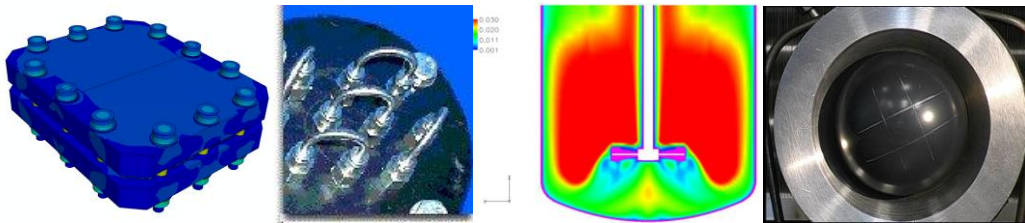


Functional Materials and Coatings

Services to support the manufacture and incorporation of nanoparticles and to assess their suitability, behaviour and scale-up for engineering applications

Who We Are

BHR provides: specialist consultancy; research and testing services; computational modelling; technology translation; specialist training and conferences; and product development services based on its core expertise in fluid mechanics. As an independent technology company our philosophy is to work with customers to understand their business drivers and to develop and implement practical and innovative technical and business solutions with demonstrable benefits.



Our Services

At the core of our business is a knowledge of how fluids and materials behave and interact and therefore how processes and equipment can be designed or optimised for different applications. In particular we have expertise in small scale fluid dynamics, fluid structure interactions, reaction engineering materials science, tribology, fluid power and process innovation. These are applied through physical modelling and simulation (CFD, FEA, MD) to address the requirements of a range of industrial research and engineering applications.

We offer these through a combination of:

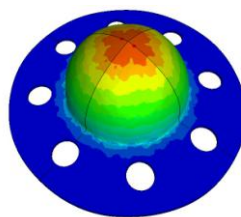
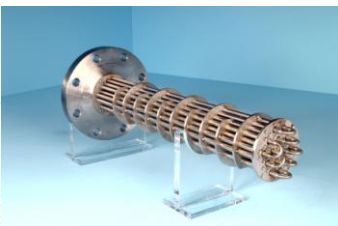
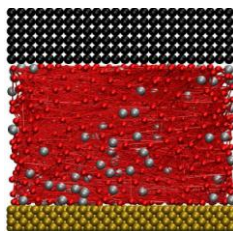
- Expert advice from our consulting engineers and business advisers
- Data from unique experimental facilities and associated measurement techniques
- Computational tools include CFD and FEA and bespoke engineering analysis software
- Multi-scale modelling techniques
- A network of technology providers (academia, Research Institutes) with whom we share expertise and facilities

Our Expertise Covers

- Fluid/material compatibility and characterisation
- Mechanical and chemical lifetime prediction of rubber-like materials
- Permeation and diffusion modelling in polymers and rubber-like materials
- Characterising the mechanical and chemical behaviour of materials and coating
- Characterisation and modelling the tribological properties of polymer and rubber-like materials
- Single and multiphase fluid flow, transportation, pumping and separation
- Manufacture and dispersion of fine particles:
 - Suspension (wetting, drawing down without settling)
 - Break up of nanoparticle clusters
 - Stabilisation and dissolution
- Batch, in-line and continuous mixing, and mass transfer
- Chemical reaction and reaction engineering
- Process intensification technology
- Rheology of complex fluids and nanoparticles
- Pilot plant scale-up and scale-out rules

Some Examples of Where and How Our Expertise is Applied

- Speciality chemicals - scale-up and scale-out for flexible/distributed manufacture
- Aircraft landing gear - controlling friction during the life of nano-coated sliding components
- Offshore wind turbines – elastomer sealing materials for extending maintenance periods
- Biohazard sensors – design of micro-fluidics for lab-on-chip devices
- Engine lubrication system – stabilised nanoparticles in additive packages
- Healthcare – tribology and wear in implants/prosthetics with nano-coatings



How We Work With You

Our aim is to provide new innovative or optimised designs, analytical models and operating methodologies from which cost-effective and sustainable industrial processes can be developed. We will work for individual companies or groups of customers, building project teams and resources, and focussing the work to address their specific research needs. The intellectual property can be owned by the customer or shared with BHR or others. We also provide customers with direct access to a wide range of technical expertise, dedicated and customised test facilities and proprietary and in-house analytical tools providing rapid solutions to many engineering challenges.

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