

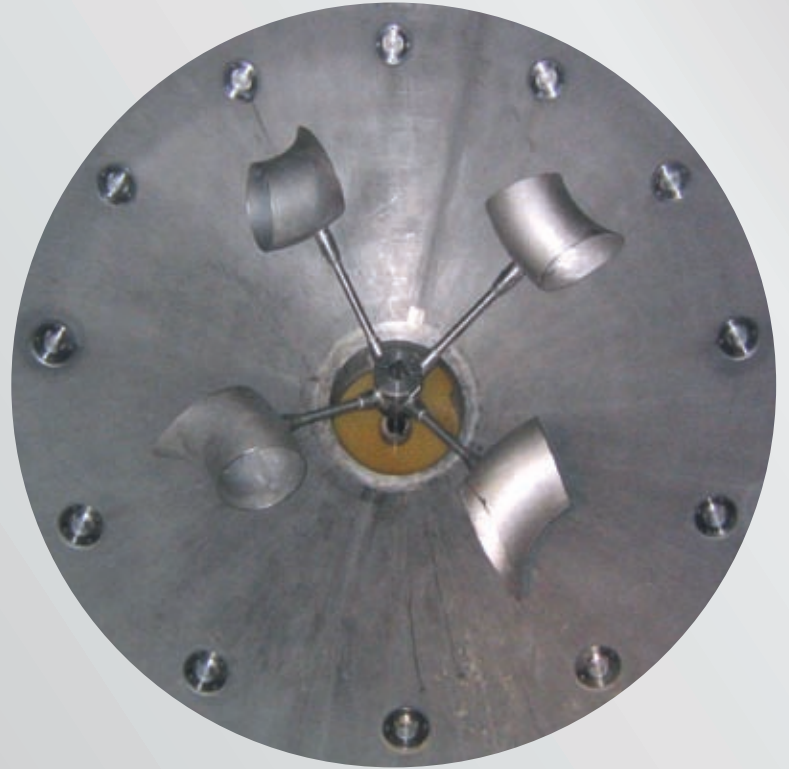
AFLOSJET

Mash heating by live steam injection

The mash conversion process is one of the most important steps in wort production. The traditional mash tuns are equipped with double heating jackets and an agitator. During mashing, sufficient agitation is crucial to assure the homogeneity of the mash in the conversion vessel as well as to increase the heat transfer. However, this technology has several well known disadvantages:

- The strong agitation required to ensure a good heat transfer causes particle attrition (shear sensitive material is broken up into smaller particles) and mash oxidation, leading to the formation of a gel, causing filtration problems. Furthermore, mash oxidation also leads to a reduced flavour stability of the final beer.
- The fouling of the double jackets progressively reduces the heat transfer. A regular (sometimes after 15 brews) C.I.P. of the mash conversion vessel is required. The brewhouse productivity is therefore significantly affected.

To overcome these problems, **MEURA** has developed the **AFLOSJET** system, an Anti-Fouling LOw Shear forces mash heating system.



AFLOSJET

MAIN ASSETS

The **AFLOSJET** system uses direct clean steam diffusion that gently heats the mash, providing numerous advantages compared to a conventional system using double jackets:

- Rapid and constant rise in temperature independent from CIP cycles (reproducible mash vessel occupation time all week long).
- Reduction of mash oxidation and shear forces.
- Reduction of Strecker aldehydes.
- Excellent mash filterability.
- Only a weekly CIP required thus lower amount of chemicals for cleaning.
- Ideal solution for a brewhouse re-vamping.

TECHNICAL DESCRIPTION

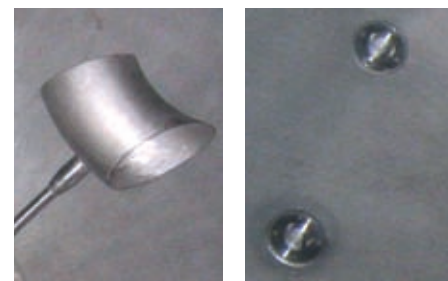
The patented **AFLOSJET** diffusers work at a low steam pressure and avoid damaging the enzymes and proteins of the mash.

The function of the agitator with the **AFLOSJET** system is no longer to assure a heat transfer as it is the case with a double jacket, but to make sure the brew is homogeneous. For this reason, the **AFLOSJET** system requires a type of agitator different from the double jacket system.

The system is the ideal solution for a brewhouse re-vamping. It is installed without a long halt in production and is an attractive economical solution compared to the installation of new conversion vessels.

The **AFLOSJET** system comprises two different parts, *clean steam diffusion* and *clean steam production*:

- The clean steam diffusion devices: In order to diffuse clean steam into the mash, **MEURA** developed a patented system. The mash conversion vessels are equipped with clean steam diffusion heads. Their number depends on the mash volume and the required heating speed. Steam is then injected at low pressure (<1bar).



- Clean steam production: to obtain clean steam, two different solutions exist.

1. Clean steam production unit which includes:

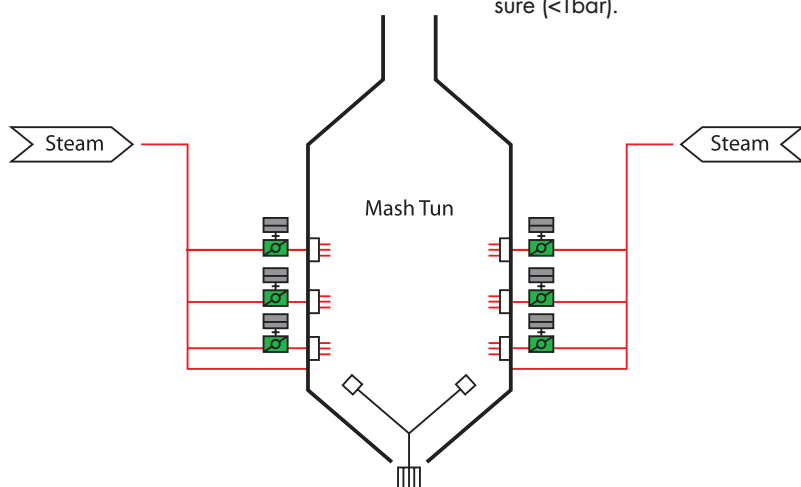
- ▷ a water treatment unit (generally softening by means of ion exchange resins followed by reverse osmosis)
- ▷ a buffer tank for hot, treated and de-aerated water
- ▷ a steam generator which is a tubular heat exchanger, heated with the primary steam circulating in its internal tubes. The role of the clean steam generator is to vaporise the treated water at low pressure.

The feeding water is first softened and treated in a reverse osmosis unit, then heated up to 95-98°C for degassing and stored in a buffer tank. Treated water is fed instantaneously from the buffer tank to the clean steam generator according to the needs of clean steam. The low pressure clean steam produced is then injected into the mash through specially designed devices.

2. An industrial steam filtration unit: this technique can be applied if the brewery produces industrial steam free from any non-food-grade additives. The steam is then filtered up to 1 µm in order to produce a culinary quality steam.

SOME REFERENCES:

- FEIZ, China
- Meurens, Belgium
- Nestlé, Singapore
- NLDC – Martens Brewery, Belgium
- Povolzhe Brewery, Russia
- Rosar Brewery, Russia
- Shymkentpivo, Kazakhstan
- Star Brewery, Madagascar



TRADITIONALLY PIONEERS SINCE 1845

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