautering with a mash filter results in high brew rates and flexible use of raw materials

All frame conditions must be suited to achieve clear and pure worts with a low solids content. In terms of economy, this means that this process should be fast and with a high brew rate and, if possible, all of the dissolved extract should be won from the spent grains.

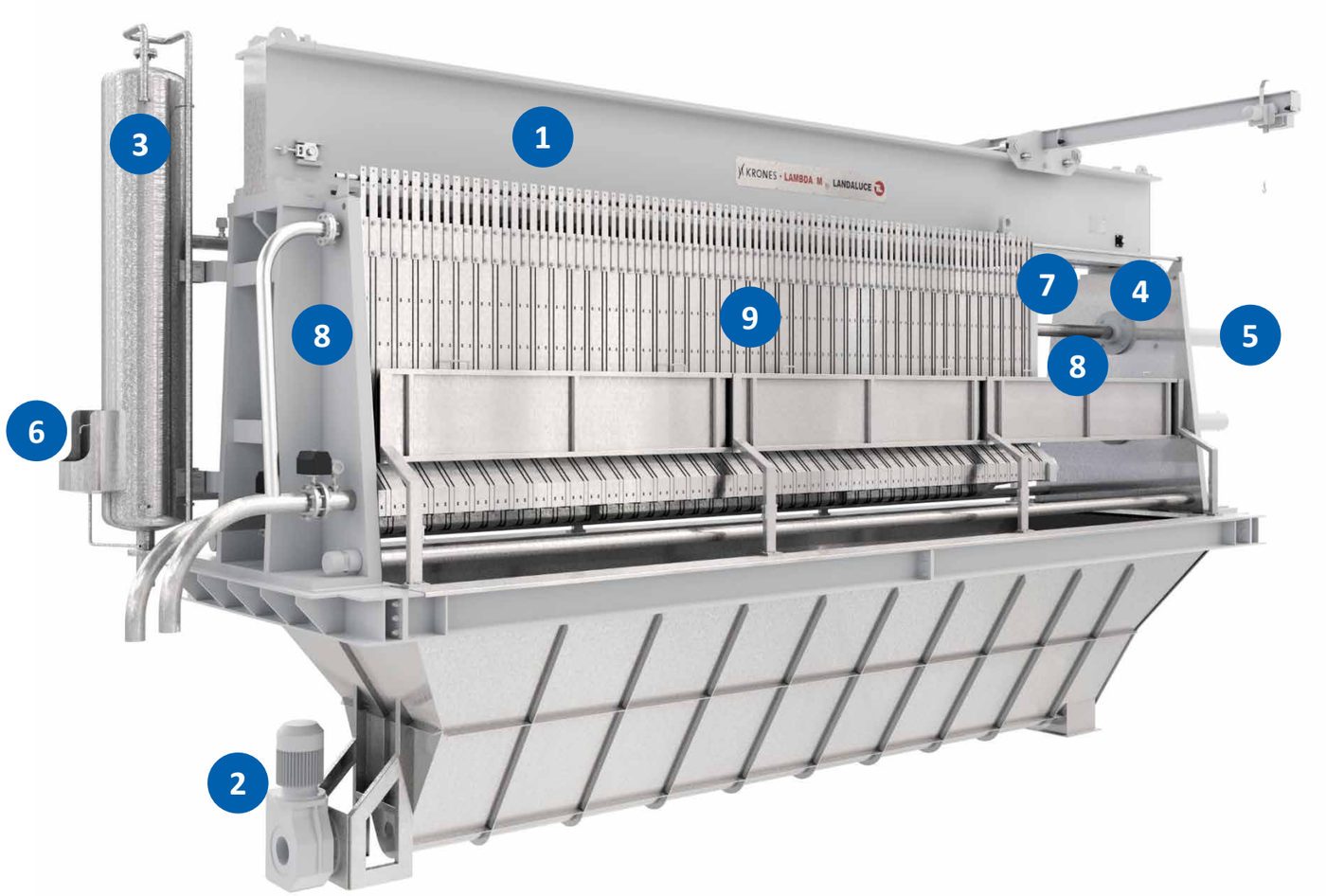
With a high portion of raw grain or an alternative carrier of starch, with a constant load and a high-gravity brewing process, the lautering process must be attuned as well. In this case, the STEINECKER mash filter is the lautering system to go for.

At a glance

- A high yield in spite of an original extract content > 18 °P CW
- Fast brew rates with a high portion of raw grain or alternative sources of starch
- Ideal for a low type variety with constant loads
- Very short lautering times for more than 12 brews per day
- Low space requirements

Mash filter – line concept

1. Main beam
2. Motor for spent grains screw
3. Balancing tank
4. Pressing cylinder guide
5. Pressing cylinder
6. Sampling
7. Moving plate
8. Static plate
9. Filter frame and pressing modules



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Technology

Main beam

- The filter frame and pressing modules are connected to the spent grains discharge mechanism in the main beam.
- This guarantees very fast and uninterrupted grains discharging without tilting the frames or modules.
- The main beam acts as a guide rail for an optional cleaning machine or for the crane during maintenance work.

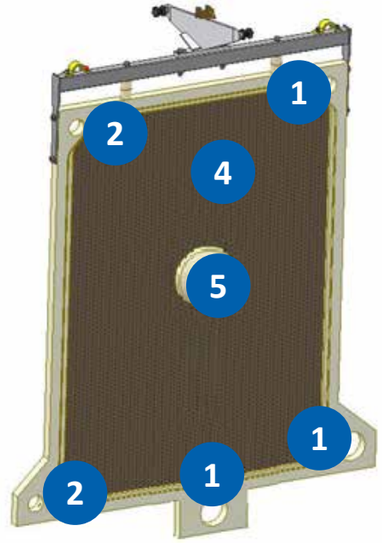
Mash filter – assemblies in detail

Filter frame and pressing module

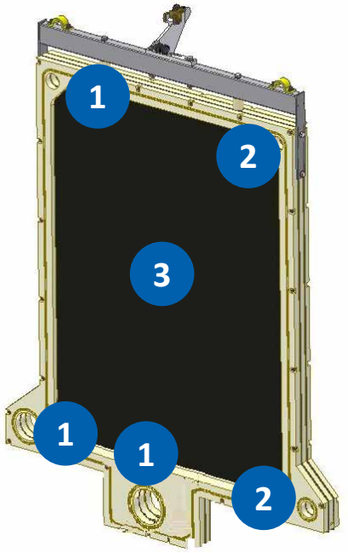
- Simple membrane design without seals or grooves
- The pressing module membrane is pressurised with water

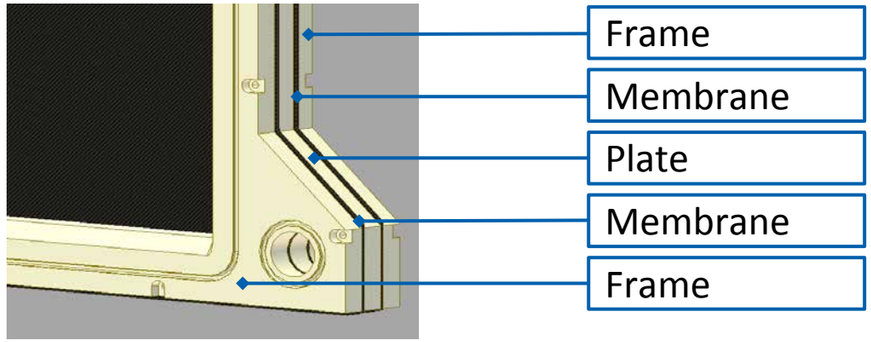
1. Mash infeed
2. Wort discharge
3. Membrane
4. Filter cloth
5. Spacer

Filter frame

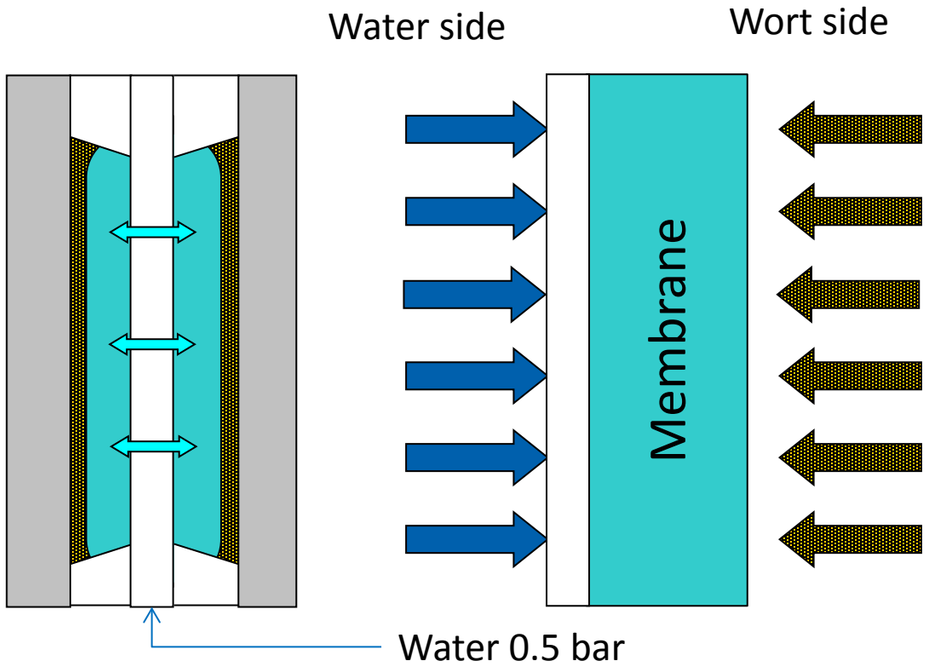


Pressing module





The lautering process with water membrane



What are the advantages of the water membrane?

- As an incompressible medium, water creates a spent grains cake of even thickness. This is proven by the distribution of the pore diameter.
- The residual extract is efficiently washed out with a reduced water consumption.

Compression	Air		Water	
	Bottom	Top	Bottom	Top
Porosity*	68 %	55 %	59 %	54 %
Pore diameter µm	Distribution %			
> 100	52	27	22	23
> 50 - < 100	31	27	50	46
< 50	17	46	28	31
Water consumption**	2.4 - 2.2 l		≤2.2 l	

** Measured with a mercury porosity meter ** Based on kg malt*

Comparison: characteristics of spent grains with air or water membrane

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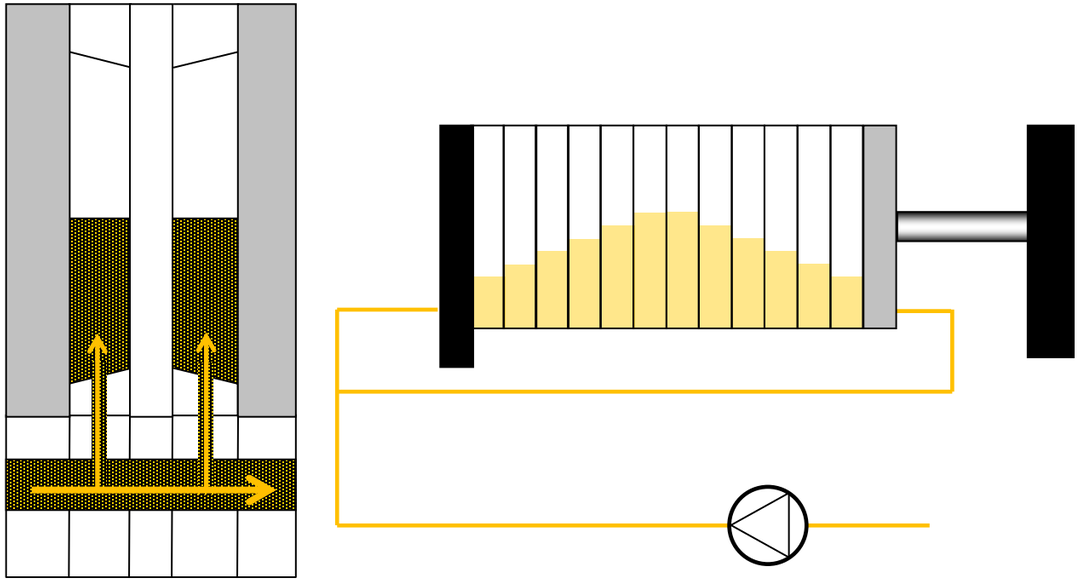
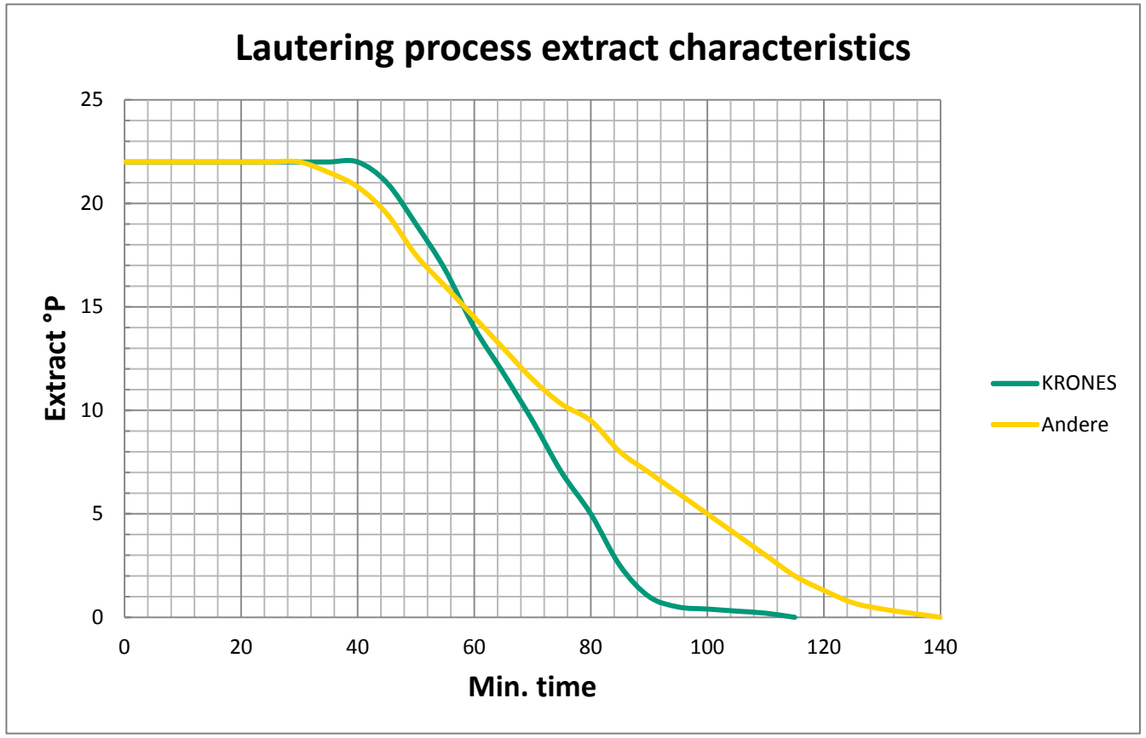
Optimum flow conditions during filling



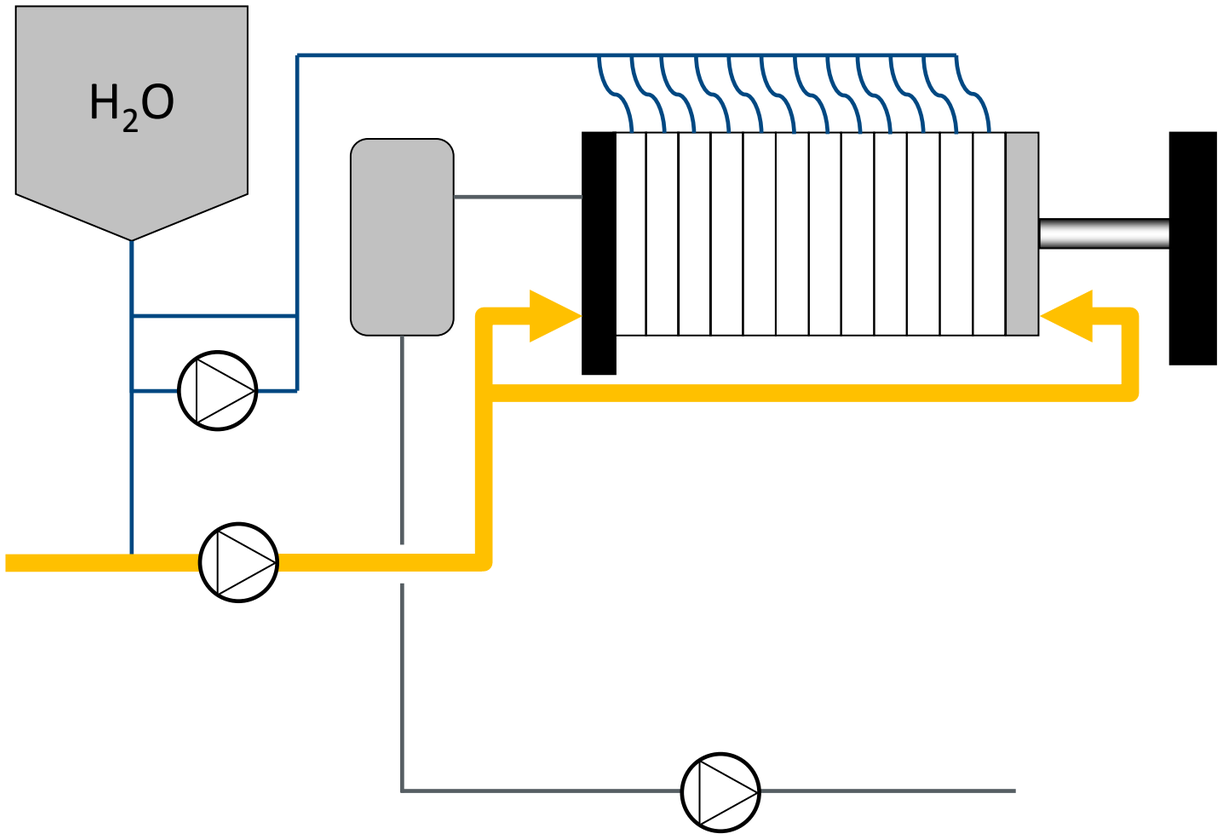


How is the residual extract won efficiently?

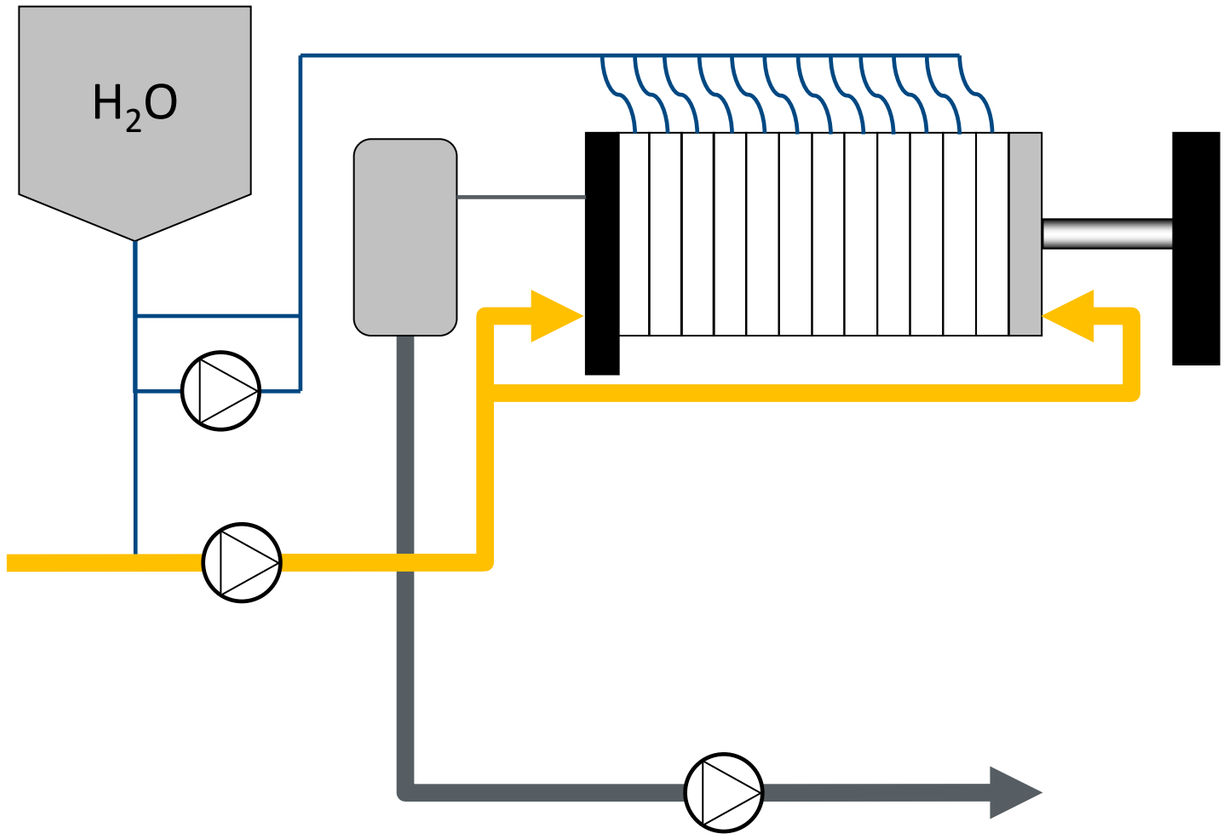
- Uniformly created infeeds improve the flow conditions during filling.
- The even filling of the filter frame and compression with water allow the spent grains cake to be washed out homogeneously.
- The washable extract is obtained effectively with ≤ 2.2 l of sparging water per kg of malt equivalent.

Filtration with the mash filter – procedure

1. Filling

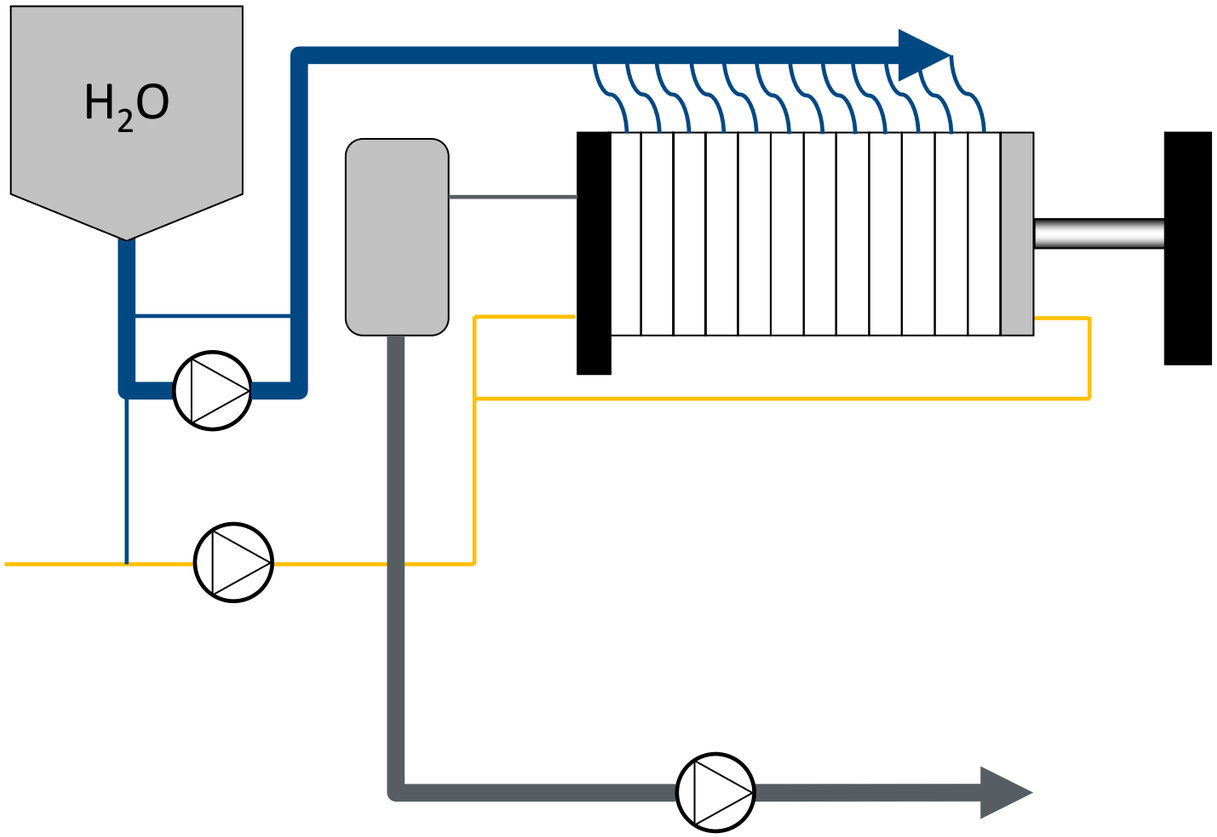


2. First wort

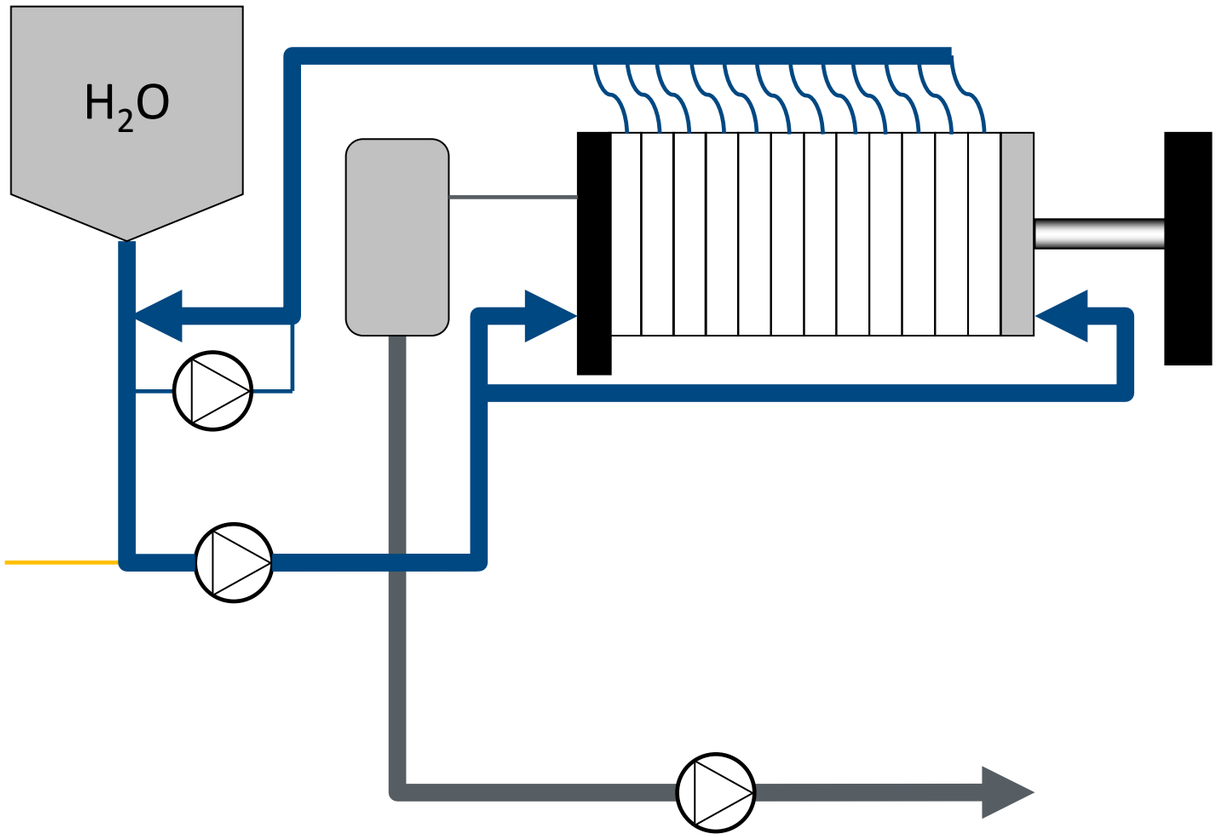


Filtration with the mash filter – procedure

3. Pre-compression



4. Sparging 1



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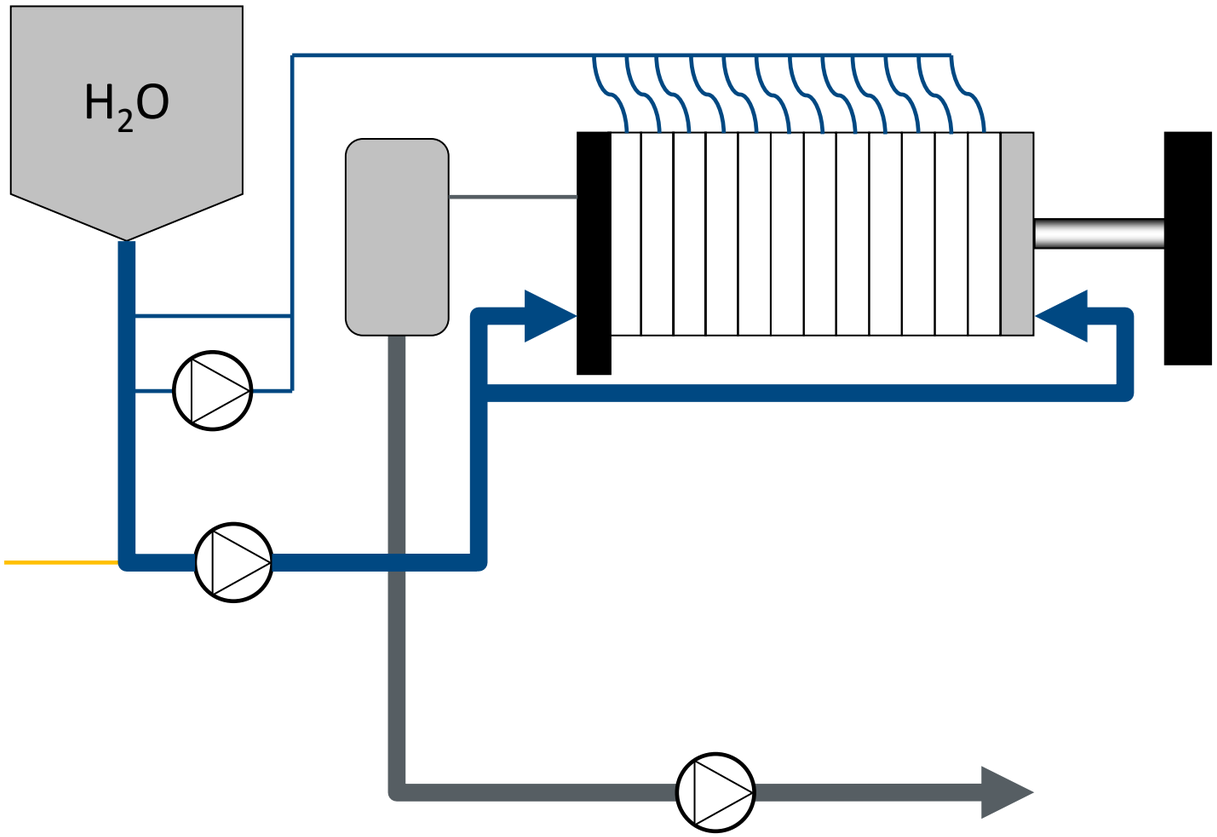
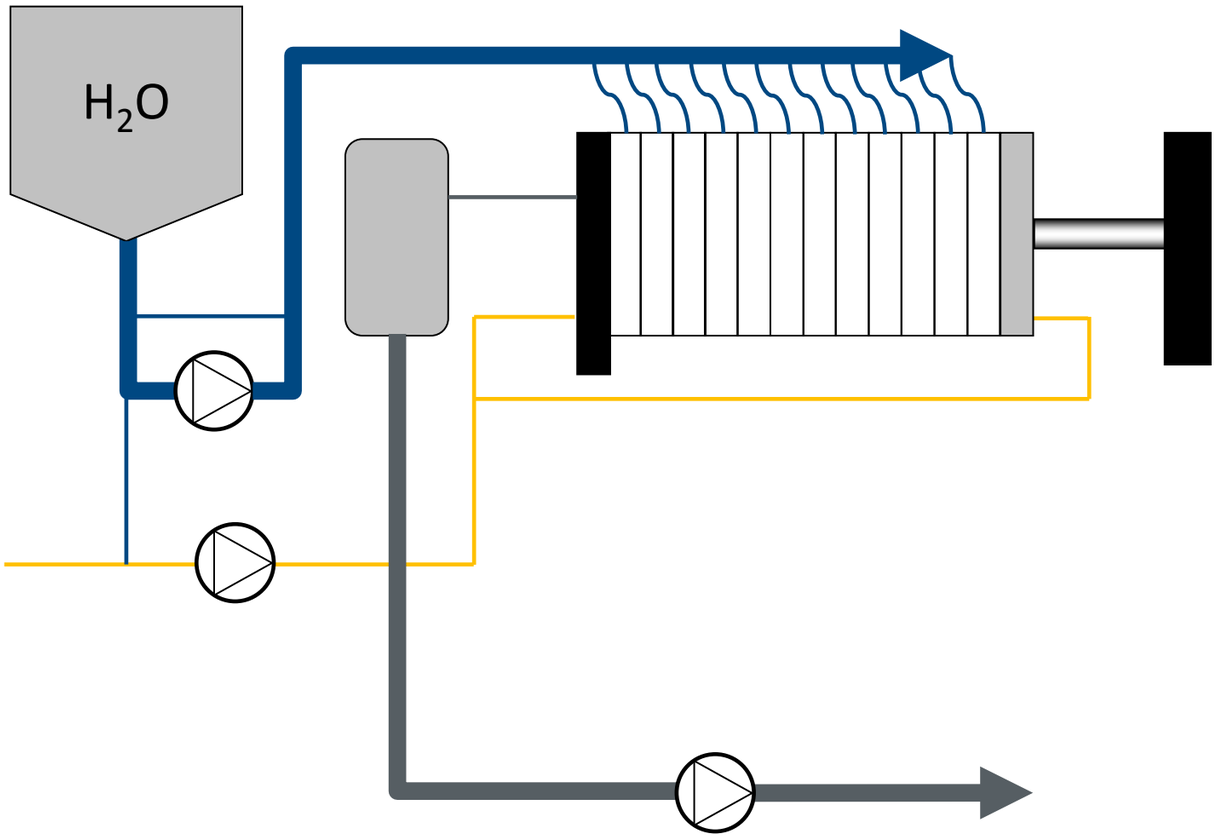
Filtration with the mash filter – procedure

5. Sparging 2

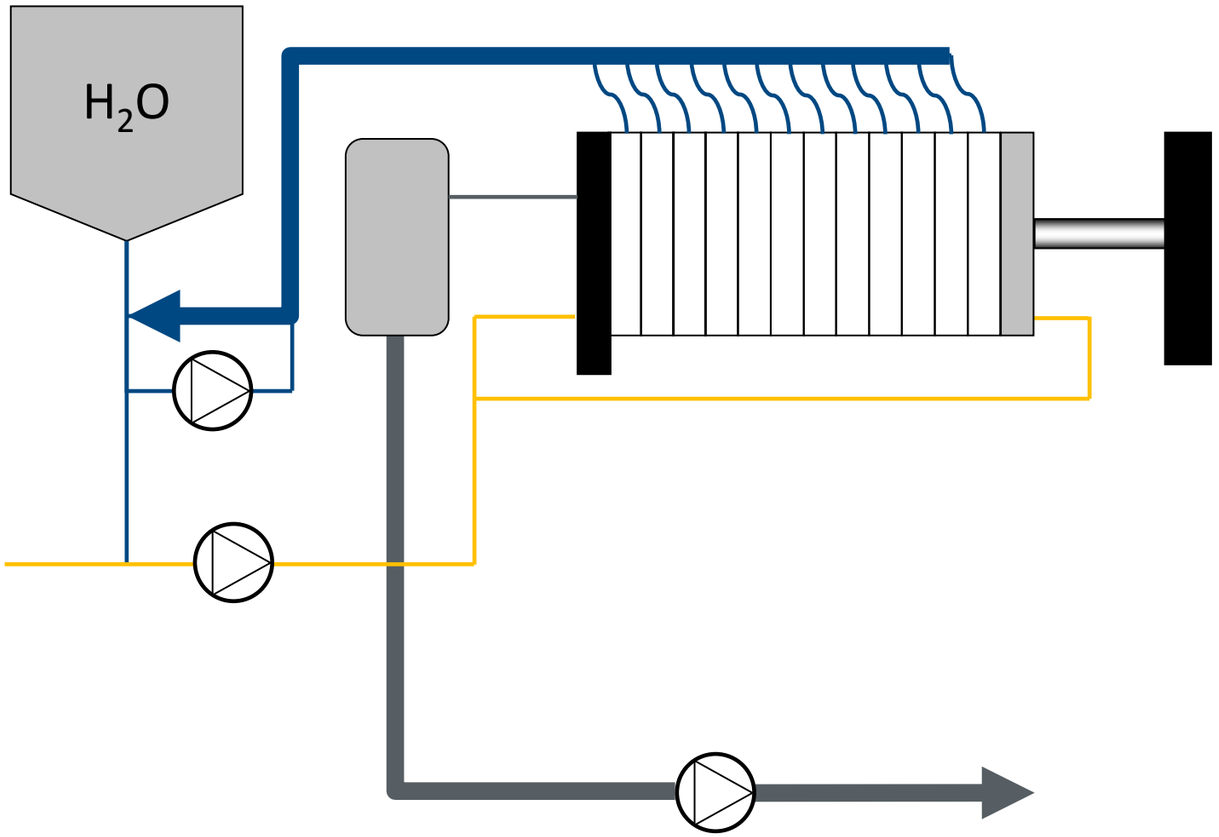


6. Compression

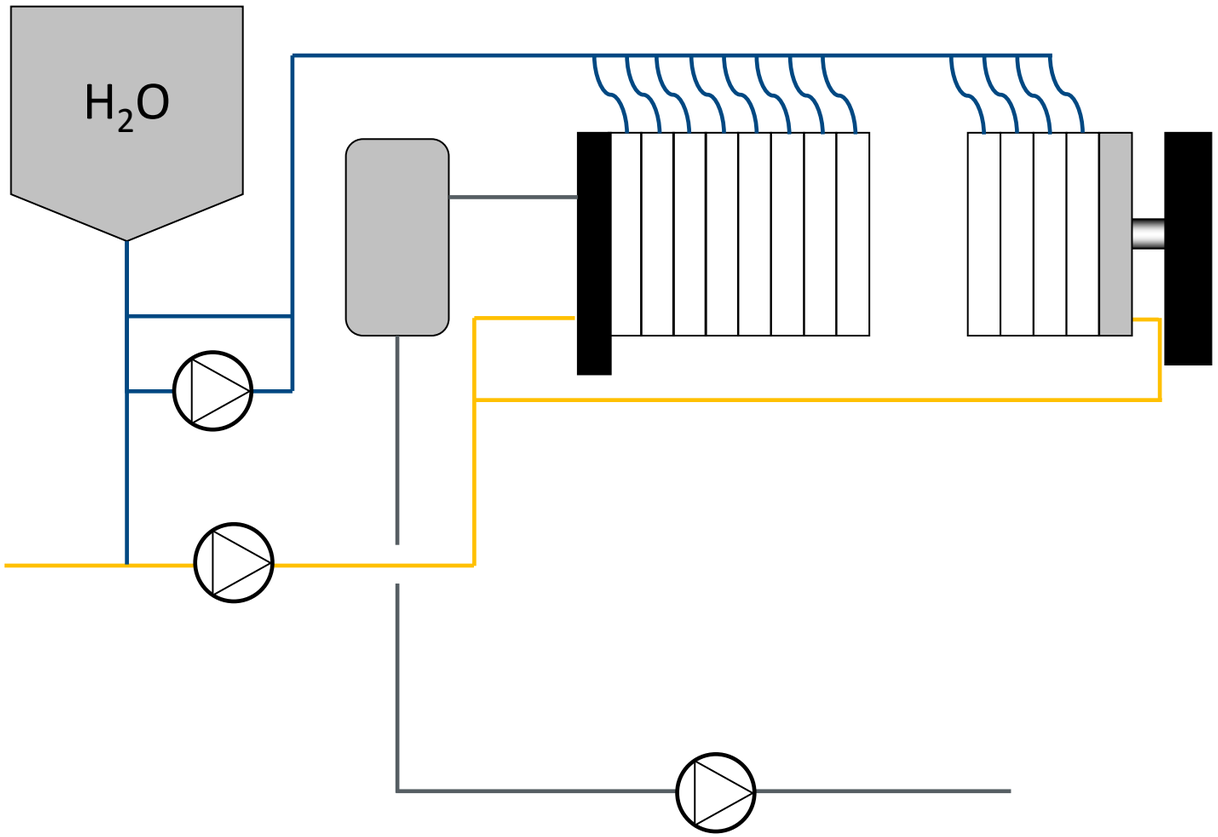


Filtration with the mash filter – procedure

7. Emptying



8. Spent grains removal



Design parameters

Pre-requisites for mashing

- Saccharification until iodine normality level has been reached
- First wort concentration > 22 °P
- pH value < 5.5
- Mash intensity > 105 %
- Final mash temperature 76 – 85 °C
- Moderate mechanical load due to the agitator
- Low thermal load

STEINECKER mash filter	1,500 x 2,000	1,800 x 2,000
Maximum load in kg Malt equivalent	12,800	14,800
Load per frame in kg	160	185
Number of chambers	80	80
Flexibility %	0 - 30	0 – 30
Sparging water l/kg Malt equivalent	≤ 2.2	≤ 2.2
Lautering duration in min.	< 120	< 120
Imhoff solids ml/l	< 5	< 5

Facts at a glance

Target yield

- Depending on the brew cycle and percentage of raw grain used, yields similar to the laboratory value were achieved.
- For raw materials other than malt, a modified grist composition must be observed.

Yield		
	Residual extract, spent grains % dry	
	washable	extractable*
12 brews	< 3,5	< 4
14 brews	< 4,0	< 4

* Results formerly related to 80 % moisture, today on dry matter
** EBC method

Grist composition %				
Sieve (mm)	Malt	Maize	Barley	Sorghum
1.27	< 1	< 2	< 5	< 5
1.01		< 15		
0.547	> 65	> 87	> 95	> 95
0.253				
0.152	< 34			
Bottom				

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Benefits at a glance

Perfect yields

The homogeneous distribution of spent grains in the filter and the compression of the spent grains with water as pressure medium enables the effective washing out of the residual extract with only a small amount of sparging water.

Flexible with regard to the brewing process

If high-gravity brewing processes, alternative raw grains and constant loads are used, the mash filter always provides optimum production conditions.

High productivity

Short lautering times and fast, uninterrupted spent grains removal allow an output of 14 brews per day.

Economic operation

Low-maintenance filter frames and pressing modules reduce the maintenance measures required.

Digitalisation

Process technology

Bottling and packaging equipment

Intralogistics

Lifecycle service

We do more.

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