GEA’s revolutionary ECO-FERM™ system for gentle liquid jet mixing in fermentation tanks has been especially developed to further improve fermentation efficiency and homogeneity. A mixing jet that is centrally directed upwards supports the natural upward flow process in vertical fermenters caused by the formation of CO₂ and convection. Significant time savings in fermentation, warm maturation and cooling of the beer, without affecting quality parameters and filterability, may be achieved. Our experience shows that particularly good results may still be achieved with flocculent yeast and unfavorable height to diameter ratios of fermenters.

A GEA jet mixer, driven by a liquid flow, is utilized and supplied by a centrifugal pump fed from the tank bottom. Inside the tank, the majority of the mixed liquid is drawn into the jet mixer through its side openings, entrained by the driving flow and boosted upwards. Due to the special design, only a quarter of the total mixing flow created in the tank has to be supplied via the centrifugal pump.

Different unit sizes are available and capable of handling batch sizes from 500 hl to 12,000 hl.
ECO-FERM™

Low-shear jet mixing improves process consistency and production planning

The process principle is simple and the benefits that can be achieved are impressive:

- Faster fermentation, improved maturation and shorter cooling times
- Quicker process times allow for additional tank throughput
- Improved scheduling of production processes due to more uniform fermentation
- Consistently high beer quality with unchanged flavor profile due to more uniform fermentation
- Higher raw material yield and increased returns thanks to higher degrees of final attenuation

ECO-FERM™ – A system with special features:

- Low-shear mixing principle prevents excessive mechanical stress on active yeast cells
- With no moving parts, jet mixing devices offer quick and easy installation, low energy consumption, minimal operational costs and no maintenance. Existing tanks can be easily retrofitted; side installation into the bottom tank cone is also possible
- Specially developed process connection ensures perfect hygienic installation

The diagram describes a particular application where the threshold value of 80 ppb for diacetyl as criterion for the completion of warm maturation is already reached after 6.5 days.

In this application, time saving with ECO-FERM™ is more than 24 hours.