



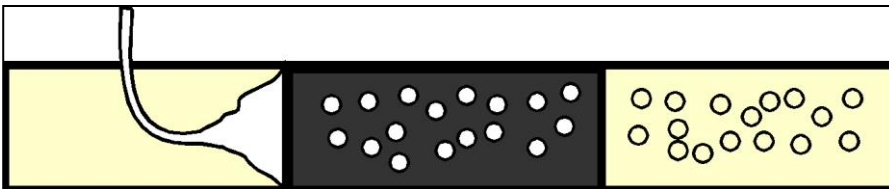
Design, Optimisation and Scale-up

Case Study

Design limitations of existing or proposed equipment/processes identified. Cost-effective recommendations are made for improved design and scale-up.

Problem

Blending 1% of surfactant into water instantly formed a viscous gel, which needed to be dispersed.



Existing Design – Static mixer

Inadequate static mixer design caused:

- Unwanted gel formation
- Frequent mixer blockage
- High pressure drop
- Over-dosing of additive
- Inconsistent product quality

Need

Correct design and scale-up of static mixer for rapid dispersion.

Solution

Desk study carried out, and design faults identified. New design proved and optimised through experiments with actual process fluids, followed by scale-up.

Benefits

- Started up, right first time
- No mixer blockage
- Consistent product quality
- Less additive dosed
- Reduced pressure drop

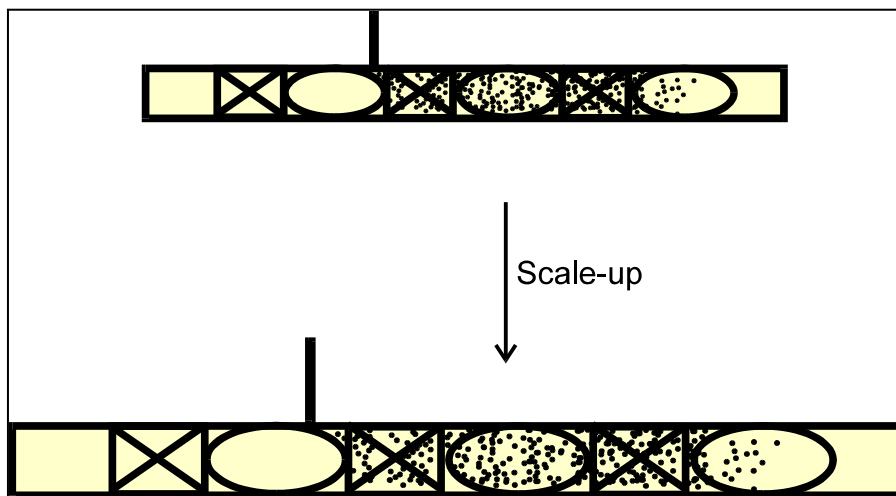
Design and Scale-up

Case Study

Recommendations and Design Improvements

Alternative static mixer recommended and optimised through laboratory protocols in terms of:

- Turbulent energy dissipation
- Residence time (i.e. number of mixer elements)
- Feed position, number of feed points and feed tube diameter



Correct feed design formed fine mist of droplets and avoided gel formation.

BHR Group is an international centre of fluid mixing expertise and know-how in the design, optimisation and scale-up of chemical reactors for single-phase and multiphase processes. Expertise in CFD modelling, fluid mechanics and chemistry is backed by unrivalled pilot and production-scale experimental facilities for model validation.

Contact us for more information or visit our website.

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