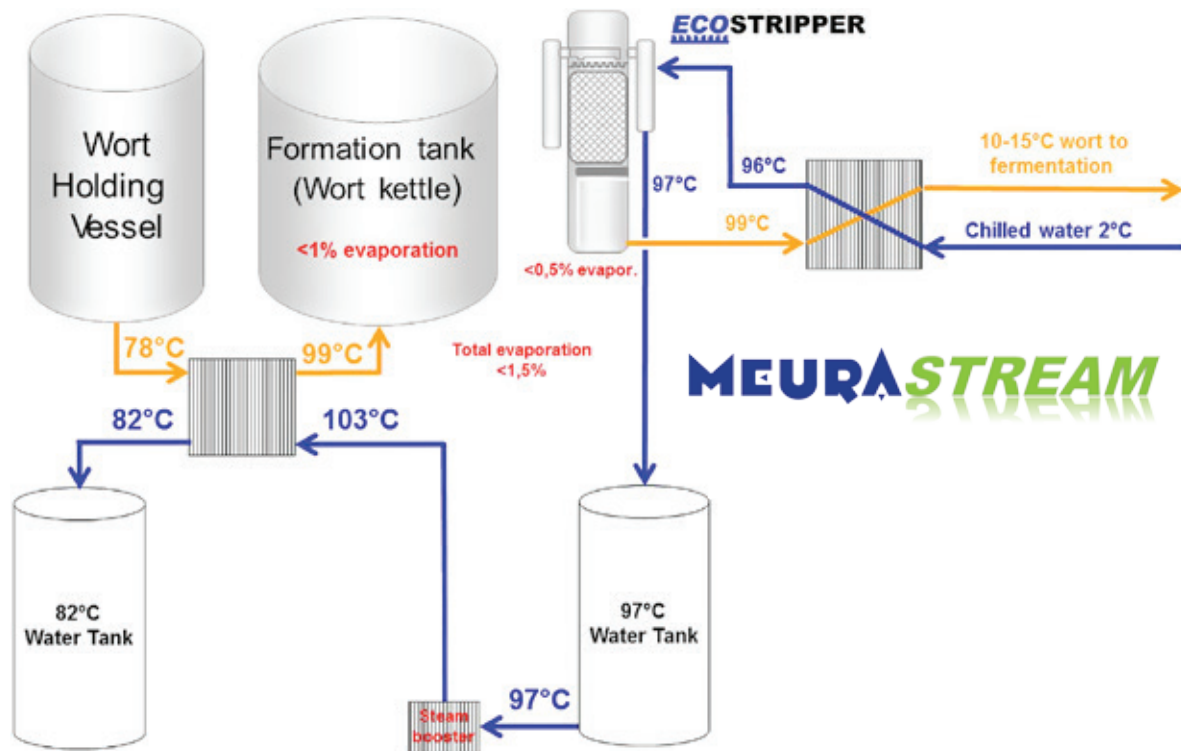


THE MEURASTREAM



Conventional brewhouses, even those equipped with energy recovery by vapour condensation on the wort kettle, still have significant steam consumption and over-production of hot water. Over-production of hot water has become a problem for many brewers in the past 5-10 years in particular. As the industry is trying to reduce the water consumption in the overall process, the extra hot water produced in the brewhouse cannot (or only partially) be used. Often the hot water tank in the brewhouse overflows daily, which represents water and energy loss.

With this reduced steam use and hot water excess in mind, Meura has developed and patented a new concept, called the “MEURASTREAM”. The principle of the MEURASTREAM can be implemented in a batch brewhouse or a Meurabrew (Meura’s continuous brewhouse) alike.

The MEURASTREAM consists of 2 major technologies:

ECOSTRIPPER TECHNOLOGY

The Meurastream is no longer using a traditional wort kettle, but is based on wort stripping (Ecostripper).

With the Ecostripper, the heat treatment of the wort and elimination of volatiles is separated into two steps (in a classic brewhouse the wort kettle performs these processes at the same time). In a first vessel, called the formation vessel, the wort is kept at 100°C with almost no evaporation (less than 1%). In that stage all the processes that involve heat treatment are performed (formation of DMS, sterilisation, enzyme deactivation, hop isomerisation etc.) After that formation step the trub is removed by whirlpool or Clarisaver (wort settling tank). The final step, in-line with the wort cooling, is the ECOstripper, wort stripping technology. Wort is pumped on top of the stripper and 0.5% steam is injected in counter flow to eliminate the unwanted volatiles.

The overall evaporation rate with the Meurastream is less than 1.5%.

The first Meurastream has recently been sold and will shortly be commissioned. The results will for sure be developed more deeply in one of our next issues.

VERY HOT BREW WATER PRODUCTION WITH ENERGY RE-USE

The energy to heat up the wort after mash filtration from 78°C to boiling temperature will primarily come from the wort cooling. Instead of heating the brew water in the wort cooler to the traditional 80-85°C, the water will leave the heat exchanger at about 96°C. This means that the volume of hot water will be smaller than at the usual lower temperature. The energy from the steam injected into the Ecostripper is partially recovered and heats the water to 97°C. The hot water is then temporarily stored in a very hot water vessel. For the next brew, that 97°C water is heated to 103°C with an in-line steam booster and is used to pre-heat the wort to 99°C, when pumped to the wort kettle (or formation vessel). The brew water will leave the heat exchange at 82°C, and is then used for mashing-in and sparging. In short, part of the energy from the wort cooling is used for the wort pre-heating. It also means that most of the steam consumed in a Meurastream brewhouse is for mash heating only!

The following table compares the MEURASTREAM with a brewhouse without energy recovery and one with the conventional vapour condensation technology (often called the “pfaduko” system). The calculations are made under the same conditions and recalculated to 15°P cold wort.

	Thermal energy	Hot water excess
CLASSIC BREWHOUSE	26,0 MJ/hl	37,8 l/hl
PFADUKO BREWHOUSE	19,4 MJ/hl	37,8 l/hl
MEURA STREAM	12,6 MJ/hl	15,6 l/hl

The table shows that the MEURASTREAM reduces the thermal energy of a brewhouse without energy recovery by 52% and by 35% for a brewhouse with pfaduko! Excess hot water is reduced by 60% thanks to the MEURASTREAM! These figures make the MeuraStream most probably the most energy efficient brewhouse concept available in the market. The MeuraStream concept can be easily implemented in an existing brewhouse.