

# CONTROLLED STABILIZATION SYSTEM CSS

The stabilizing system for the beverage industry





## A LEAP OF PROGRESS



- The CSS is a gentle but highly effective beer stabilization
- The CSS is the cost effective stabilization alternative to regenerable PVPP method
- The CSS is a compact build, fully automated stabilizing plant
- The CSS stabilizing agent remains in the filter plant and can be regenerated and reused without losses for several years
- The CSS is easily incorporated into any existing filter line and automation

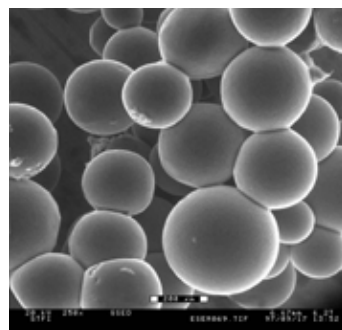


**The CSS consists of one or several modules which are completely filled with the adsorbent. The adsorbent is permanently retained between an inlet and an outlet screen, making the dosing of precoat and feed suspension prior to each stabilization unnecessary.**

Filtered, unstabilized beer flows through the CSS module containing the adsorbent. A contact time of a few seconds is enough to remove polyphenols by adsorption.

The adsorbent itself is based on a high-grade, crosslinked, insoluble agarose (polysaccharide) with a particle size between 100–300 µm.

Polyphenoles are adsorbed and then removed from the agarose adsorbent during the regeneration. Neither substances are dissolved in the beer nor is the beer quality affected in a negative way. The beer's organoleptic properties, its foam stability, color and bitterness units remain unaltered.



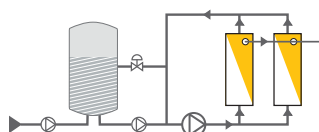
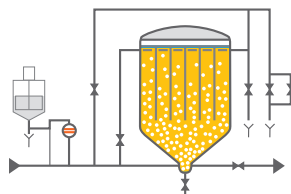
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The adsorbent meets the legal requirements of clarifying agents for beer and complies with 21 CFR 173.25.c of the FDA. Furthermore it is German "Purity law" approved.

#### CSS and Kieselgur Filtration

- Stabilization independent of Filtration
- Filter capacity of the DE filter can be completely used for DE
- CSS Regeneration takes place at the same time as the DE filter cleaning
- Adapts to any filter step, e.g. circulation of DE filter. No circulation required

#### CSS and Crossflow Filtration

- Continuous filtration and stabilization possible through Contiflow set up
- Changing flow rates or stops are unproblematic
- No dosage of any powder during filtration and stabilization
- Stabilization without negative influence to the crossflow membrane





## INNOVATION AT YOUR FINGER TIP

### Stabilization

The CSS beer stabilization is fully automated, a touch of a button at filtration start is all it takes. Over the time of the stabilization run the flow rate adsorber/bypass is regulated automatically, so that the consistent stability is guaranteed throughout the stabilization run.

Adjustments to accommodate changing conditions, beer types and stabilization requirements can be made easily, based on the data stored in the program.

### Regeneration

The adsorbent can be regenerated several hundred times with caustic (NaOH). Sterilization is carried out with hot water.



All of the described process steps do take place within the fully automated CSS plant:

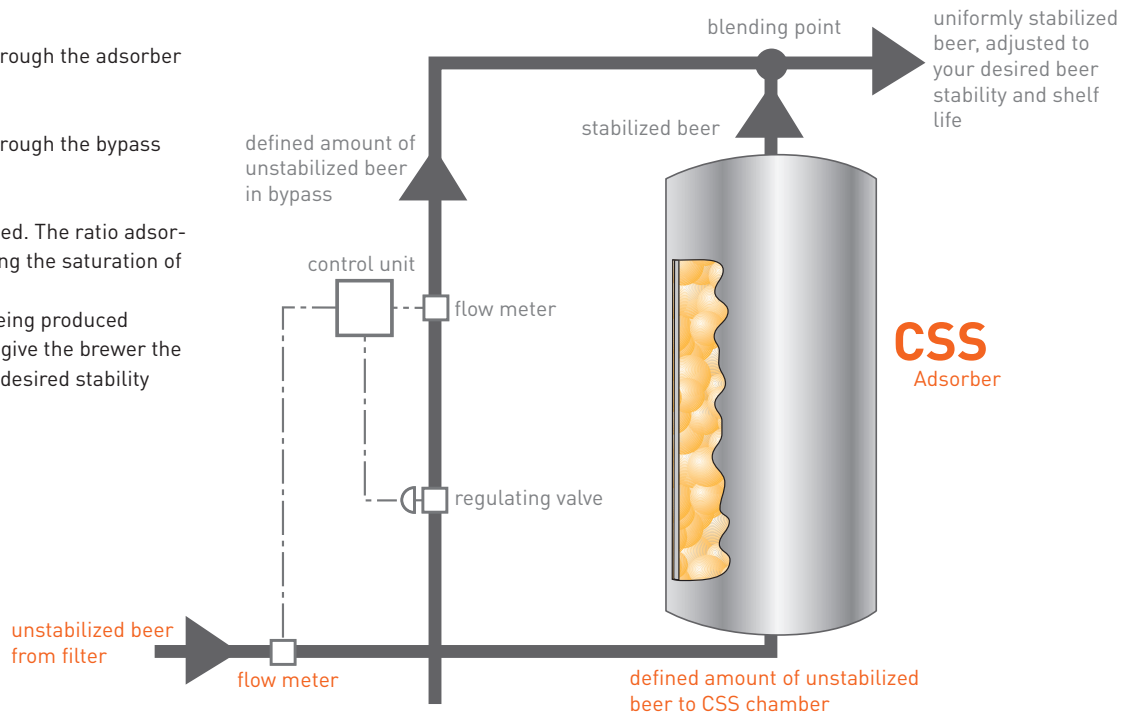
### CSS Stabilization

A defined amount of beer flows through the adsorber  
 → Intensive stabilization

A defined amount of beer flows through the bypass  
 → Unstabilized

Both beer streams are then blended. The ratio adsorber to bypass gradually rises during the saturation of the adsorber

- Uniformly stabilized beer is being produced
- Easy adjustments to the ratio give the brewer the possibility to freely select the desired stability



# STABILITY GUARANTEED

The stability test as the most important test for beer stability, convinces unconditionally



The CSS achieves excellent beer stability while treating the product gently.

The treatment with the CSS generally removes fewer substances than PVPP. The adsorption of low molecular polyphenoles is lower.

The organoleptic properties, the foam stability, beer color and bitterness units of the beer remain unchanged.



#### Quality advantages

- The degree of stabilization is adjustable
- The CSS can be used over a long period of time with consistent results

#### Environmental advantages

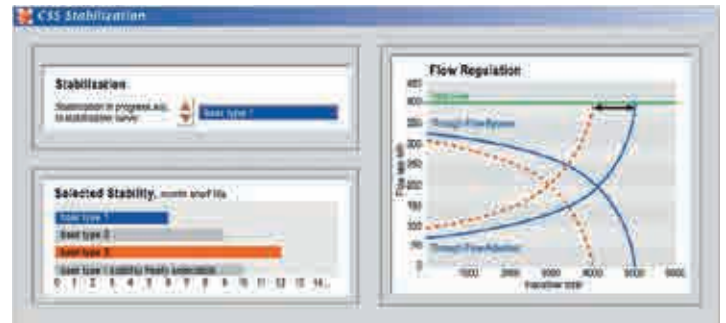
- The amounts of water (waste water) and chemicals required for the regeneration and CIP are very low

#### Technological advantages

- The adsorbent is chemically/physically stable, so that it can be regenerated without any losses
- Due to the compact module, the CSS next phase volumes and pre and post runs are very small
- The CSS has a small foot print and does not require much room height
- Installation behind DE- or Crossflow Filter
- Continuous stabilization possible

#### Economical advantages

- Comparatively lower investment costs
- Short time return on investment
- Low operating costs
- Stabilizing costs can be budgeted accurately over several years
- Fully automated process reduces labor costs
- No storage, logistics and ordering of lost stabilizing material



# YOUR PARTNER.

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