

Static mixer description

What is a static mixer? :

A **static mixer** is a device for mixing two or more fluid materials. Most commonly, the fluids are liquid; however, static mixers are used to mix gas streams, disperse and mixing gas into liquid or disperse immiscible liquids.

The device consists of mixer elements contained in cylindrical (tube) housing. These can vary from 6 mm to several meters diameter. Static mixer elements consist of a series of baffles that are made from metal. Similarly, the mixer housing can be made from metal. Typical materials of construction for the static mixer components carbon steel, stainless steel, duplex and super duplex steel, Monel, Titanium and more. The overall system design incorporates a method for delivering the streams of liquids into the static mixer. As the streams move through the mixer, the non-moving elements continuously blend the materials. Complete mixing is dependent on many variables including the fluid properties, tube inner diameter, the number of elements, and their design.

Principles of Operation:

A **static mixer** is a series of fixed, typically breakers of flow line, elements enclosed within a tubular housing. The fixed geometric design of the unit can simultaneously produce patterns of flow division and radial and tangential mixing.

Flow Division: In laminar flow, a processed material divides at the leading edge of each element of the mixer and follows the channels created by the element shape. At each succeeding element, the two channels are further divided, resulting in an exponential increase in stratification. The number of striations produced is 2^n where 'n' is the number of elements in the mixer.

Radial Mixing: In either turbulent or laminar flow, rotational circulation of a processed material around its own hydraulic center in each channel of the mixer causes radial mixing of the material. Processed material is intermixed to reduce or eliminate radial gradients in temperature, velocity and material composition.

Tangential Mixing: In either turbulent or laminar flow, the change of the direction in the circulation lines of a processed material around its own hydraulic center change in each channel of the mixer causes tangential mixing of the material. Processed material is intermixed to reduce or eliminate tangential gradients in temperature, velocity and material composition.

Applications:

When the mixing of two or more fluids is required, p.e.

- Oils with water or additives.
- Chemicals with water.
- Resins with catalysts.
- Chemicals for processing or reaction.
- Gases, process or technical

Filtration & mixing experts since 1984

Data and information is for reference only, and may vary depending on specific application

Hispano Europea de Comercio e Industria S.L.
Calidad, 24 - Pol. Los Olivos - 28906 Getafe (Madrid) España
Tel. (34) 916 967 039 Fax (34) 916 950 352
e-mail: sales@hecisa.com <http://www.hecisa.com>

