

Yeast Propagation





With its optimised yeast propagation Tuchenhagen offers a system . . .

. . . that guarantees constant quality of the pitching yeast.

Overageing and mutations of the yeast have an adverse effect on the fermentation process. Any of these phenomena can be avoided by a propagation of pitching yeast at regular intervals.

In addition, the use of new propagations reduces the risk of contamination due to repeated yeast pitching.

Tuchenhagen Brewery Systems offers a method that ensures that the yeast is in growth (log-phase) during the entire propagation process. Yeast propagated under these conditions provides high stability in taste and froth. The reproducible quality guarantees a true pleasure in beer consumption.

High product quality at low production costs – these are criteria one expects from systems of today.

They should allow for an optimal cell propagation and the production of vigorous yeast which implies a gentle product handling.

The system Tuchenhagen offers is an optimised „One-Tank-Propagation“ that conforms to all requirements made on modern process plants.

Basic modules:

- Propagator with cooling jackets
- Circulation loop, complete with heat exchanger (for heat treatment of small partial streams) and aeration device
- Aeration lance
- Local sterile air station with candle filter and product trap

Accessory:

- Carlsberg flask
- Tank-Top System VARITOP
- VARINLINE® measurement technology

Despite of this low degree of equipment, optimal yeast cell counts are achieved.

Additional sterilisation of wort is not required, because the system is fully CIP-able - a surety for highest microbiological safety.

A sterilisation with steam is not required either.

In this way space as well as investment and operating costs can be minimised.

If required so by the customer, the system may be retrofitted with an additional wort sterilisation. A circulation loop is used for consistent heating and after sterilisation, cooling of wort down to the propagation temperature.

The whole process may be fully automated. For this purpose, it is possible to integrate the control into an existing control system or to provide a separate PLC for local control.

Perfect control over the entire process is given using the Tuchenhagen VARINLINE® measurement technology.

The Process

During the pitching procedure, wort is pumped in batches into the propagator.

A heat exchanger takes care of increasing the temperature for the change from pitching to propagation conditions.

Yeast is dosed to the heated wort using a sampling valve.

A circulation loop connected to the propagator ensures optimal mixing and homogenising of the yeast suspension.

The circulation rate and flow velocity may specifically be adapted to the propagation process and set temperatures.

Centrifugal pumps are exclusively used within the entire propagation system.

Aeration of the yeast suspension may be effected in dependence of the tank contents with an aeration lance installed in the bottom of the propagation tank.

Using the lance offers the advantage that even with larger product volumes a homogeneous distribution of the air in the yeast suspension is ensured.

Since the amount of sterile air is metered according to the tank contents and in particular according to the oxygen demand of the yeast, excessive aeration will not take place.

This method significantly reduces the formation of foam compared to traditional methods and allows

Tuchenhagen propagators with a headspace of approx. 40% to operate without pressurisation.

Each propagator is equipped with its own fully automated sterile air station, complete with filter and product trap.

The use of local sterile air filters safely exclude any risk of contamination.

The product trap prevents the product from penetrating into the air system. Highest biological safety is given because the air pipes are CIP-able up to the product trap.

For a controlled process the use of Tuchenhagen VARINLINE® measurement technology is recommended.

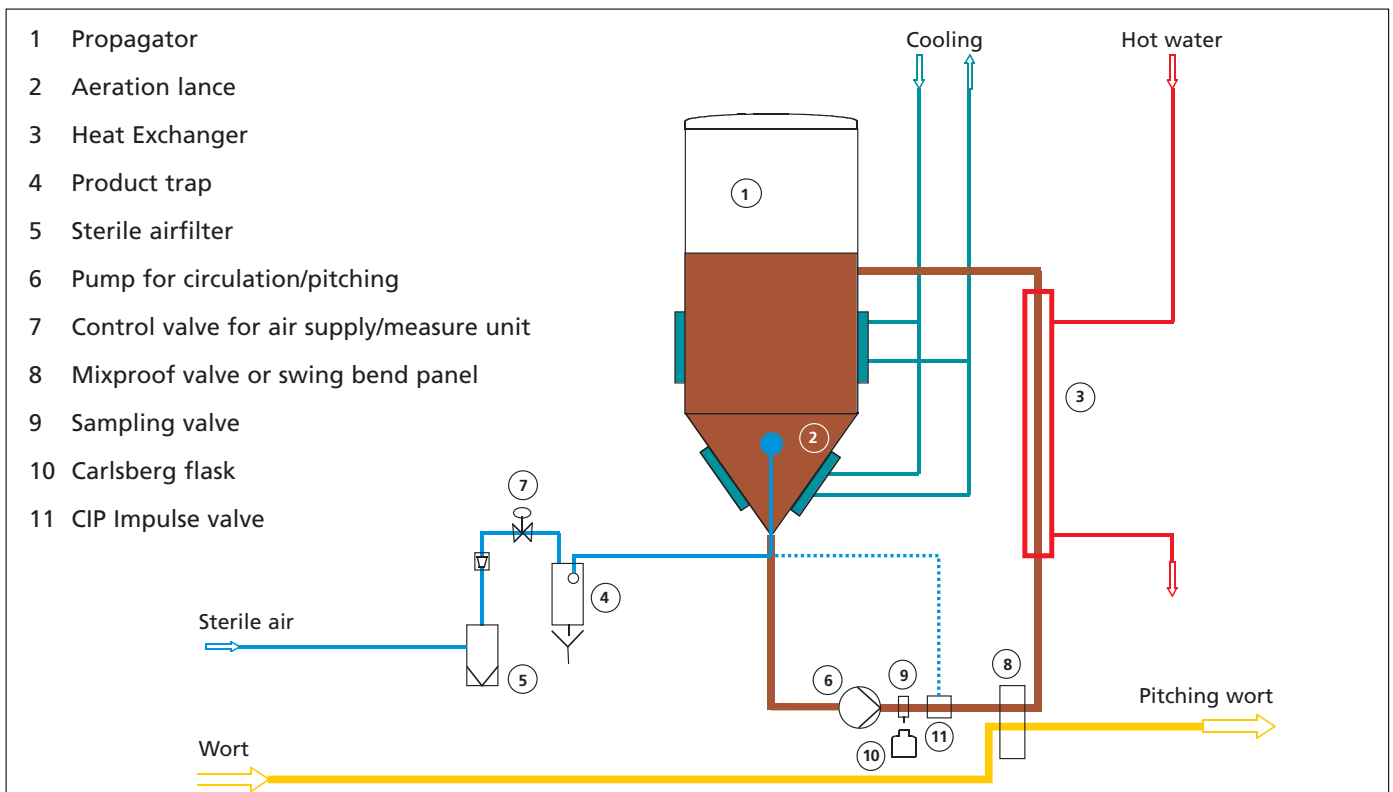
All instruments can be installed pocket-free thanks to the use of Tuchenhagen in-line access unit of the VARINLINE® programme.

The use of alcohol measuring units proved to be successful for an optimal process control. They allow a.o. to adapt the oxygen supply to the specific process conditions as well to determine the optimal point of time for the next wort batch.

In this way the initiation of further propagation steps in time work against excessive ethanol concentrations which normally limit the growth of yeast.

At the end of the propagation process it is possible to start a next cycle with a residue amount of approximately 20%.

The propagator is completely emptied at regular intervals for cleaning operations and then filled with fresh yeast cultures from the laboratory for the next cycle.



The characteristics

- vigorous, actively fermenting yeast
- no additional wort sterilisation
- low equipment degree
- optimal aeration
- circulation loop
- sterile air station with candle filter and product trap
- in-line alcohol measurement

The customer advantages

- high and constant beer quality
- gain of essential nutrients
- minimisation of space and costs
- reduced formation of foam
- optimal homogenisation, easy in-place cleaning
- highest microbiological process safety
- determination of the optimal point of time for initiating further propagation steps