

# Turbidity for yeast harvesting

Description of the application: "Yeast harvesting"

## Description:

During and after fermentation the yeast gathers on the floor or the cone of the tank. As a rule yeast is used many times as a pitching yeast. Since it is only the most powerful fermenting yeasts which should be further used, a separation is often made into dead yeast, core yeast and overs.

At the start of the yeast harvest the number of yeast cells is very high (TNTC\*) and continuously reduces over the duration of the yeast drawing process. As soon as the specified yeast cell count, which is essential for the secondary fermentation, has been reached, the process is terminated. The start and finish of the yeast harvest is normally carried out manually by an employee who monitors the turbidity on the sightglass.

Also after the completion of the storage time, or before filtration the residual yeast is drawn off as lees.

If ZKGs are used before filtration, in the case of horizontal tanks after drawing empty, the separation between green beer and the yeast phase is also generally carried out manually according to visual aspects (turbidity / colour).

## Automation with the turbidity meter itm-2

It is possible to use a cloudiness measuring device (itm-2) to automate yeast harvesting and to define the separation of the individual phases.

The itm-2 starts and ends the process with dependence on the turbidity in an accurate reproducible manner. This automation guarantees consistent product quality and also permits cost-savings to be made.

## Phase separation before the yeast tank

The yeast drawn off in the fermentation or storage tanks is collected in yeast tanks (pitching yeast tank or old yeast tank). An itm-2 and downstream of that a pilot valve are installed in front of the yeast tank. At the start of yeast drawing the necessary lines are filled with water. At the start of the yeast harvest, the water in the lines is pushed out by the following yeast. As soon as the yeast arrives at the turbidity meter, it is detected by the itm-2 and the valve is changed over from the channel line to the collecting tank (pitching or old yeast tank).

After completion of the harvesting process any yeast remaining in the line is pushed into the yeast tank by the water. When water gets as far as the turbidity meter the process is terminated and the valve is changed over again to the channel line.

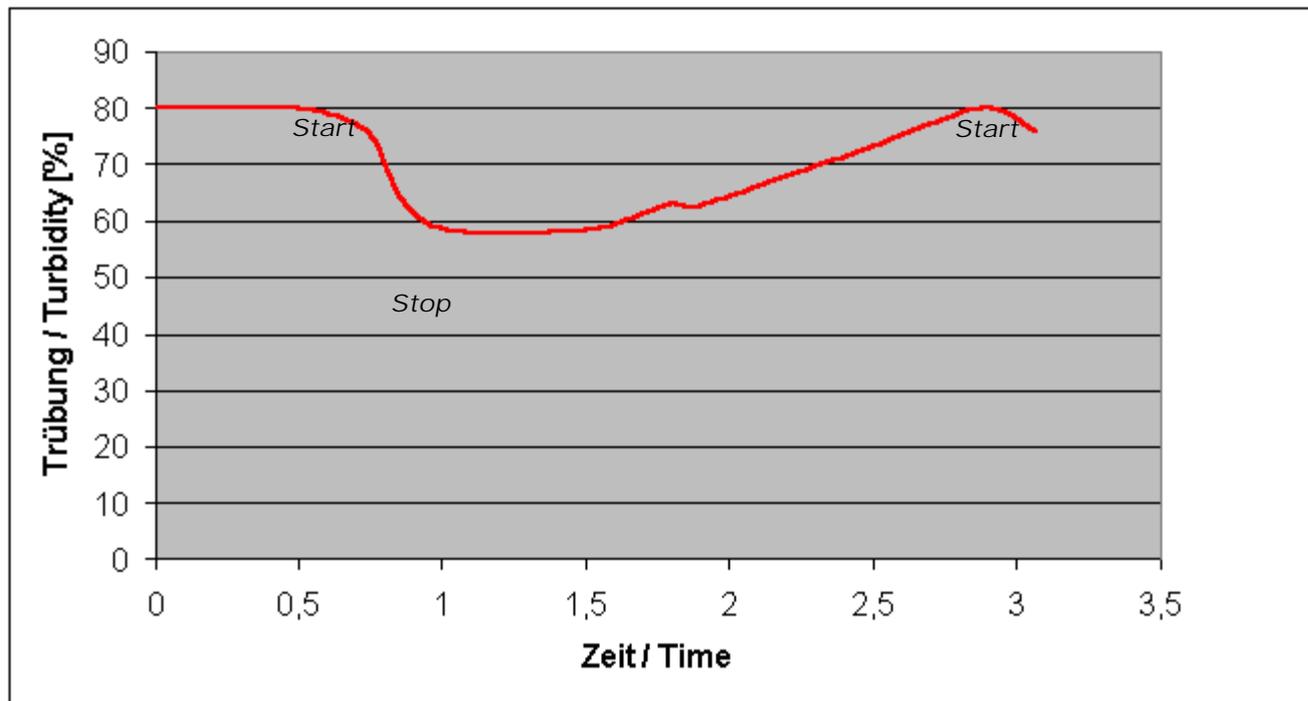
## Typical measured values after the fermentation tank:

At the start of the yeast harvest (yeast cell count TNTC\*) the itm-2 displays a measured value of for example 80%. The cell count for unfiltered beer is between 1.5 – 3.0 million yeast cells / ml. according to beer sort and process. As soon as the corresponding turbidity (caused by the number of residual yeast cells) has been reached, the itm-2 displays a measured value of for example 20%. In our example the dry substance at the start was 12% and at the end it was 6-8%.

\*TNTC = To Numerous To Count



Schematical progression of the turbidity while the yeast harvesting



Your advantages:

- > High reproducibility in the yeast harvest, no human influences!  
=> Uniform consistent quality
- > Cost savings, no staff required for this process.
- > Considerably cheaper than the competition (Optek, Monitek, Sigrist) by a factor of 3-5!

It is worthwhile:

Assumed duration of a harvesting process: approx. 15 minutes  
(incl. setting-up time)

Frequency: After every fermentation – in the case of green beer every 3 to 5 days.  
In the storage tank, according to storage duration, every 2 to 5 weeks

List price of the itm-2: approx. 1000 EUR

Hourly rate of pay of an employee incl. additional costs: 50 EUR

- > Cost of one harvesting process: 12,50 EUR
- > Amortization of the investment over only 80 yeast harvests
- > If only 3 yeast harvests are carried out per week the investment is payed off after 26 weeks.
- > If 5 yeast harvests are carried out per week the investment is payed off after 16 weeks.