NEW IDEAS

HENNING NIELSEN, E-MAIL: BREWER@HENNINGNIELSEN.DK

In the brewing industry we don't meet new ideas every day. However recently the following two new ideas have been introduced:

- Effective agitation can be achieved by reciculation of beer or yeast via the CIP pump and a washing turbine positioned under the surface of the liquid.
- When CO2 is injected in the circulation, an effective stripper for dissolved Oxygen is made as well.

This new principle of agitation has been tested* by the research team of professor John Villadsen at The Technical University in Copenhagen, and today the patents on this technology, know-how and commercial rights are installed in the Danish company ISO-MIX A/S.

Naturally the cost of investment and the job of sanitation are strongly favoring the combination of an agitator and a tank-washer compared to classic propellers and separate tank washers.

For the brewing industry the new ideas are of special interest, since the tank-washing turbines have been used for several years. The subcontractor for ISO-MIX A/S supplying the new combined agitator and tank washer is the Toftejorg A/S,

A handful of breweries are at this moment planning full scale trials for agitation of water, beer and yeast and results will be published within the coming months.

Initial trials have given the following indications:

1. The new design of agitator is generally completing a certain job in half the time compared to traditional mechanical agitators. The energy consumption could be reduced to 25 % of the normal. During the agitation any liquid or solid additives could be mixed in.
2. When used as a gas stripper with CO2 injection the turbine will reduce the content of Oxygen in 500 hl carbonated water or beer from 0.5 ppm to 0.1 ppm

within minutes and with the use of 100-200 kg CO2.

Naturally more precise results will be at hand after the planned series of full scale trials.

A list of possible applications within the breweries has been made as follows:

- In mash kettle to give sudden rise in temperature by mixing in steam or super-heated water.
- In wort kettle to increase heat transfer at heating jackets.
- In yeast holding tanks to homogenize and possibly to dilute yeast before pitching.
- In yeast holding tanks to aerate yeast before pitching.
- In fermenters to maintain high and uniform yeast concentration during diacetyl-rest and cooling.
- In beer tanks during cooling to increase effectiveness of cooling jackets.
- In beer tanks to add stabilizing agents, color or other ingredients.
- In Bright Beer Tanks (BBTs) to homogenize Porter or other heavy beers.
- In BBTs to remove oxygen by means of CO2.
- In BBTs to reduce waiting time for homogenizing after blending.
- In CIP tank to reduce waiting time after addition of detergent.
- In sugar dissolving tanks (e.g. for soft drinks) to reduce waiting time for homogenization.
- In surplus yeast tanks to allow emptying of settled yeast.
- In raw water tanks for aeration.
- In tanks for treated water to remove oxygen by means of CO2.
- In D-water tanks to remove Oxygen by means of CO2.
- In sewage neutralization tanks to speed up process and to reduce cost of additives.
- In sewages balancing tanks to add oxygen and to homogenize the effluent.

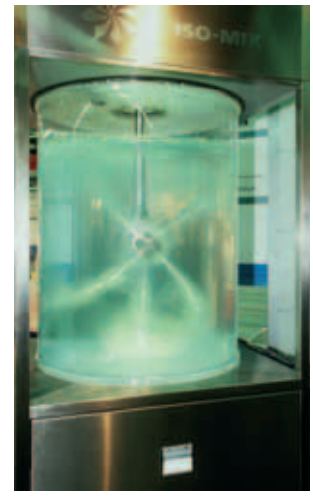

Photo: Isomix (Rotary jet head IM10)

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References:

* *Nordkvist M., Grotkjær T., Hummer J. S., Villadsen J., (2003) "Applying Rotary Jet Heads for Mixing and Mass transfer in a Forced Recirculation Tank Reactor System", Chemical Engineering Science accepted*

* *Nordkvist M, Grotkjær T., Lazar J. Å., Hummer J. S., Villadsen J., (2003), "Hiv røreværket op, sænk jetten ned", Dansk Kemi, 2003, 84 (6/7): 18-21*