



Process Intensification

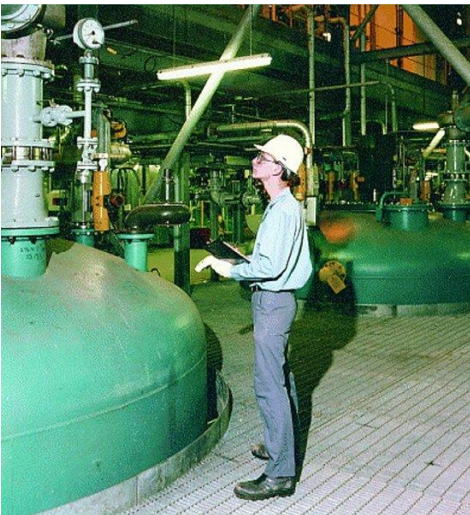
Integrated services and products to transform your process economics

Process Intensification (PI) is a revolutionary approach to process and plant design, development and implementation. Providing a chemical process with the precise environment it needs to flourish results in better products and processes which are Safer, Cleaner, Smaller – and Cheaper.

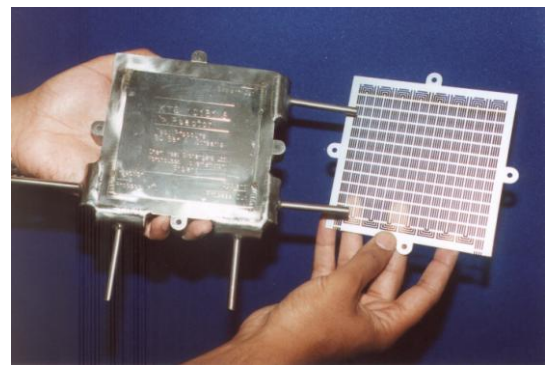
Established Benefits from Process Intensification

- capital cost reduced by 60%
- 99% reduction in impurity levels resulting in significantly more valuable product
- 70% plus reduction in energy usage and hence substantial reduction in operating cost
- 93% yield first time out – better than fully optimised batch process
- 99.8% reduction in reactor volume for a potentially hazardous process, leading to inherently safe operation
- flexibility to handle very wide range of processes through use of 'plug and play' reactors and plant

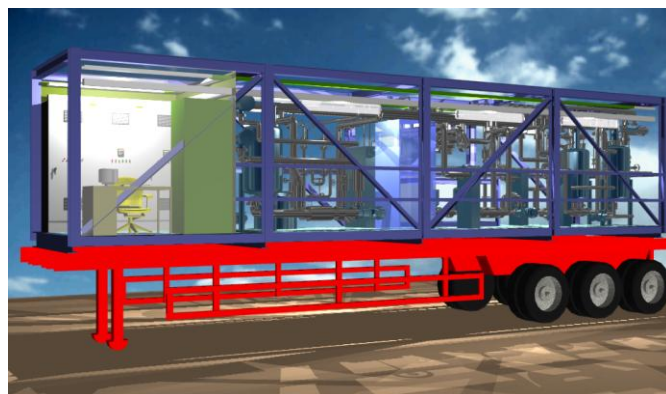
Process intensification – from this....



To this....



Intensified reactors



Mobile, flexible kilo plant

'From Test Tube to Customer'

PI does not just replace old, inefficient plant with new, intensified equipment. Consideration of PI methodologies at the earliest stages of process development opens up opportunities for patentable products and process chemistry. Implementation of flexible, reconfigurable PI plant can challenge the traditional chemical company business model, allowing just in time manufacturing or distributed manufacture.

BHR Group has used its 60 man years of experience in PI to create an integrated set of services and products to help its customers to realise the benefits, with a full 'Test Tube to Customer Approach'

PI Audit

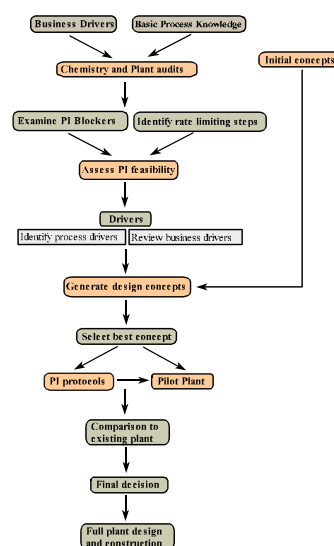
Using its unique structured methodologies, BHR Solutions rapidly screens your process for PI and identifies the business benefits. Typical deliverables

- outline process flow diagram
- reactor selection and design
- order of magnitude plant cost

PI Design

A PI design will provide you with an outline process and plant design, including:

- suggested upgrades to process chemistry
- basic P & ID
- recommendations for laboratory and pilot tests



PI Measurement Services

Application of PI often requires measurement of more process information (eg kinetics). BHR Solutions can design simple laboratory tests and help interpret the results. These might be carried out by you, us or through our partners.

PI Equipment Selection

BHR Group can advise on the choice and specification of intensified reactors to suit your needs, from laboratory scale and protocol testing through to full-scale production plant.

Contact us for more information or visit our website.

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