

Practical results of the revolutionary brewhouse OMNIUM



VLB
BERLIN

Brewing Conference Bangkok 2019

09 to 11 June 2019, Bangkok, Thailand

Konstantin Ziller

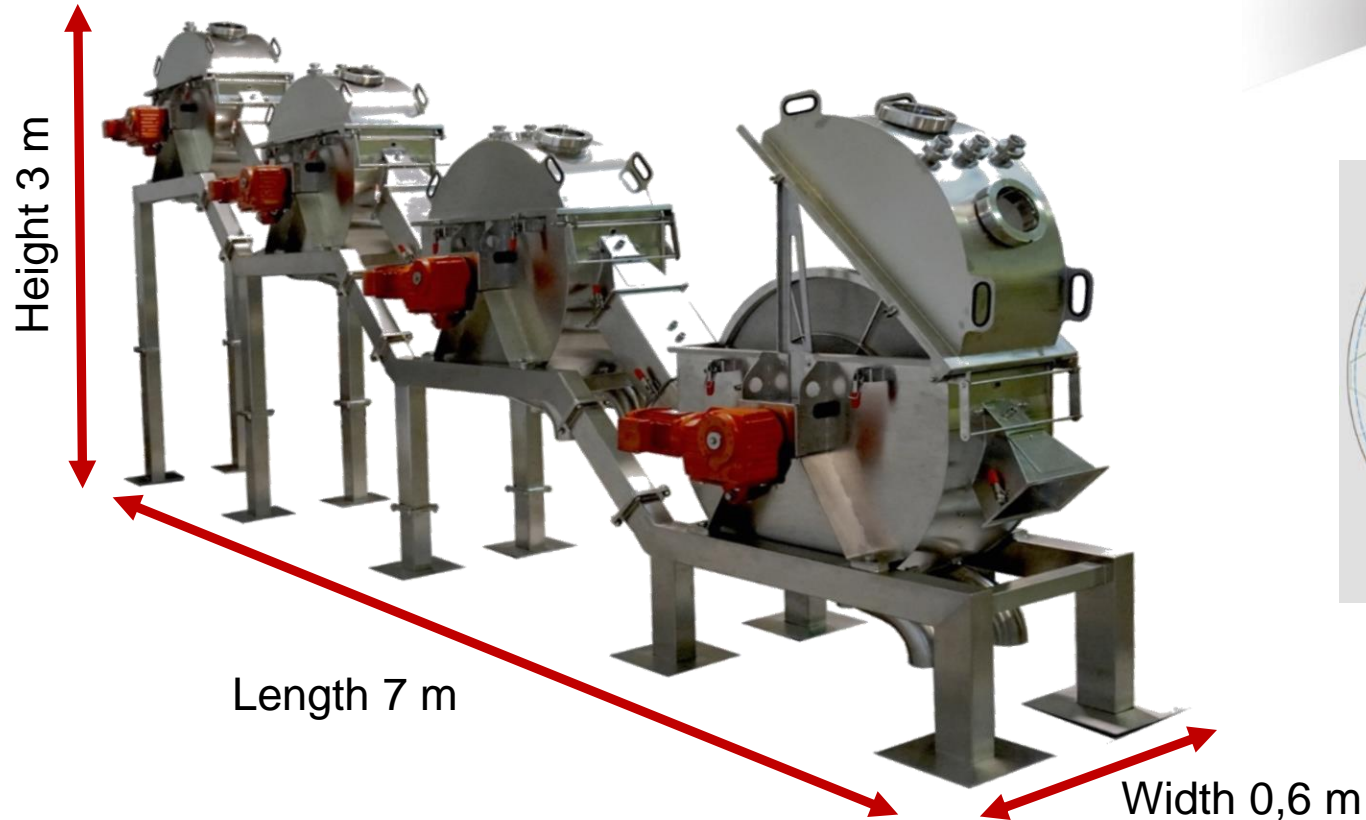
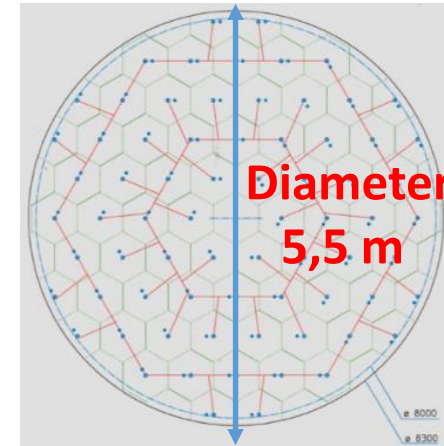
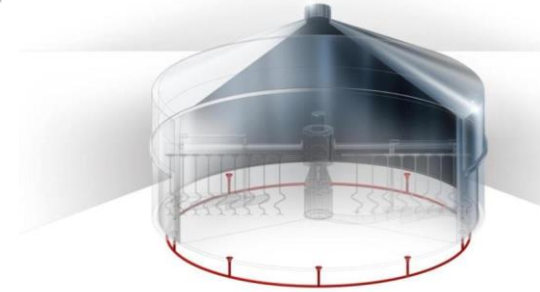
ZIEMANN HOLVRIEKA GmbH, Ludwigsburg



LAUTERING SOLUTIONS OVERVIEW

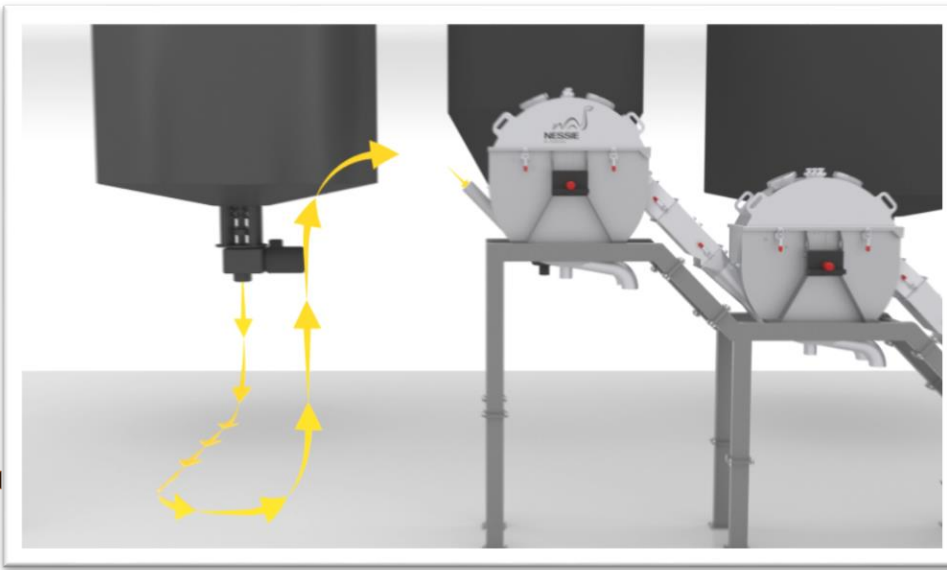
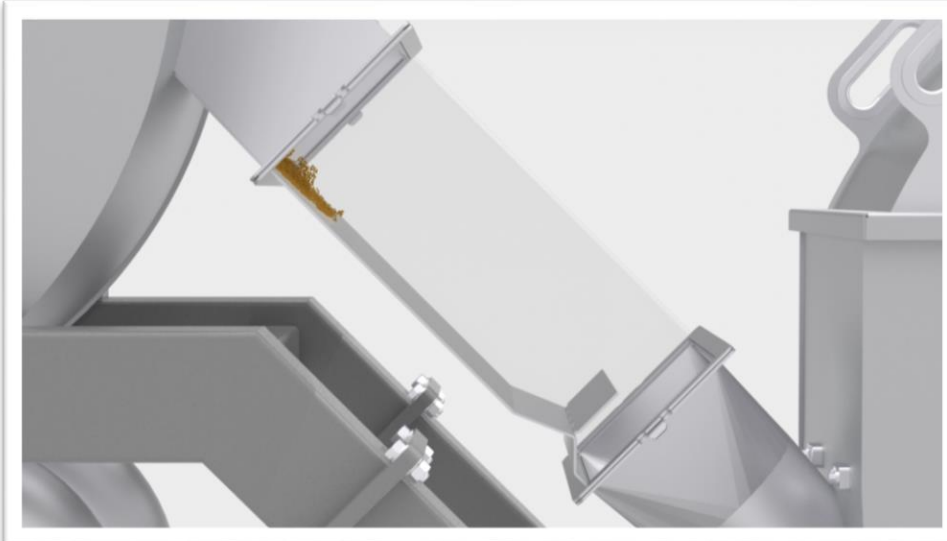
Basic parameters of Nessie

- 4 rotary disk filters, cascade arrangement, connected in series
- Mash transfer time = lautering time
- Separation and extraction in one step = saving on time
- Basic design up to 120hl/h of wort production



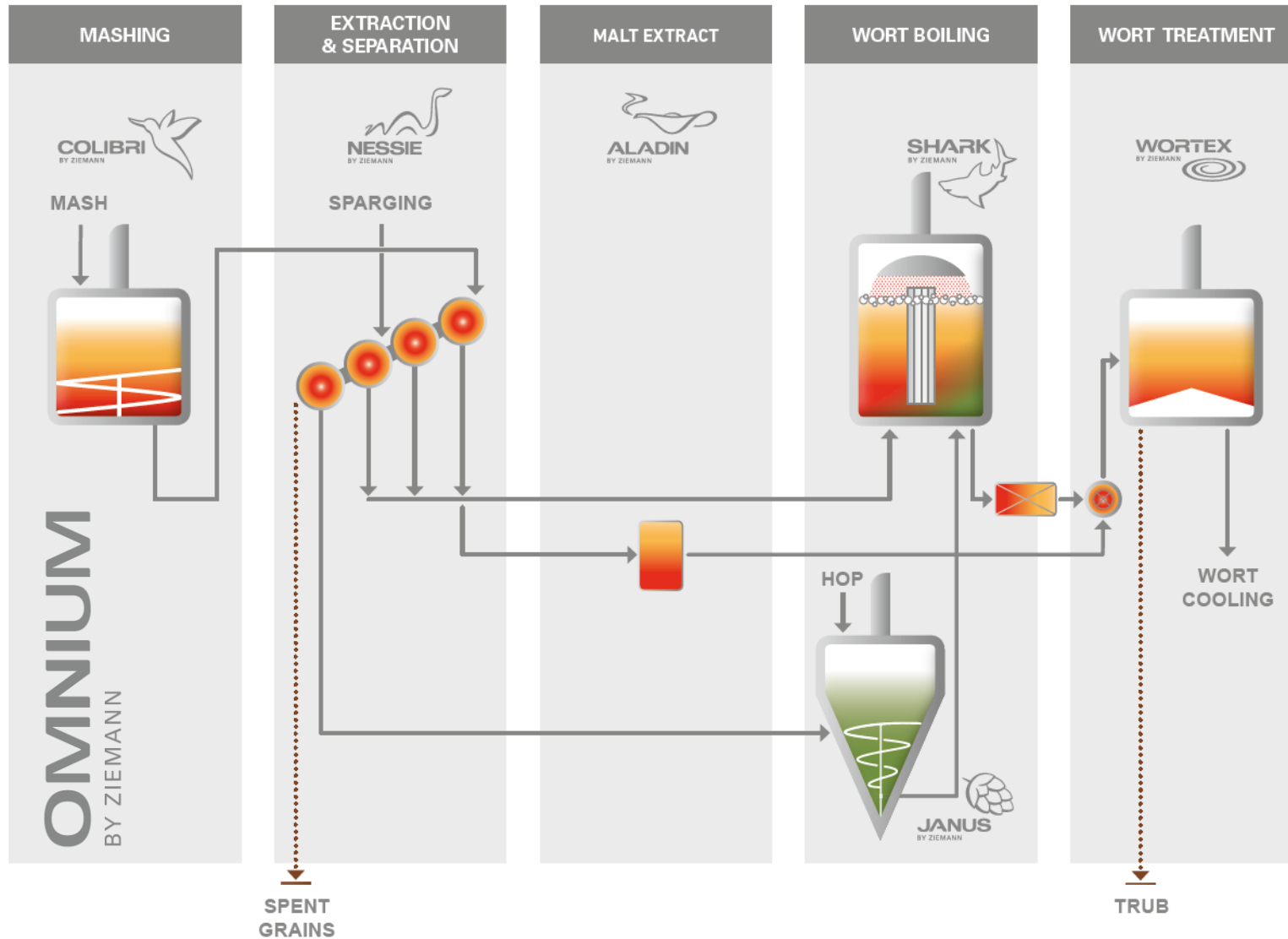
Short review

Extraction



Separation

Omnium



1st application - Schlossbrauerei Reckendorf



Omnium - High capacity with low footprint



Omnium Brewhouse – Flexible brew size



Smallest batch
size:
35 hL



Designed
for batch size:
70 hL



Biggest batch
size:
100 hL

down to 50% less

up to 43% more



External boiler is
necessary for production
of different batch sizes

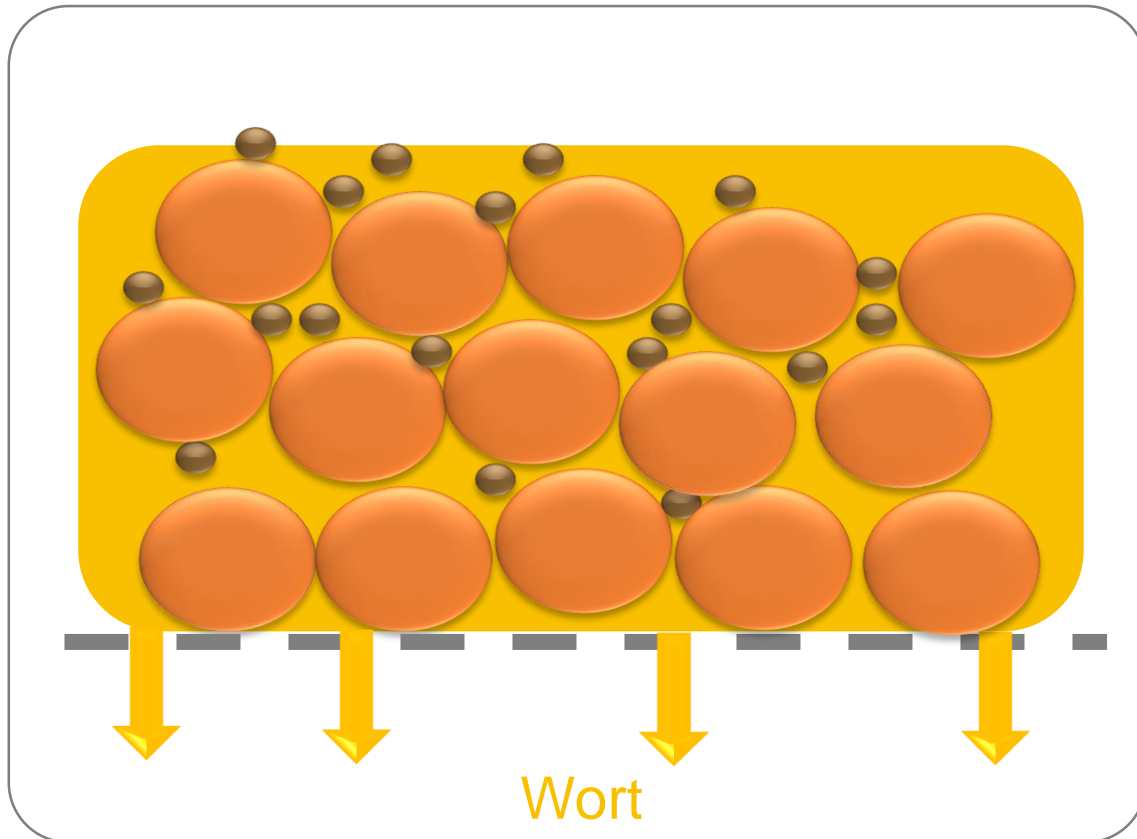
Omnium Brewhouse – time for one brew

TIME	0.25	0.50	0.75	1.0	0.25	1.5	1.75	2.0	2.25	2.5	2.75	3.0	3.25	3.5	3.75	4.0	4.25	4.5	4.75	5.0	5.25	5.5	5.75	6.0	6.25	6.5	6.75	7.0	7.25	7.5	7.75	8.0	8.25							
	LAUTER TUN BREWHOUSE (100 hL)																																							
Mash tun	MASHING																																							
Lauter tun											LAUTERING																													
Wort kettle																																								
Whirlpool																																								
Flotation tank																																								
	OMNIUM BREWHOUSE (100 hL)																																							
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Aladin																																								
Wort kettle																																								
Janus																																								
Whirlpool																																								

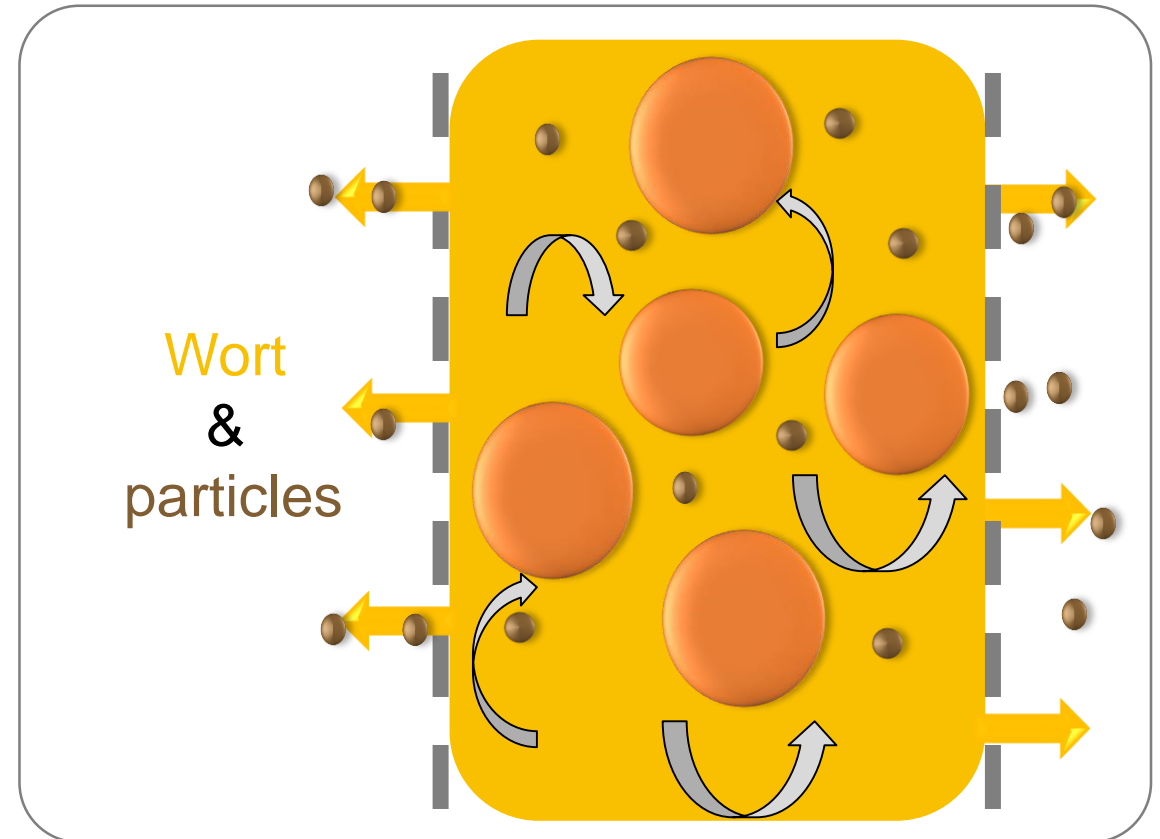


Separation process

Lauter Tun: static, depth filtration



NESSIE by ZIEMANN: dynamic filtration



Spent grains analysis

		MEBAK	OMNIUM*
Analysis	Unit	Regular values	measured
Humidity	%	80.0	77.6
Extract soluble (80 % humidity)	%	0.8	0.8
Extract convertible (80 % humidity)	%	0.8	< 0.10
Total remaining extract (80 % humidity)	%	1.6	< 0.9
Photometric iodine value [dE 578 nm]	E	< 3.0	0.06

*100% Pilsner Malt

Overview – raw materials

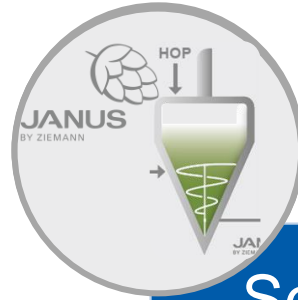
Raw material	Mash Filter	Lauter Tun	NESSIE by ZIEMANN
Barley Malt	100%	100%	100%
Wheat Malt	100%	Max. 70%	100%
Un-malted Grains	100%	100%	100%
Sorghum	100%	Max. 50%	100%
Cassava	Max. 50%	Max. 30%	100%
Maize/Maize Grits	<60%	Max. 40%	> 80%
Starch	<60%	Max. 30%	> 80%





Concentrated extract of first wort

→ Low iodine value



Separate hop isomerization vessel

→ Optimized hop isomerization

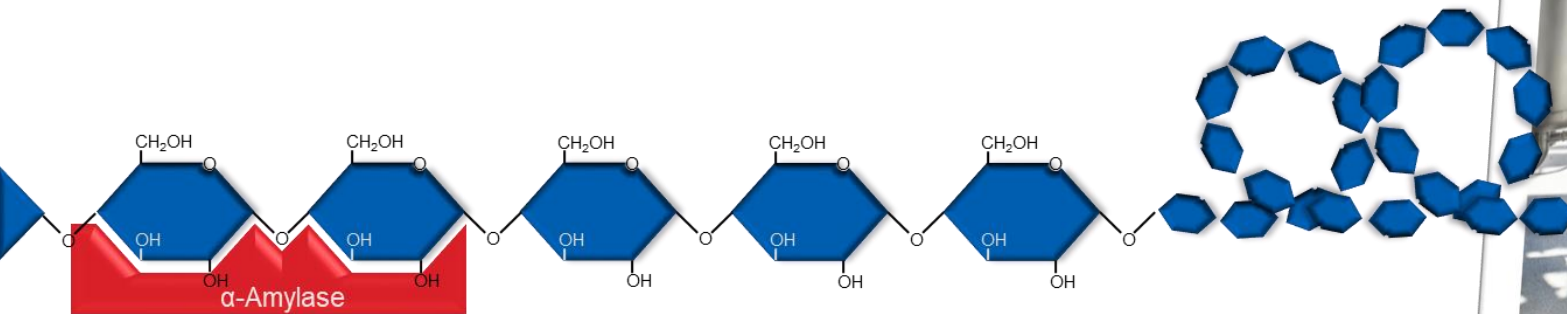


Controlled removal of hot trub

→ Keep nutrients for yeast

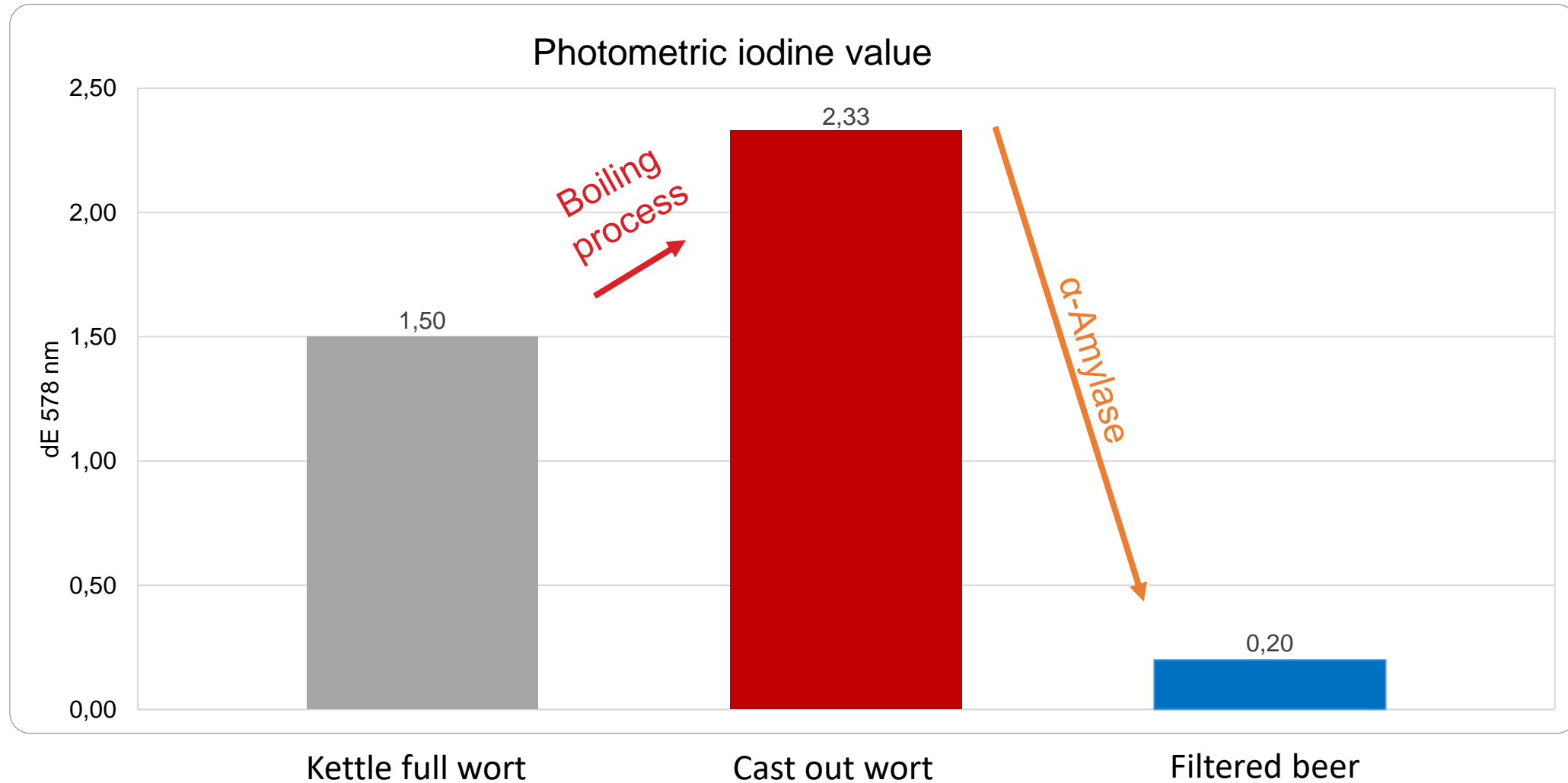
Concentrated extract of first wort

- Large spectrum of enzymes, example: α -Amylase
- Keep temperature at 72 °C
- Usage: Post saccharification of wort
- Amount: approx. 1-2 % cast out wort



ALADIN
BY ZIEMANN

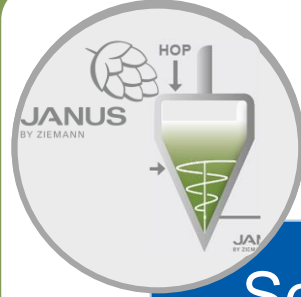
Iodine value





Concentrated extract of first wort

→ Low iodine value



Separate hop isomerization vessel

→ Optimized hop isomerization



Controlled removal of hot trub

→ Keep nutrients for yeast

Janus – separate hop isomerization vessel

- Smaller wort kettle
- Separate isomerization of hops independent from boiling process

- Temperature
- Lower content of extract
- Lower content of protein
- pH value of 5.8 – 7.2
 - (depending on water quality)
- Longer isomerization time
 - up to 100 Min.



JANUS 
BY ZIEMANN

Janus – Separate hop isomerization

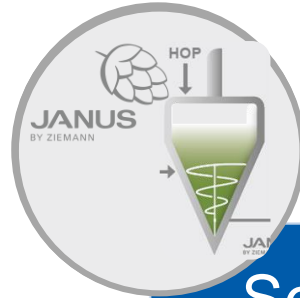
Omnium Brewhouse					
Brand	Bitter units	Polyphenols [mg/L]	Iso-alpha-acids [mg/L]	alpha-acids [mg/L]	Accompanying bittering compounds
„Helle Freude“	24	162	↗	↘	↘
Lauter Tun Brewhouse					
„Helle Freude“	24	211	↘	↗	↗

Amount of polyphenols in wort is lower → cleaner, smoother bitterness!



Concentrated extract of first wort

→ Low iodine value



Separate hop isomerization vessel

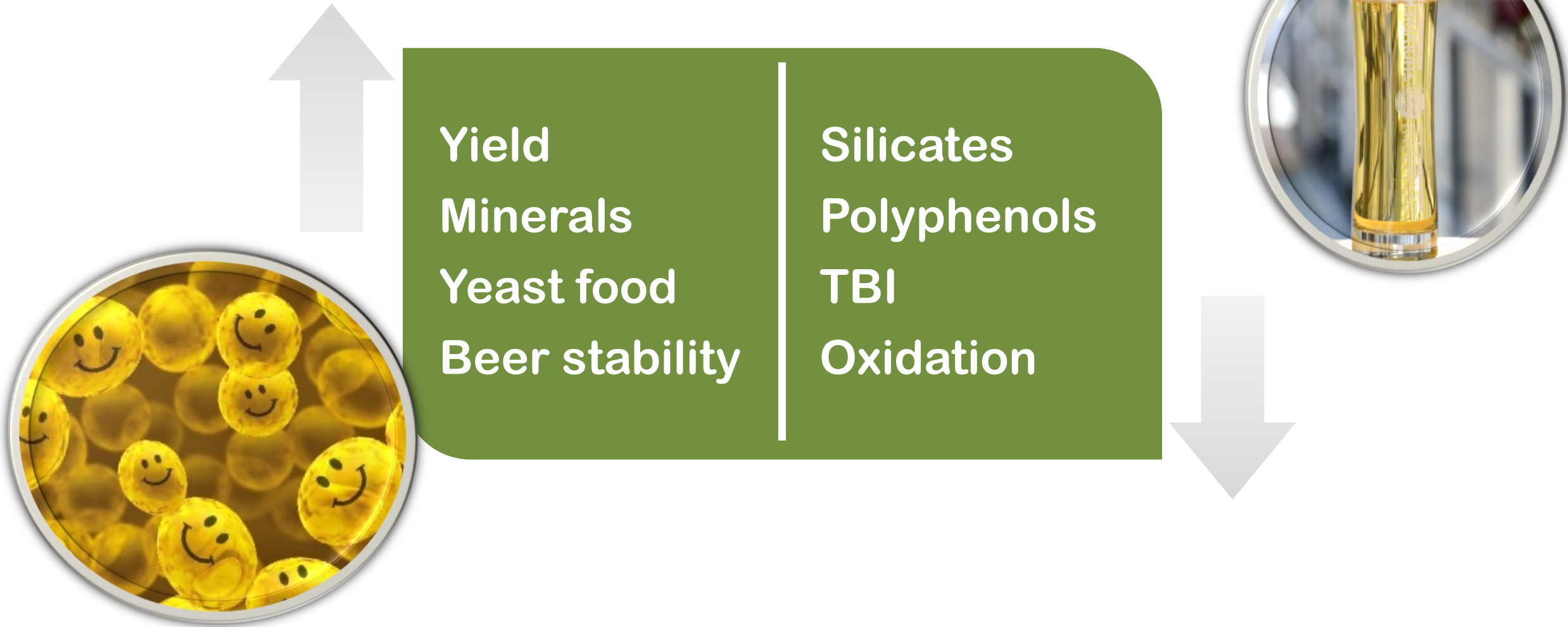
→ Optimized hop isomerization



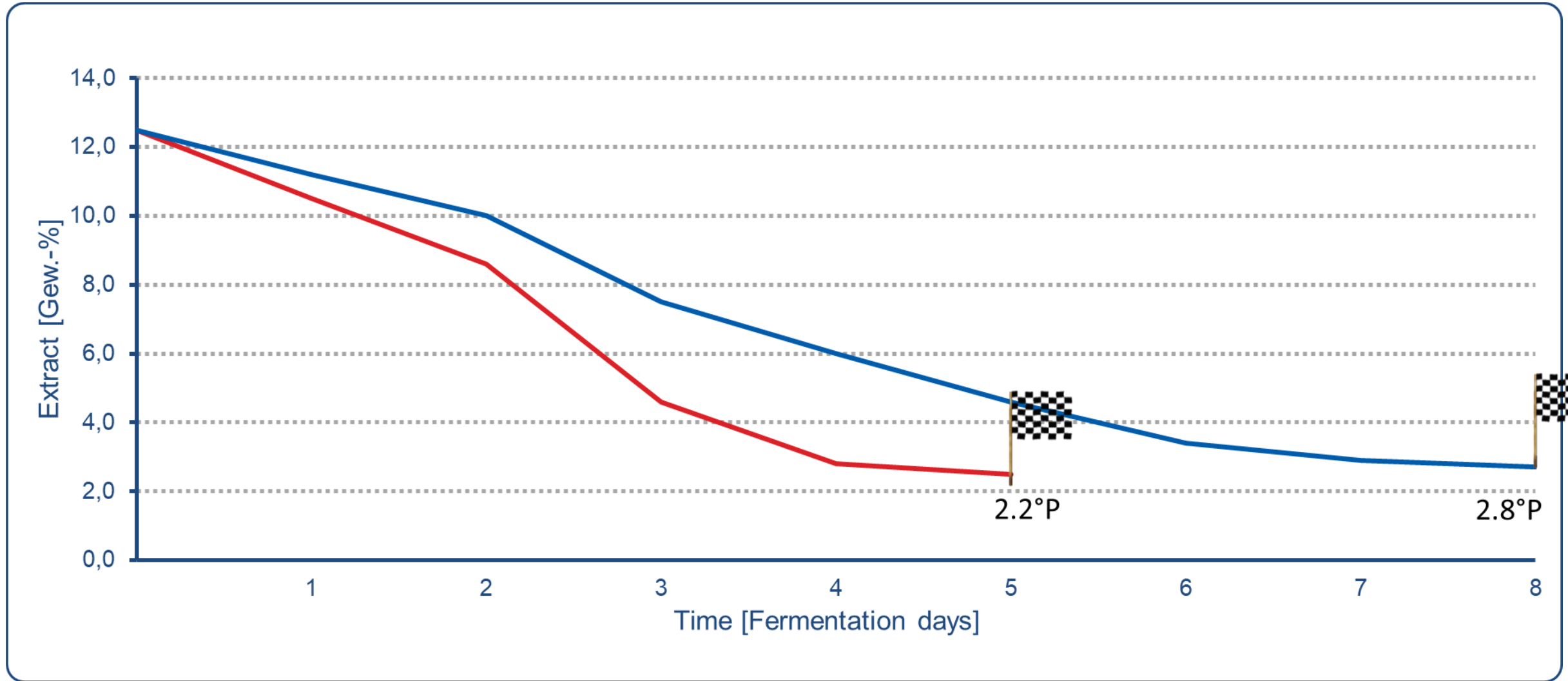
Controlled removal of hot trub

→ Keep nutrients for yeast

Wort quality results



Omnium vs. lauter tun - fermentation



Beer foam and shelf life time filtered beer

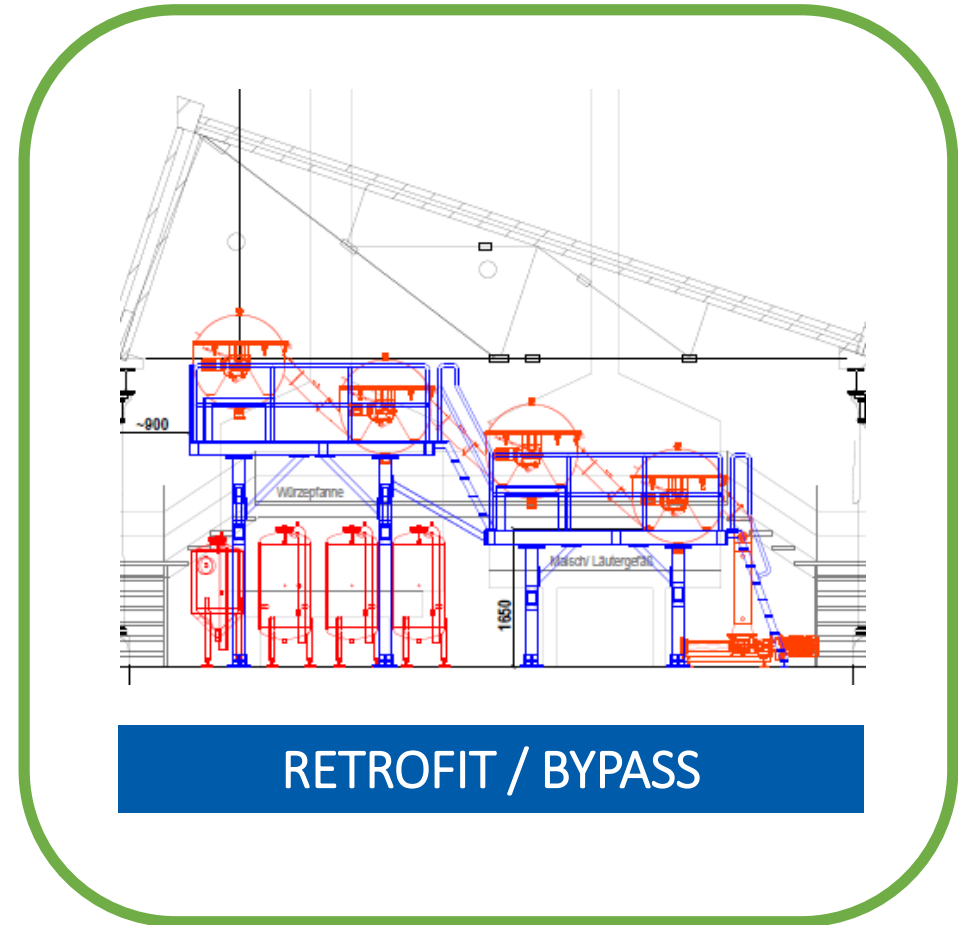
Brewhouse	Lauter tun	Omnium
Brand	„Helle Freude“	„Helle Freude“
Foam Index	113 FI	122 FI
Foam Stability	94 HL	101 HL
Diacetyl total [mg/l]	0.03	0.04
Warm test (0/40/0°C)	8	20



OMNIUM & NESSIE project selection

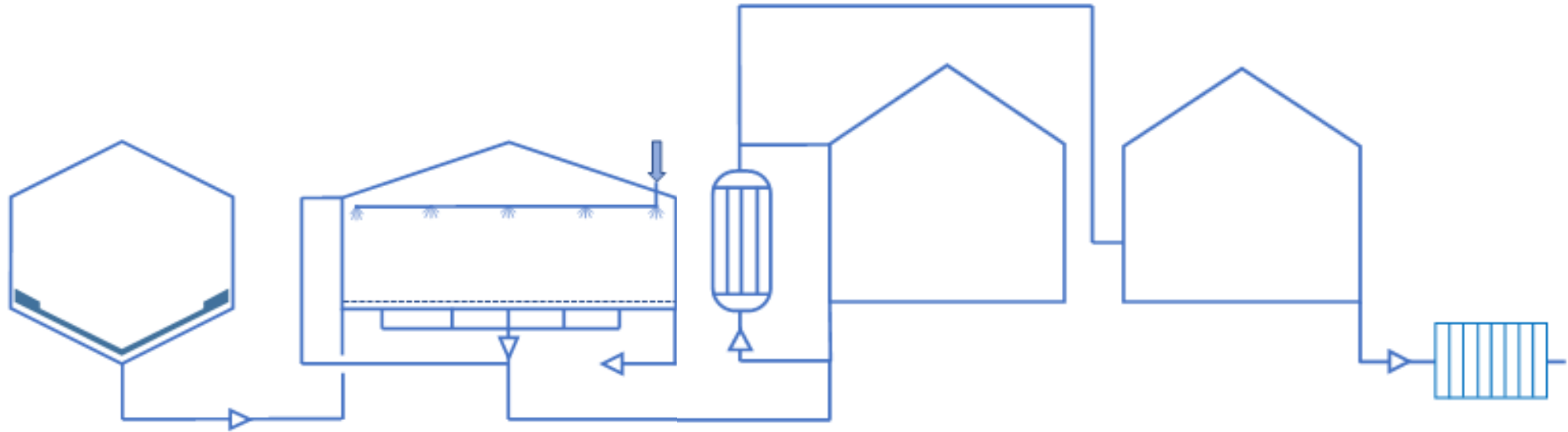


COMPLETE BREW HOUSE



RETROFIT / BYPASS

Make the most of your existing Equipment



Situation:

- 5-7 brews in 24 hours
- 8-9 brews in 24 hours (wort receiver)
- BUT lauter tun will remain bottleneck

Requirements / Expectations:

- Double capacity
- No extra shift
- Cut your losses
- Improve quality
- Create unique beers
- ...

Solution:

- New brewhouse?
 - New brewery?
 - Upgrade with new lauter tun?
... space requirement
... production interruption
- **Upgrade your brewhouse with Nessie / Omnium technology!**

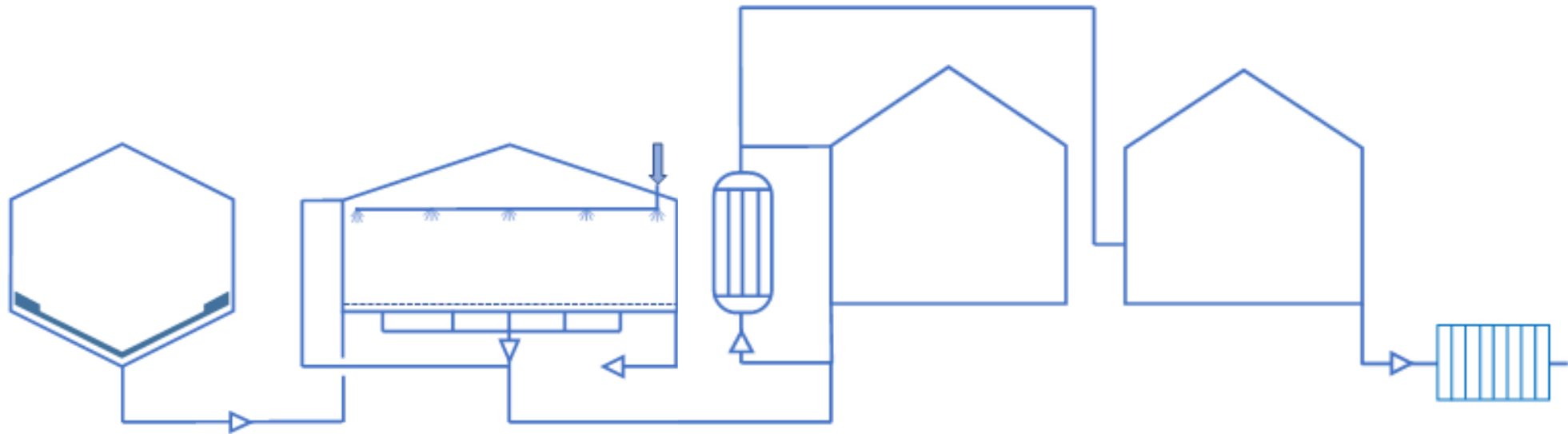
Make the most of your existing Equipment

Mashing time: 90 min.

Lautering time: 150 min.

Boiling time: 60 min.

Whirlpool & cooling time: 75 min.



Total: 6,25h/brew = 6 brews / day possible

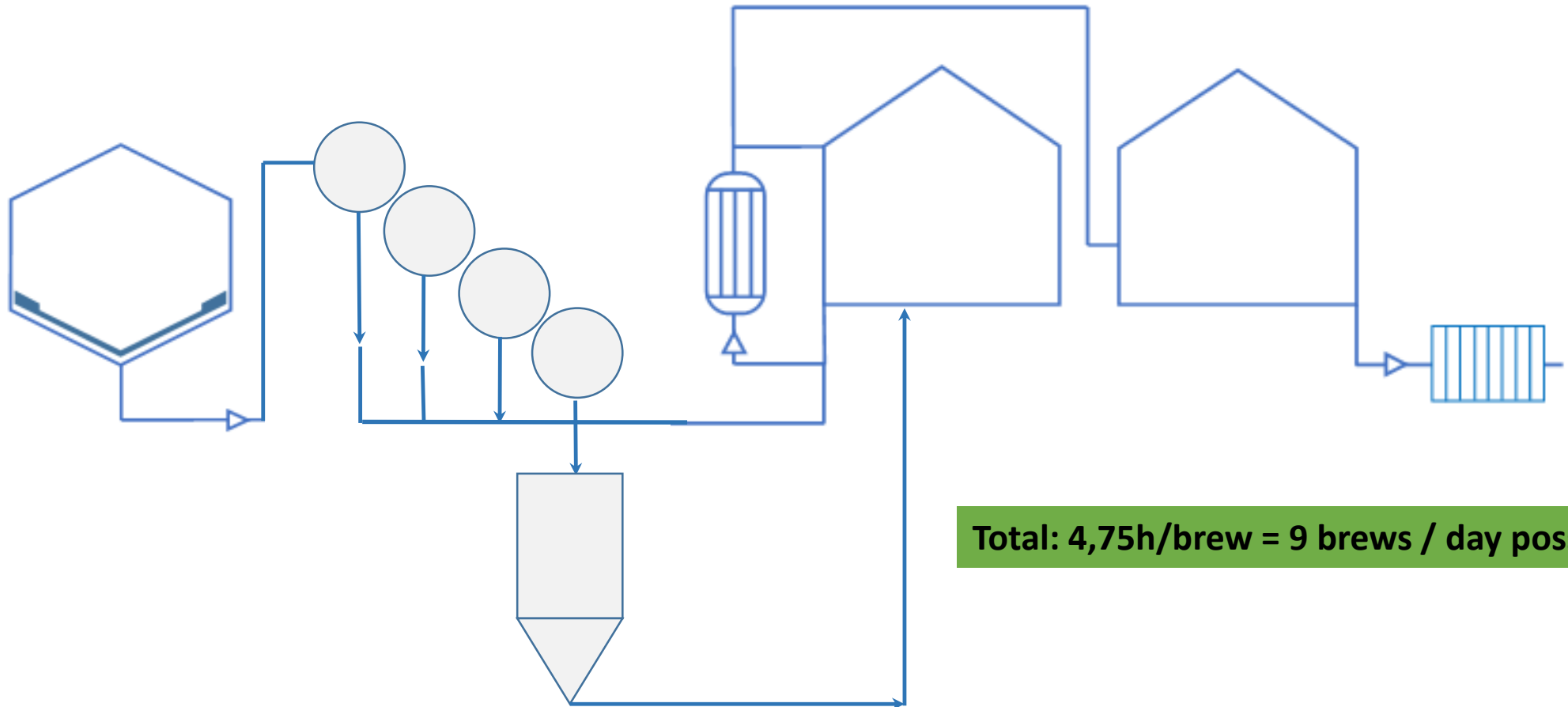
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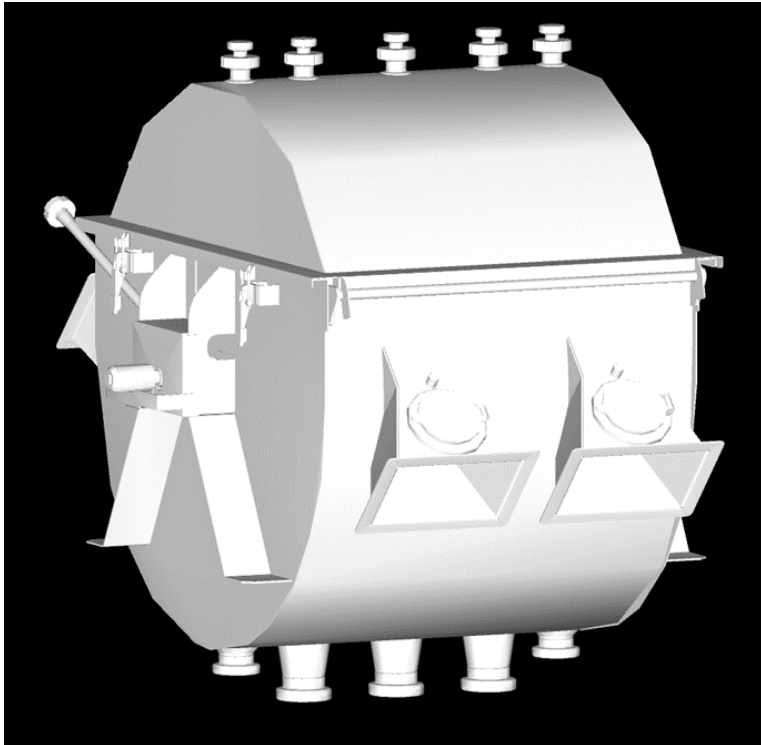
Whirlpool & cooling time: 75 min.



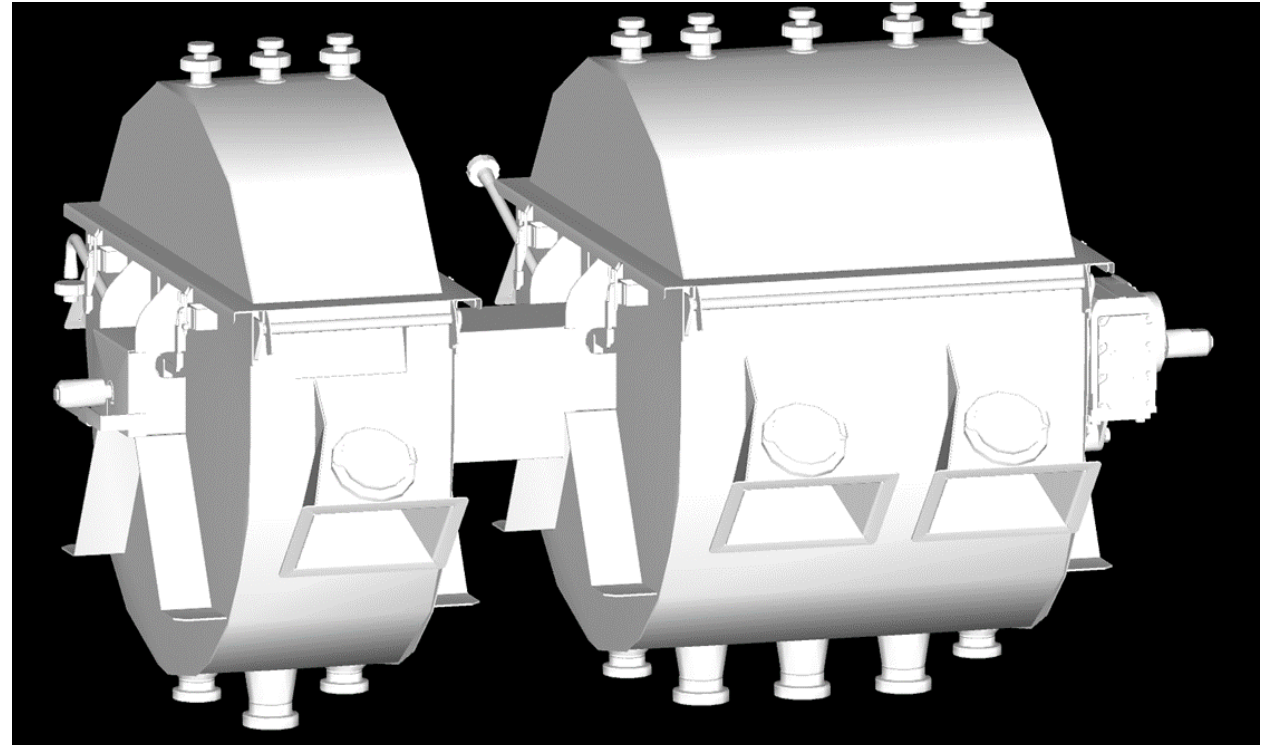
Total: 4,75h/brew = 9 brews / day possible

Upgrade your Nessie

Up to 220hl / hour



Up to 320hl / hour



OVERVIEW

Criteria	Mash Filter	Lauter Tun	NESSIE by ZIEMANN
Batch occupation time of lautering device	> 90 min	> 104 min	< 60 min
Floor space requirements	Low, but heavy loads	High and heavy loads	Very low in space and loads
Flexibility regarding batch size	low \pm 10 % (higher with separation kit)	high + 15 % / – 50 %	Extremely high
Use of adjuncts	Up to 100 % e.g. rice	approx. 40 %	Up to > 80% e.g. maize grits
Process management	Minimal control	Suction pressure, flow control, height and speed of raking machine	Flow control, rotation speed, counter current flow, sparging management
Yield	High yield possible related to milling	Limited yield related to milling	High yield independent of milling
First wort (mash) concentration	~ 25°P +	~ 21 °P +	Up to 32°P
Requirements to staff	Relocation of separation kit / change of cloths and membranes (if equipped)	Cleaning of false bottom	Regular revision
Cleaning	CIP Volume = Filter volume	CIP Volume according to vessel cleaning	Low CIP volume
Spare parts	Many moving parts / cloths / membranes	Less moving parts, but heavy	Moving parts / Lip seals

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