



# Process Intensification

Increase efficiency, reduce costs and gain the competitive edge!

---

## Process Intensification

### Decrease operating costs

- Process Intensification (PI) aims to make the most efficient use of the process environment, reduces waste by-product formation and overall energy consumption.

### Reduce capital expenditure on new plant

- Intensified process devices are often significantly smaller than a 'traditional' plant, giving a reduced footprint and lower capital costs.

### Increase confidence in scale-up

- The process intensification methodology used by BHR Group builds 'scale-independent' process knowledge from the start, enabling future scale-up to run smoothly.

### Safer processes

- Hazardous process inventories can be significantly reduced.

### Develop directly from laboratory to continuous full-scale processing

- Process Intensification provides a method for assessing continuous processing routes directly from laboratory scale tests.

### Gain a competitive edge

- In a mature market you can keep the competitive edge by reducing operational costs and improving production quality.





## BHR Group

### Expertise & Capability

- At BHR Group we have a team of highly skilled engineers and chemists with strong academic and industrial credentials with over 20 years Process Intensification experience.
- BHR Group can quickly and efficiently recognise the main indicators of whether Process Intensification (PI) can be applied to your process.
- Our experience allows us to collect the right PI data from experimental work, and in turn give smart advice on proof of concept testing.
- We will work with you as a partner to understand your primary business drivers and tailor our work to operate with them. This approach improves the quality experimental data and a better exchange of information between your engineers and ours.
- We can recognise how to maximise the benefit of both BHR Group's and your own knowledge base.
- As an independent consultant BHR Group's focus is getting the best results for your reaction, independent of the technology you use.

### Our approach to process intensification

If you have an idea for a process to be intensified and want to test the hypothesis to gain confidence before implementation. BHR Group will;

- Use our in-house tried and tested methodology for process intensification studies.
- Perform a preliminary desk study to assess PI feasibility and present a range of intensification options.
- Do proof of concept testing, either in-house at BHR Group or give advice on setting up the appropriate testing at your facility.
- Develop full-scale intensified processing scenarios.
- Offer support with full-scale implementation as part of our service to you.

### Benefits realised through Process Intensification

<b>60%</b>	Reduction in capital cost
<b>99%</b>	Reduction in impurity levels, leading to more valuable product
<b>70%</b>	Reduction in energy use
<b>93%</b>	Yield achieved 'first time out' - better than fully developed batch process
<b>99.8%</b>	Reduction in reactor volume leading to inherently safe operation

Contact us for more information or visit our website [www.bhrgroup.com](http://www.bhrgroup.com)

P-36

Office contact information:

Telephone: +44 (0) 1234 750 422  
Facsimile: +44 (0) 1234 750 074  
Email: [contactus@bhrgroup.co.uk](mailto:contactus@bhrgroup.co.uk)  
Website: [www.bhrgroup.com](http://www.bhrgroup.com)

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



Global Experts in Fluid Engineering