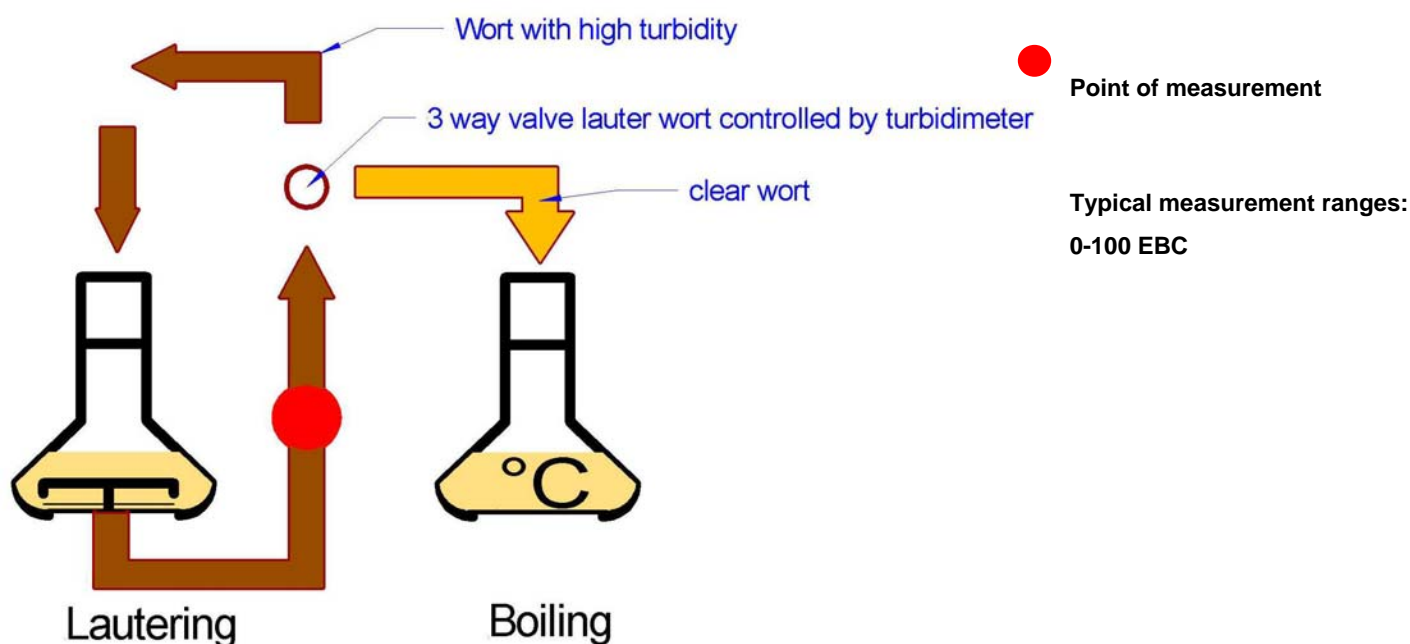


## Wort Clarity



### Description:

The turbidity measurement in hot wort is used to control the clarity during lauter process. The detection of turbidity guarantees for the clarity of the lauter wort within customers specification. Cloudy wort caused by filter bed upsets or raking the filter bed at different cutting heights will be pumped back into the lauter tun. The clear wort will be pumped to the boiler. During the last couple of years the turbidity values of the wort declined permanently due to modern technology in the lauter process. A turbidity of less than 10 EBC is normal in modern brew houses. Therefore traditional absorption measurement units are sometimes replaced by 12° forward scatter turbidimeters. The scattered light technology provides a much better sensitivity and long term stability than the traditional absorption photometers.

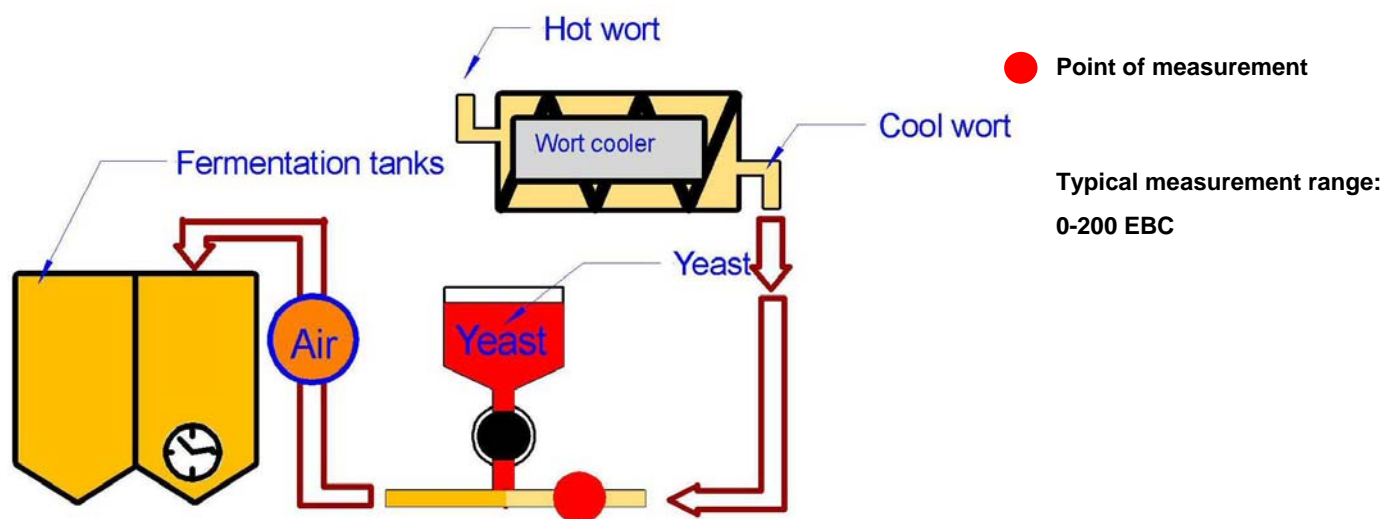
### Advantages:

- Lauter process observation
- Quality control of the used grains
- Automatic switching between wort with turbidity and clear wort
- Time optimization of the lauter process

### Principles of measurement:

- 1.) Absorption turbidity measurement
- 2.) 12° forward scatter turbidity measurement

# Turbidity of cold wort



## Description:

The protein flakes accrued during boiling procedure of the wort will be removed by a whirlpool, a centrifuge or a filter press. The clarified wort will be pumped to the wort cooler. The wort cooler will reduce the wort temperature down to approx. 5°C – 6°C very fast. During this cooling procedure the cool turbidity will be created. This turbidity is developed by protein and tanning agents. Flotation tanks can be used to remove part of the cool turbidity to optimize the fermentation procedure.

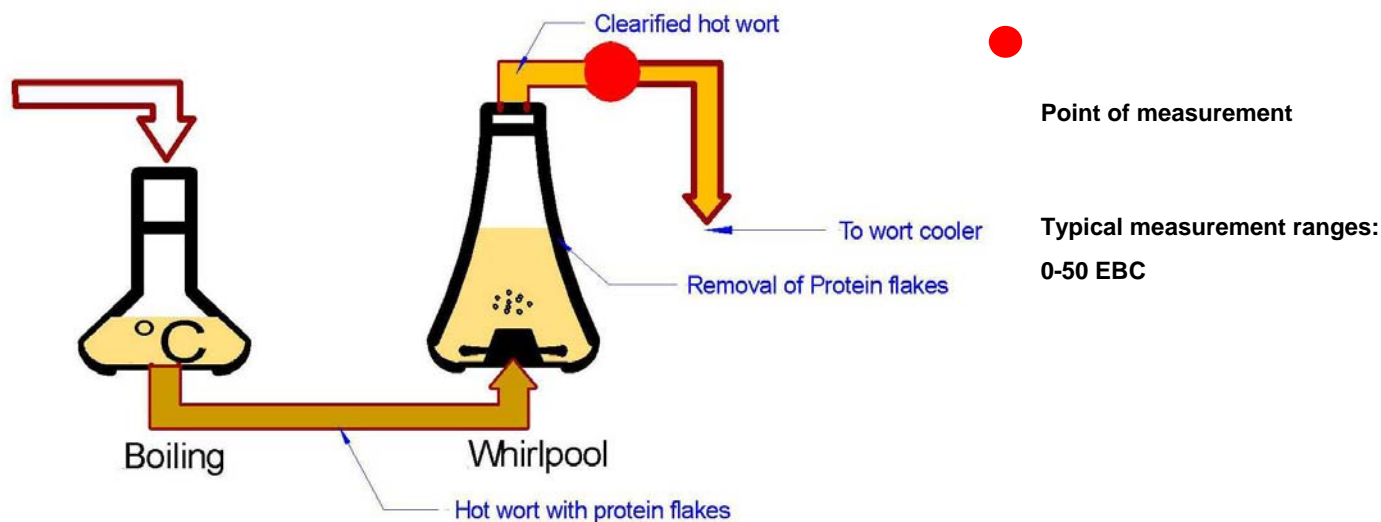
## Advantages:

- Observation of the development of protein and tanning agents
- Efficiency control of flotation procedure
- Alarm in case of too high turbidity

## Principles of measurement:

- 1.) Absorption turbidity measurement

# Whirlpool efficiency



## Description:

The protein flakes accrued during boiling procedure of the wort will be removed by a whirlpool, a centrifuge or a filter press. The detection of turbidity makes sure that the separation process of the protein flakes operates efficient. The system will provide an alarm in case of upset condition during the separation procedure. The clarified wort will be pumped to the wort cooler.

A 12° forward scatter turbidimeter is recommended for this application because the hop resin inside the wort can cause extreme window coatings at the flowcell of the turbidimeter.

The scattered light technology provides a much better sensitivity and long term stability than the traditional absorption photometers and compensates for window coatings.

## Advantages:

- Separation process observation
- Efficiency control of the separation process
- Alarm in case of separation problems

## Principles of measurement:

- 1.) 12° forward scatter turbidity measurement