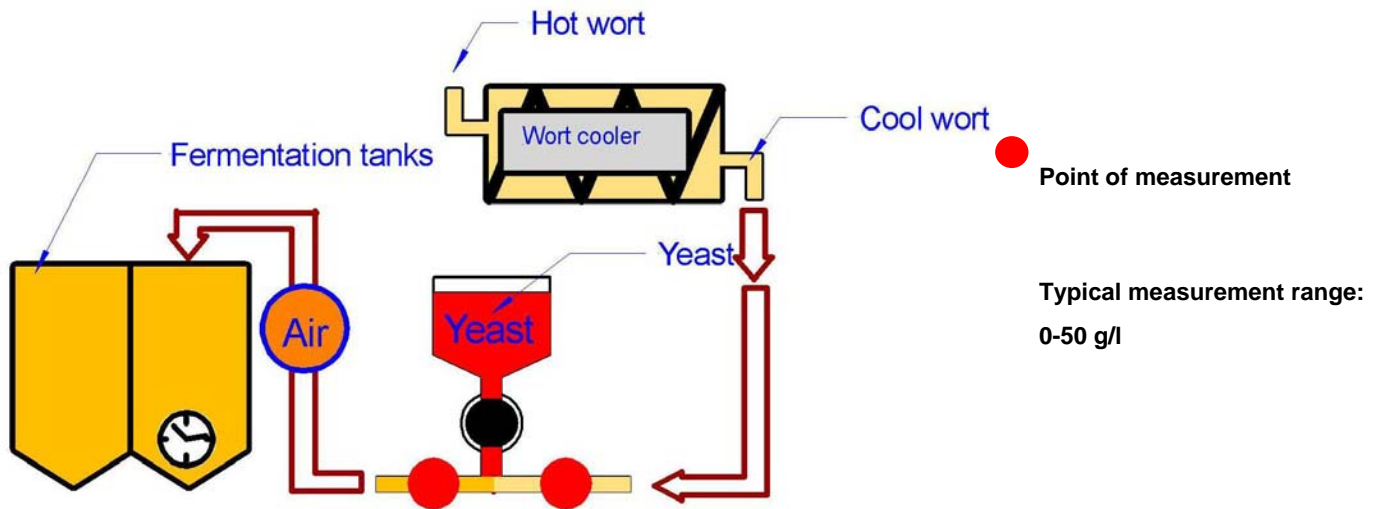


Yeast Dosage



Description:

A homogeneous yeast concentration and distribution in the fermentation tanks will guaranty optimal fermentation results. Typically the yeast will be constantly injected to the wort. The Yeast- dosage system uses two turbidity sensors to control the Yeast- quantity and optimize the fermentation process. The first sensor is located in front of the yeast- injection point and measures the turbidity of the cold wort. The second sensor is located behind the yeast- injection point and measures the turbidity of the cold wort plus the concentration of the yeast.

The transmitter calculates as follow:

$$[(\text{Turbidity of wort} + \text{Concentration of yeast}) - \text{Turbidity of wort}] = \text{yeast concentration}$$

The yeast concentration will be displayed in million cells / ml.

The yeast pump speed is controlled by the concentration signal of the yeast and a PID controller to keep the yeast concentration constant.

Higher pump speed in case of low yeast concentration.
Lower pump speed in case of high yeast concentration.

Advantages:

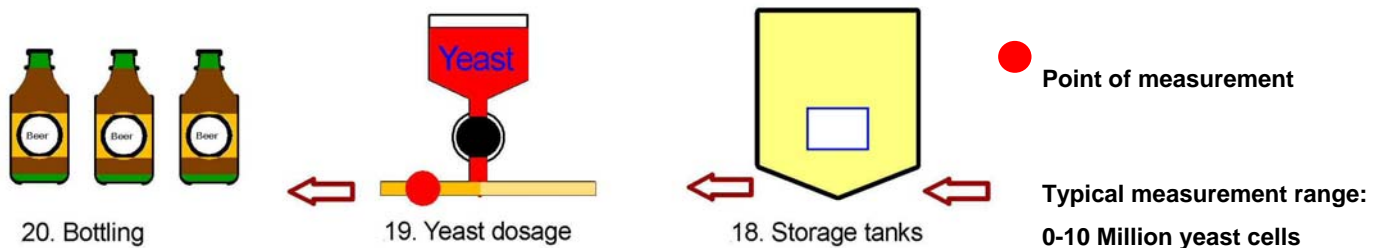
- Constant yeast- concentration per ml/beer
- Optimization of the fermentation process
- Optimization of the fermentation times

Principle of measurement:

- 1.) Absorption turbidity measurement with two sensors

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Yeast Dosage Bottling



Description:

A precise dosage of yeast during bottling of yeast beer. Variation in yeast concentration will affect taste, stability and of course clarity of the beer. The yeast concentration is measured direct in million yeast cells. The speed of the dosage pump is controlled by the concentration signal of the measurement system and a PID controller. The equipment guarantees for a constant yeast-concentration, according to customer's specification.

Higher pump speed in case of low yeast concentration.
Lower pump speed in case of high yeast concentration.

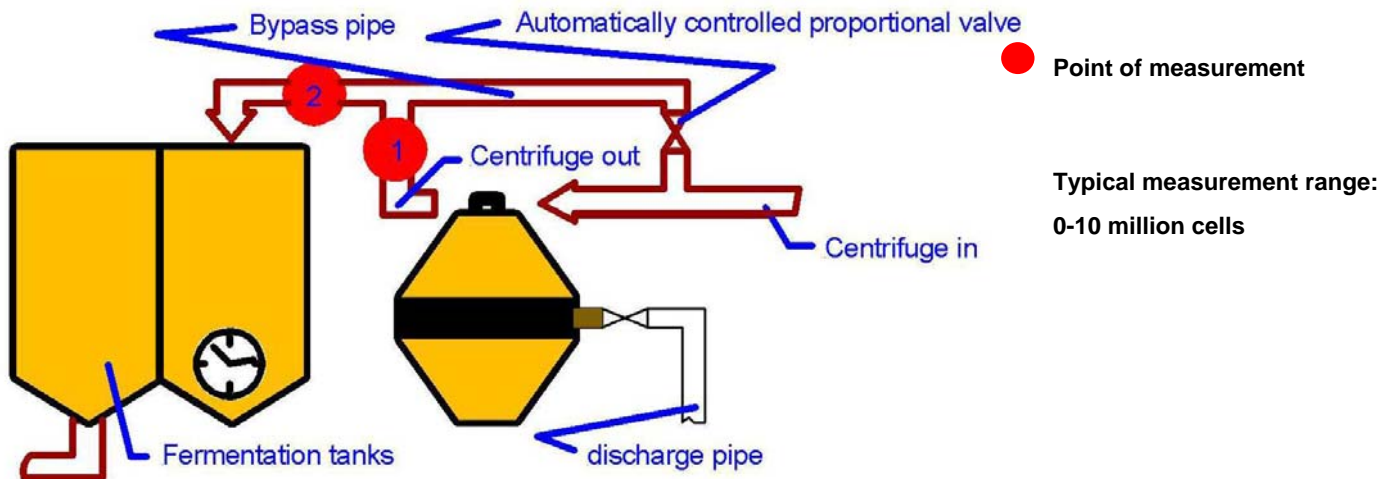
Advantages:

- Constant yeast concentration per bottle
- Quality control of the injected yeast

Principle of measurement:

- 1.) Absorption turbidity measurement

Yeast Dosage via Centrifuge



Description:

A homogeneous yeast concentration and distribution in the fermentation tanks will guaranty optimal fermentation results. Typically the yeast will be constantly injected to the wort. The yeast dosage system uses two turbidity sensors to control the yeast quantity for fermentation. The first sensor is located in the centrifuge outlet and measures the turbidity of the separated wort. The second sensor is located behind the bypass pipe and measures the turbidity of the wort plus the concentration of the yeast coming from the uncentrifuged bypass. The transmitter calculates as follow:

$$[(\text{Turbidity of wort} + \text{Concentration of yeast}) - \text{Turbidity of wort}] = \text{Yeast concentration}$$

An automatic proportional valve is controlled by the actual yeast concentration signal and a PID controller to keep the yeast concentration constant according to user specification. The yeast concentration will be displayed in million yeast cells.

The valve opens in case of to low yeast concentration.
The valve closes in case of to high yeast concentration.

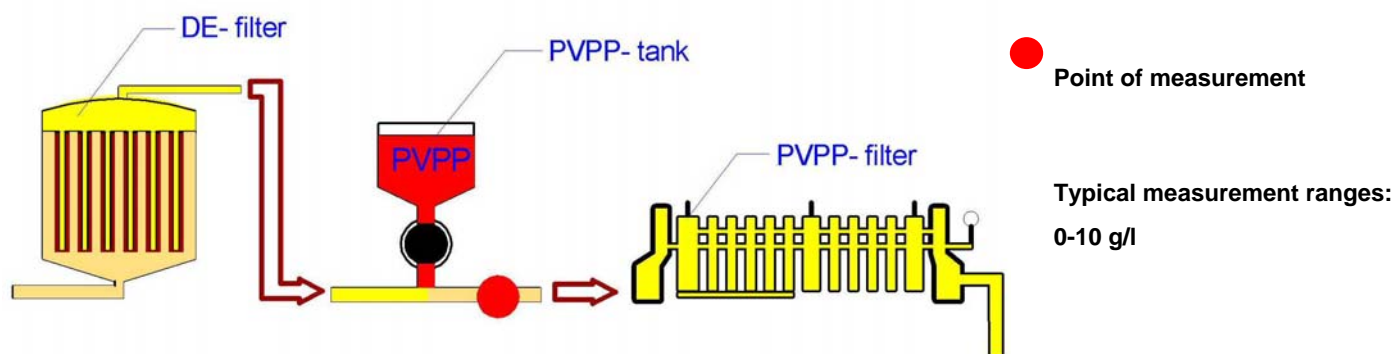
Advantages:

- Constant number of yeast cells per ml/wort
- Better control of the fermentation process
- Automatic centrifuge discharge

Principle of measurement:

- 1.) Absorption turbidity measurement with two sensors

PVPP- Dosage



Description:

PVPP is an insoluble organic compound, which will swell in water. PVPP allows a selective removal of tannoids and proteins inside the beer. Therefore PVPP filtration is used to receive a better long time stability and taste of the filtrated beer. The use of PVPP as Filter cell takes place as mixture with Diatomaceous Earth (DE) or pure without admixtures. The purity law allows a maximum concentration of 0,5g/l PVPP. An absolute exact dosage is required to fit the guidelines of the law. PVPP filter cell is expensive in procurement, recycling and wasting. A precise dosage of filter cell will reduce costs and increase the life time of the filter cake. Down times for cleaning, maintenance, etc. will decrease.

The PVPP- dosage system uses a turbidity measurement system and a PID- Controller to optimize the PVPP- quantity and a smooth batch of the filter chamber according to user guideline.

Higher pump speed in case of low PVPP concentration.

Lower pump speed in case of high PVPP concentration.

Advantages:

- Constant PVPP- concentration
- Balanced PVPP load to the filter
- Guarantees that the PVPP quantity is according to the limit of the purity law
- Optimization of the filtration results
- Optimization of the operating live of the filter
- Cost reduction due to an optimal use of filter cell

Principle of measurement:

- 1.) Absorption turbidity measurement