

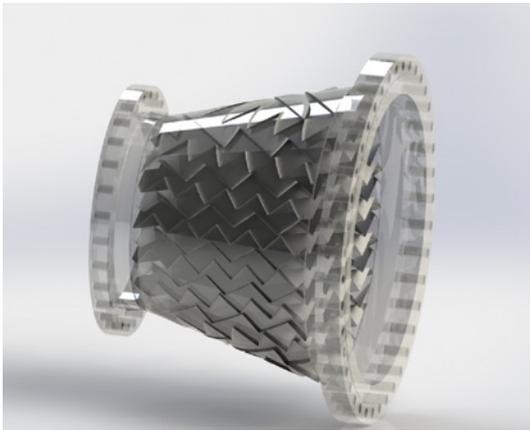
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## Homogeneous conditions for Multitube Heat Exchanger Inlets

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### Multiphase applications

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**Gas and liquid components arrive from a pipeline at the conical static mixer inlet, where they are repeatedly split into partial streams and recombined again.**

The conical static mixer provides firstly a mixing effect between gas and liquid and secondly a distribution over the whole cross section.

The specific flow pattern created by the mixing elements help to contact gas and liquid components and so the formation of droplets.

The biggest advantage of the unique conical Sulzer mixer is that a gas-liquid stream can be uniformly expanded from a smaller pipeline diameter to a bigger inlet of a heat exchanger or reactor.

That means that gas and liquid are kept dispersed and well distributed over the whole cross section, so that the downstream technology is loaded uniformly.

In addition, due to its unique form, pressure can be partially recovered so that minimum pressure drop results.

### Common applications

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- Refrigerants for gas cooling
- Natural gas processing / cooling

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### The Sulzer plus

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- Keeping up a cross sectional droplet distribution when expanding diameter
  - Equalizing velocity, concentration and temperature profiles
  - Avoiding maldistribution cases in heat exchanger and therefore reduce overall length/volume
  - Equalized loading of each single pipe of the heat exchanger
  - Possible pressure recovery instead of high pressure drop and therefore energy savings
  - Capex and Opex savings
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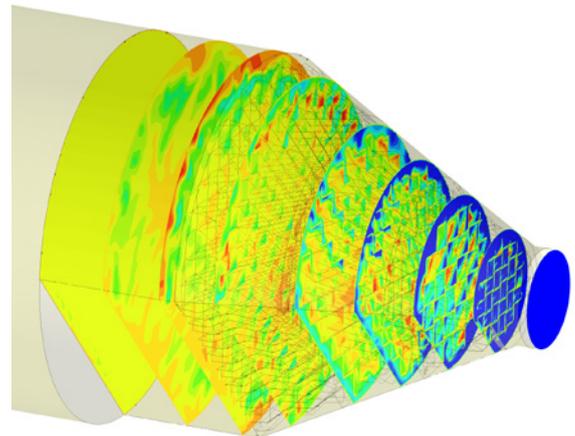
## Single phase applications

A gas flow which enters the inlet head of a multi tube heat exchanger or reactor from a small connecting pipe has a very diverse velocity distribution.

Often, there is a very low pressure drop in the heat exchanger tubes and therefore the velocity difference can have very negative influence in the different tubes ending up in a bad heat exchanger performance. The center tubes with much higher velocities have much less residence time than the outer tubes where it easily can come to even back flows. This normally ends up in a reduced overall heat transfer and requires either tube internals or bigger heat exchangers. With the Sulzer conical mixer, you can avoid such malfunctions and even optimize the overall pressure loss.

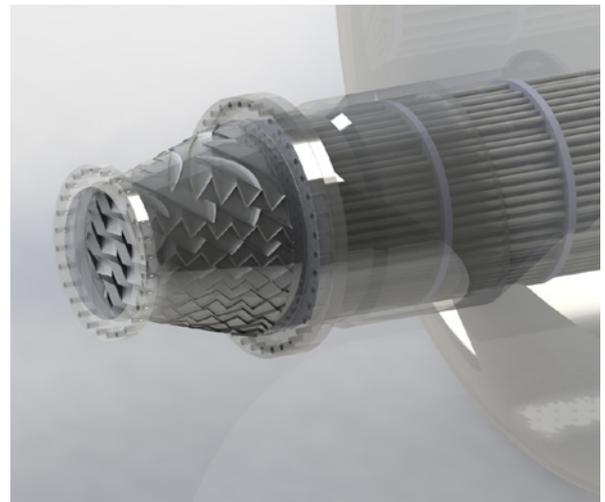
A correctly designed mixer is of importance to achieve the desired flow regime like bubble- or mist- etc. flow. Slug or wave flows would create a lot of troubles for the process and efficiency would drop dramatically if working in such conditions.

The optimum flow conditions are mainly secured by the sophisticated design of the Sulzer conical mixer. Improved velocity profiles and energy input combined with an excellent cross transport help to avoid maldistribution cases in designing heat exchangers or reactors.

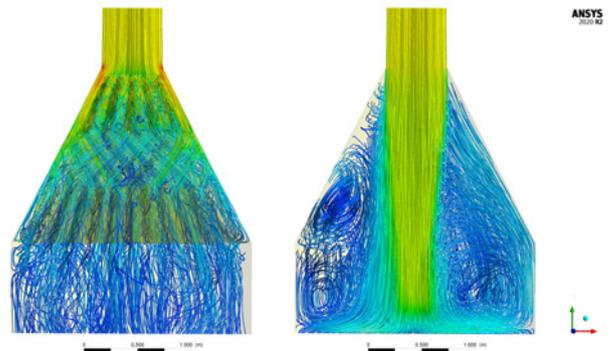


Proven design by many installations worldwide as well as CFD simulations

### Sulzer patented conical mixer



Flow behaviour at the entrance of a smaller pipe into the head of a shell & tube heat exchanger or reactor with and without Sulzer mixer.



**How can we help you?**  
**Contact us today to find your best solution.**

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