

# Mator News

3/2007

Mator AS – the separation specialist

## Possible skewed flow distribution?

Due to piping geometry and flow characteristics gas-liquid multiphase flow is most often not uniformly distributed. When this fluid enters various devices/equipments such as an inlet cyclone device in a two- or three-phase separator, as shown in the figure on the right, skewed distribution could highly affect the performance of the device.

Even though the static pressure head will attempt to even out the flow, skewed gas-liquid distribution at the inlet may lead to too much liquid at one side (high momentum) and too much gas at the other side (risk of gas carry-under).

Skewed distribution may be the source of separation problems and capacity bottlenecks and the solution often includes modifications to the internals.

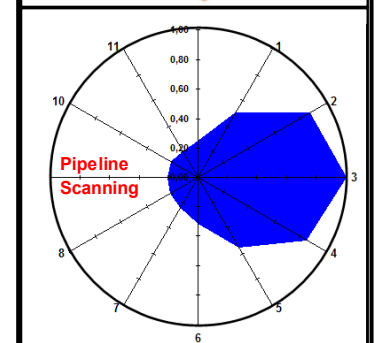
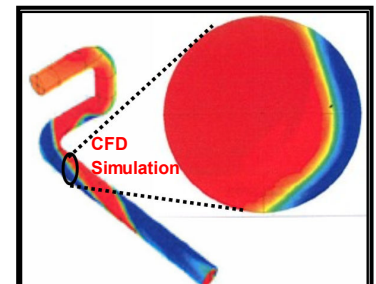
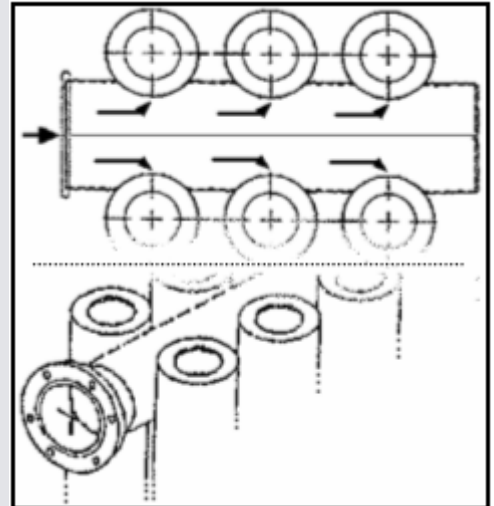
**How do you determine skewed distributions? And how do you ensure that you have the right basis for the modifications?**

Mator testing technology, in this case the Neutron Backscatter, can verify flow regimes in the piping upstream of the separator.

CFD simulations are a common tool for modelling the gas-liquid multiphase in the pipeline and inside the separator. The degree of pipeline complexity (i.e. number of bends, flanges, reducers etc.) may reduce the quality of the CFD modelling.

The figure on the right shows a CFD section from a pipeline, verified by Backscatter scanning (bottom figure).

**By utilising Mator's test technology in combination with CFD modelling, it is possible to provide confident and valuable input in order to define the problem and thereby propose an optimal solution.**



### Recent Mator projects:

- ◆ Statoil Heidrun: Emulsion breaker testing.
- ◆ Mærsk Gorm: Produced water system mapping and comparison study.
- ◆ Statoil Norne: Testing of new foam inhibitors.
- ◆ Norsk Hydro Troll C: Separator train and produced water system mapping.

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