Liquid Liquid Extraction – Mixer Settler

Liquid/liquid extractions in the mixer settler have the advantage that they can be operated discontinuously and with fluctuating product flows. The concentration profile through the stages is maintained, even when there are interruptions. This makes the mixer settler ideally suited for research and development tasks, although it is also used in production with low separation stage figures.

UD Offers Mixer – settler Sizes from 100DN to 600 DN

The required Extraction in the mixing zone is produced in the mixer settler by stirring the two phases, which separate again in the settling zone.

The two phases are mixed in and dispersed with each other by the speed-controlled stirrer in the mixer chamber. The two chambers can be separated by a double weir.

For the height adjustment of the phase separation layer in the settler, the glass apparatus has an overflow for the heavy phase which is height-adjustable during the process.

Liquid/liquid extractions in the mixer settler have the advantage that they can be operated Batch wise and with fluctuating product flows and difficult to separate mixtures.
The concentration profile through the stages is maintained, even when there are interruptions. This makes the mixer settler becomes choice for research and development tasks, although it is also used in production with low separation stage figure.

**Overview of the system**

The system consists of the following adjustable overflow valve, Mixing Zone-stirrer drive assembly and settling zone.

**Mixing Zone - Stirrer Drive Assembly**

The mixing chamber consists of a cylindrical glass cover in which a variable speed stirrer drive is fitted. Glass impeller Stirrer creates a negative pressure at the inlet, which can be used to draw liquid from a previous stage in the process. In the mixing zone a turbine stirrer with variable speed unit mixes the two phases and the mass transfer takes place during dispersion.

**Separation Zone or Settling Zone**

Separation of phases takes place in two phases. The turbulent flow in the mixing zone must be brought under control and converted in to axial flow. Then the mixer passes into the separation zone where the two phases separate, due to their specific gravity difference.

Depending on required time and liquid flow Settling Length can be increased or decreased. To standardize the equipment we have kept Settling Zone of 1 meter length In which Flow can be set to get desired Separation.

We offer Optionally also Static Mixer of PTFE or SS 304 to get more settling time between two weirs

**Auto Continuous Zone**

The adjustable overflow valve assembly at one end of the vessel can be set for any interface height. The position of the overflow weir is adjusted to suit the relative densities of the two phases. This valve can be operated externally such that the interface height can be set or reset depending on the operating process conditions. The separating head incorporates an internal overflow weir, which is manually adjusted using a hand wheel.
The internals are arranged in such a way that the heavy phase flows up through the annular space between the dip pipe and the overflow weir and then overflows through holes in the overflow pipe and out through the outlet pipe.

Advantages:

**Visual Monitoring**

The transparency of Borosilicate glass facilitates the adjustment of the overflow valve by visual monitoring where by any change in the process conditions resulting into a change in layer (interface) height can be immediately adjusted by resetting the overflow valve.

The resetting of the separation height is very simply achieved by rotating the hand wheel of the overflow valve assembly in the clock or anti clock direction.

**Large Interface Area**

The horizontal glass vessel of the MIXER-SETTLER provides a large interface area of separation in two immiscible liquid phases for a given volume. This enhances the Extraction

**Options**

- Multi-stage version
- Process control system and data recording
- Heating jacket
- Temperature measurement in the settler
- For Difficult Separations, Special Static Mixers are available for increase in residence time and break emulsions Thus Efficient separation