Packed Bed Reactor Audit

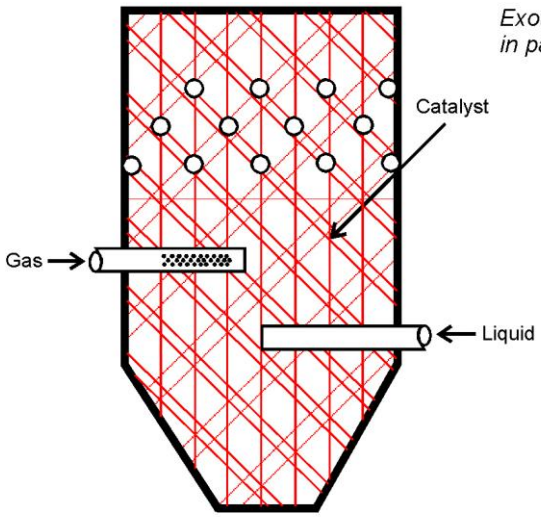
Case Study

Design limitations of equipment/process identified by audit and analysis. Cost-effective recommendations made for improvement.

Problem

Poor reactor design caused:

- Low productivity
- Reactor instabilities
- Poor catalyst lifetime.



Exothermic 3-phase reaction in packed bed reactor

Before Design Study

Need

Simple retrofit solution required in very tight timescale during shut down to improve productivity and controllability of major production plant.

Solution

Audit carried out. Design limitations identified recommendations for improvement made within period of two days.

Benefits

Saving of $1.5 million over 5 years through:

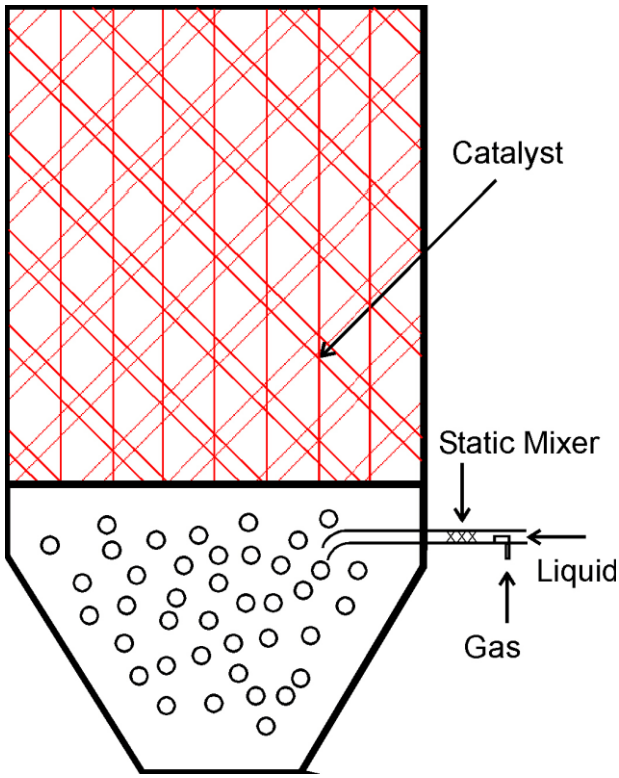
- 37% increase in productivity
- Reduced volume of packed catalyst
- Removal of reactor instabilities
- Significantly longer catalyst lifetime

Mixer and Reactor Audits

Case Study

Recommendations and Design Improvements

- Level of packed catalyst raised, reducing catalyst volume, thereby increasing liquid velocity
- Gas predispersed into liquid feed by using a static mixer
- Static mixer designed to achieve optimum interfacial area for mass transfer by using-in-house software design guides
- Feed position selected to give optimal reactant distribution, thereby improving catalyst contacting efficiency



BHR Group's Experience

BHR Group is an international centre of fluid mixing expertise and knowhow in the design, optimisation and scale-up of chemical reactors for single-phase, two-phase and multiphase processes. Expertise in CFD modelling, chemical engineering 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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