



Process Intensification Case Studies

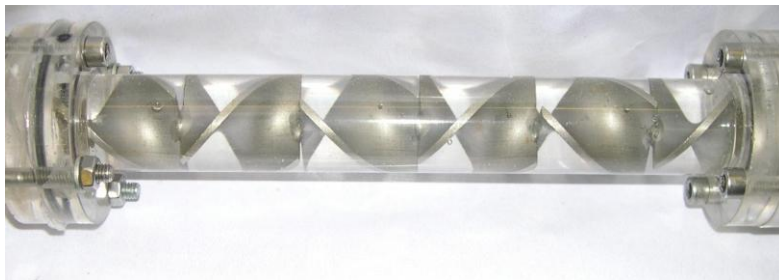
Case study 1 – Batch to Continuous

The Challenge

Our client was a chemical manufacturer that wanted to move from a batch regime to continuous flow and utilise the benefits of Process Intensification.

Make significant energy and operating cost saving by;

- Highlighting the opportunity to remove one component completely from the process by exploring higher temperatures and mixing energies.
- Reducing and potentially eliminating the need for downstream energy hungry separation processes such as distillation.
- Reducing the full-scale reaction time from hours in batch reaction to seconds in continuous flow.



Example of a static mixer used for continuous operation (Kenics KM, 6 Element, 1")

The Benefits

BHR Group increased the clients knowledge of its process behaviour by;

- Understanding the minimum mixing energy required for adequate mass transfer.
- Deriving a rate expression to model process behaviour.
- Defining the full scale process environment which produced 'laboratory reaction time-scales' at full-scale production rates.

Case study 2 – Removal of by-products

The Challenge

Our client was a multinational manufacturer and wanted to exploit the benefits of reducing the volume of by-products that were created as a result of their process mixing.

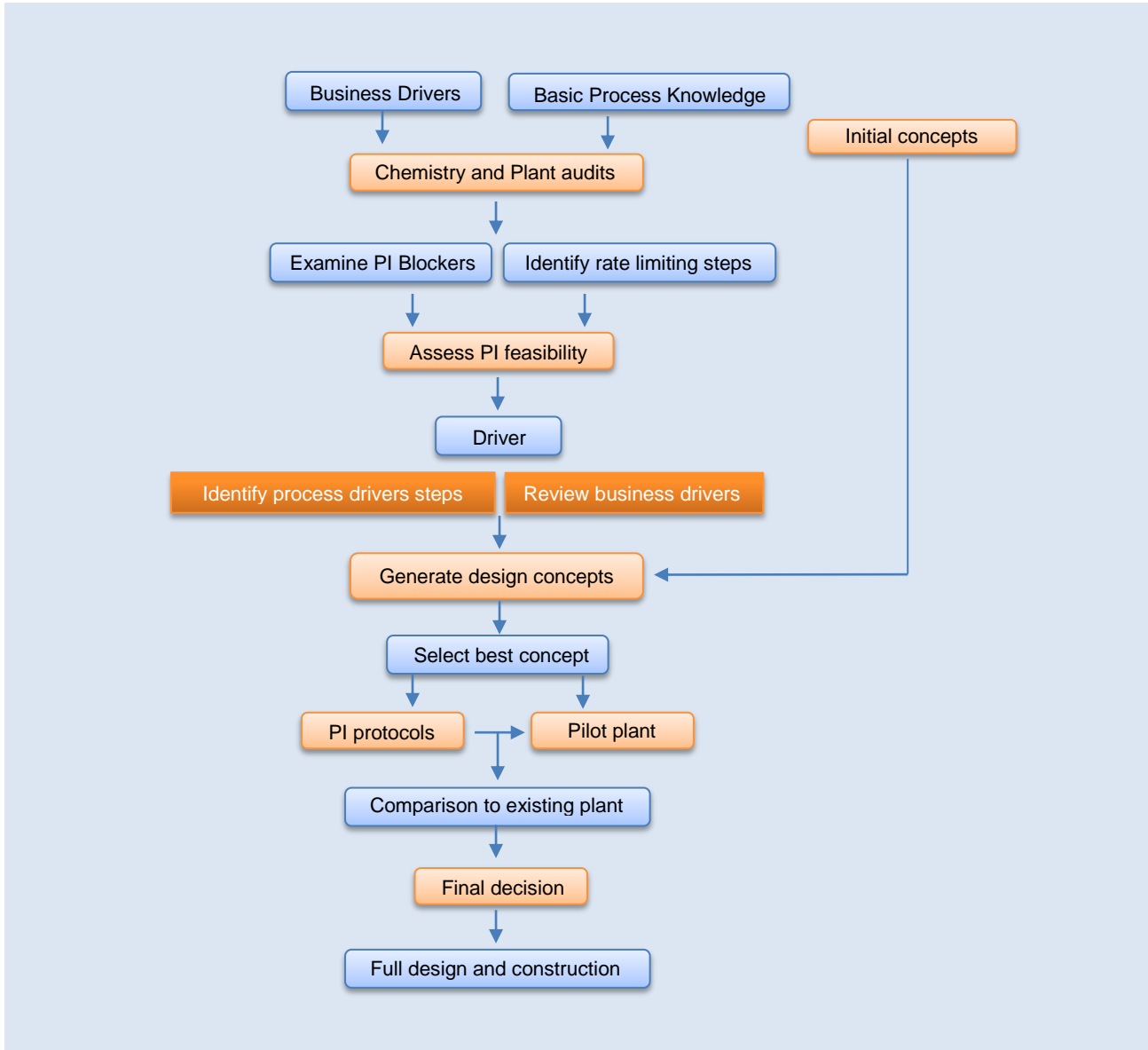
The Benefits

The study conducted by BHR Group improved the clients understanding of its process behaviour by;

- Successfully gaining the heat of reaction and kinetic information that was originally unknown or difficult to measure.
- Demonstrating that the reaction time could be brought down from 10's of minutes to fewer than 5 minutes.
- Proving that they could reduce by-product yields and benefiting from less downstream separation.



For any Process Intensification case BHR Group follows the same methodology



BHR Group, working together with our clients

Working in partnership with our clients BHR Group can confidently provide practical, timely and cost effective solutions.

Contact us for more information or visit our website www.bhrgroup.com

P-35

Office contact information:

Telephone: +44 (0) 1234 750 422
Facsimile: +44 (0) 1234 750 074
Email: contactus@bhrgroup.co.uk
Website: www.bhrgroup.co.uk

The Fluid Engineering Centre
Cranfield, Bedfordshire
MK43 0AJ
United Kingdom



Global Experts in Fluid Engineering