



# Process Technology

## Service Overview

A guide to our services for the process industries worldwide





## Services for the Process Industry

Through its core expertise in fluid engineering and over 50 years experience in delivering benefits to its customers across the globe, BHR Group addresses the key issues affecting today's process manufacturing industry.



### BHR Group Core Expertise

#### Mixing

- *Single phase*
- *Liquid liquid*
- *Gas liquid*
- *Solid liquid*
- *Multiphase*

#### Mathematical modelling

#### Physical modelling

#### Interaction of chemistry & mixing

#### Nanoparticle dispersion

#### Emulsification

#### Process intensification

#### Complex rheologies

#### Material characterisation

#### Crystallisation

#### Heat transfer

#### Piping system design

#### Sealing technology

#### Mechanical design

### Customer Benefits

#### Reduced Time to Market

- Faster process design
- Improved process routes for novel products
- Reliable scale-up
- Shorter commissioning times

#### Improved Product Quality

- Improve batch to batch repeatability
- Maintain required impurity profile
- Improved process control
- Improve batch homogeneity

#### Flexible Production

- Effective design and rating of multi-product plant
- Manage variable batch sizes
- Move to continuous production

#### Improve Containment

- Avoid leakage of materials

#### Meet Validation Requirements

- Consistent product quality
- Equipment validation

#### Meet Environmental Constraints

- Improve yield
- Improve product recovery
- Reduce energy use
- Reduce solvent use
- Reduce by-product production



## Services for Manufacturers

BHR Group adopts a 'best approach' methodology to address its clients' business requirements, from simple desk studies up to complex physical or mathematical studies, always focused on providing innovative solutions which are both robust and cost effective.

### Process Consultancy

- Expert consultancy by world-renowned specialists
- Process and plant audits
- Process analysis
- Unique, validated design and scale up correlations
- Benchmarking of equipment

### Physical Modelling

- Range of test vessels up to 15,000 litres
- Wide range of impellers available
- Bespoke models
- Validated performance measurement techniques
- Selection of test materials
- Rheometric testing

### Mathematical Simulation

- Computational Fluid Dynamics (CFD)
- Modelling of complex physics and chemistry
- Crystallisation modelling
- Finite Element Analysis (FEA)
- Multiscale modelling

### Process Research & Development

- Cost-sharing collaborative R&D to address common problems
- Confidential R&D
- Access to UK government and EU R&D funding

### Process Intensification

- Design of PI processes
- Specification of PI equipment

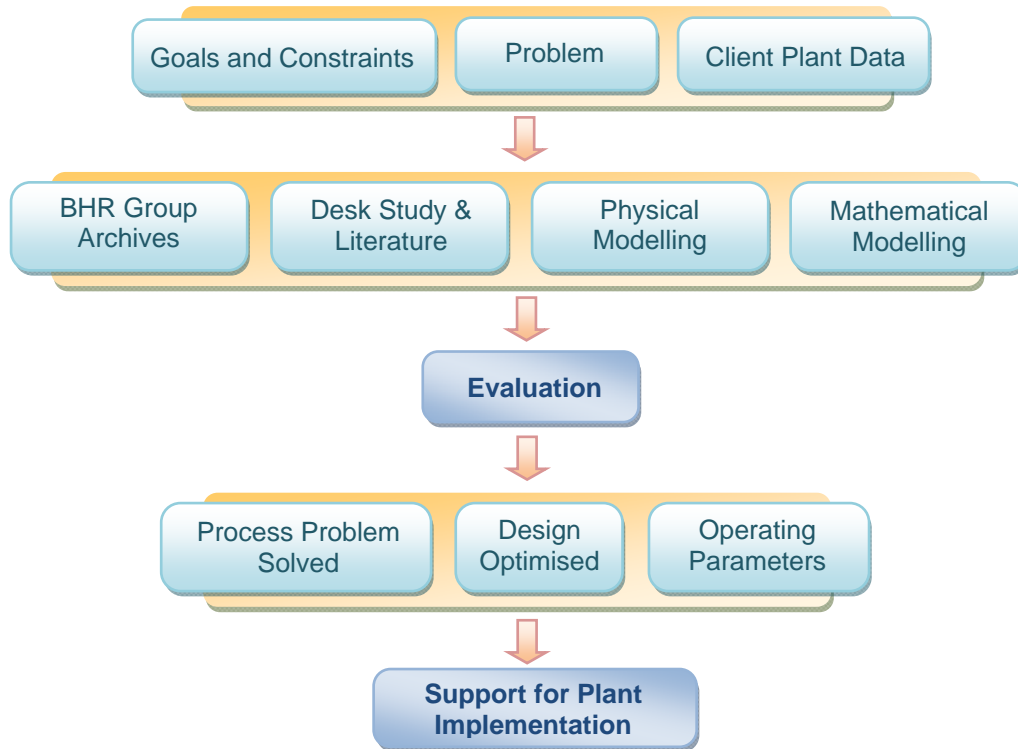
### Training – Open or Bespoke Courses

- Mixing
- Nanoparticle Dispersion in Liquids
- Process Intensification
- Slurry Handling and Rheology





## Our Approach



### Our Clients

AstraZeneca	Merck
Akzo Nobel Chemicals	Pepsi
B P	Pfizer
Chemineer	Philadelphia Mixing Solutions
Dow	Procter and Gamble
Dow Corning	Rathi Vessels
Du Pont	Sellafield
Eli Lilly	Shell
Exxon	Solvay
Genzyme	Statiflo
GSK	Sulzer
Huntsman	Unilever
Infineum	US Dept of Energy
Joshua Greaves	VT Nuclear

### Industries

Agrochemical  
Bulk Chemicals  
Equipment Manufacturers  
Fine Chemicals  
Food and Drink  
Ink and Pigment  
Mining & Mineral  
Nuclear  
Oil and Gas  
Paint  
Petrochemical  
Pharmaceutical  
Water and Wastewater

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

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