WATER JET CUTTING AND CLEANING
www.bhrgroup.com
Abrasive water jet cutting delivers a range of benefits over mechanical and other cutting systems. This cold cutting technique is ideal for decontamination, decommissioning and work in explosive and hazardous environments where heat would have a detrimental effect.

BHR’s water jetting systems are used in a wide range of specialist applications where cold, precise cutting and cleaning with minimal secondary contamination is critical. We provide specialist high pressure water-abrasive products, develop new or improved products for sale or licence, and provide after sales support, maintenance and repair services to the energy, defence, security and fire and rescue sectors.

Our products are used for a wide range of applications, including:
- Cutting steel, concrete and composite structures
- Neutralising and safely removing (by scouring) contaminated surfaces
- Remote manipulation and cutting in confined, unstable or hazardous environments
- Use in Inertial navigation
- Where people, time and other resources are critical to operational success

Whatever the industry, the challenges involved in safe, controlled and precise cutting in hazardous environments call for specialist design, development and delivery of appropriate products – provided by the world’s leading fluid engineering experts.

CAPABILITIES

For over 40 years BHR Group has designed, built and sold or licensed specialist high pressure cold-cutting and cleaning abrasive water jetting products. Using proprietary suspension slurry technology the modular design of the OSPREY cutting system can be adapted to meet specific applications that are difficult to access or hazardous to people and the environment.

The cutting systems are capable of cutting through virtually any known material and do so in a highly controlled and heat-free way making them ideal for decommissioning, refurbishment and maintenance work in hazardous and explosive environments or where heat would have a detrimental effect on the material being cut.

The OSPREY systems are built for field deployable operations in either man portable or containerised form, and can be supplied with a variety of cutting head manipulators, and can be mounted onframes, vehicles or ROVs, allowing remote control operation over long distances, where required.

Our products feature:
- High cutting power of virtually all materials
- Low water consumption - reducing waste treatment
- Millimetre precision - allowing cutting near to hazardous structures
- Low reaction force - allowing use on ROVs and human operators
- Remote deployment up to 1km
- Operation in explosive environments
- Lightweight mobile units
DECONTAMINATION

OIL & GAS
- Spill cleanup
- Tank cleaning

NUCLEAR
- Scouring hot materials
- Segregating active material

DEFENCE
- Chemical neutralisation & cleaning
- CANS removal

DISPOSAL

OIL & GAS
- File cutting
- Slurry transportation

NUCLEAR
- Encapsulating radioactive material
- Sludge handling
- Bulk liquids handling
- Plant size reduction

DECOMMISSIONING

OIL & GAS
- Subsea jackets & structures
- Subsea mattresses
- Tank dismantling
- Underwater cutting

NUCLEAR
- Process pipework and vessels
- Concrete structures
- Decommissioning steel and concrete structures

DEFENCE
- Ordnance disposal
- Underwater cutting
- Composite structures

APPLICATIONS

With the ability to deliver cold, coherent, fine-beam jetting, BHR’s abrasive cutting systems are ideal for a wide range of uses:

- **OIL & GAS**: Manual and remotely operated cutting systems for decommissioning steel and concrete structures, tanks and pipelines, offshore and onshore.
- **NUCLEAR**: Manual and remotely operated cutting and scouring systems for decommissioning steel and concrete structures and tanks.
- **DEFENCE**: Remotely operated cutting systems for Explosive Ordnance Decommissioning (EOD) and nuclear submarine decommissioning.
- **Fire and Rescue**: Manual and remotely operated cutting systems for civil road traffic accident rescue and scouring systems for decontamination due to chemical spillages.
- **Disaster Response**: Manual cutting systems for emergency and disaster rescue from complex and unstable building and structures.
- **Security**: Cutting systems for clandestine surveillance and hostage rescue, and scouring systems for post-CBRN decontamination.

We provide specialised high pressure water-abrasive products, develop new or improved products for sale or licence, and provide after sales support, maintenance and repair services.
Our heritage provides you with the exceptional advantage of access to a diverse range of engineering services and skills. Our combination of engineering expertise and investment in key technologies gives us a unique capability to provide specialised high pressure water-abrasive products, develop new or improved products for sale or licence, and provide after sales support, maintenance and repair services.

Our approach is to work in close co-operation with you or your clients to understand the specific and individual needs and drivers, so that we can provide solutions that are both technologically sound and commercially viable.

Our experience gives us a unique advantage in developing and field deployment and operation of our high pressure water jet cutting products and services.

BHR Group is an independent technology organisation providing engineering consultancy, industrial research and product development services based on its core expertise in fluid engineering. We apply over 60 years of know-how to design, develop, validate and optimise processes for the benefit of a wide-range of industries and clients around the world.

Our knowledge and technology base is continually enhanced through research, development and industry funded PhD projects culminated by practical site experience. BHR Group also participate in major industrial consortia.

TEAM WORLD-CLASS ENGINEERING EXPERIENCE

MARK FAIRHURST

Technical Director

Mark’s professional career started 35 years ago in high pressure water with the development of a patented Abrasive Water Jet Cutting system. His expertise was broadened to fluid power through working on the development of standards relating to oil hydraulic systems, filtration and pressure impulse fatigue.

He has designed, built and operated a world array of HWJ test rigs for water, superheated steam, oil, fuels, combustible gasses and LNG and is regularly consulted on a broad range of projects such as boardshaping in the aerospace and marine industries, safety critical system designs in the defence and offshore industries and corrosion sensitive systems in the food and beverage industry.

He is presently the Vice-Chairman of the product testing committee of the BHR/ IOS, and the Chairman of the Technical Advisory committee of the Water Jet Technology Conference.

PAUL FULCHER

Senior Project Manager

Paul joined BHR Group in 1988 and is primarily focused in projects involving high pressure engineering. Recently involved with BHR’s innovative DIAJET® water jetting cutting system, he has conceived, designed and utilised his mechanical engineering skills in such diverse projects as decommissioning, SS20 rocket motors, nuclear silo decommissioning and contract cold cutting both on and off-shore.

Paul has recently project managed a varied array of HWJ projects for various organisations including SS20 rocket motors, nuclear silo decommissioning and contract cold cutting both on and off-shore.

CRAG KNIGHT

Senior Consultant

Craig has nine years experience of fluid engineering projects in Engineered Systems in defence and aerospace. He has worked on the full spectrum of activities around product design, development and qualification of systems including: hydraulic energy converters, high pressure abrasive water jetting systems used for surface decontamination and pathfaking, pressure fatigue testing of aerospace equipment and HIPPO fluid testing with a single and multiple incompressible and compressible fluids.

Craig is a chartered engineer with the IMechE.

EMILY HO

Senior Consultant

Emily is an expert in thermodynamics, fluid mechanics, heat transfer, process engineering, fluid sealing and material science. Her work involves compressible and incompressible fluids at high pressures and extreme temperatures.

During her career, Emily has consulted on a wide spectrum of applications including fluid sealing for heavy duty diesel engines, hydraulic fluid barriers and transmissions, gases for fuel cell flow analysis for boiler tubes in nuclear power stations, supercritical steam injection and nozzle design for starch hydrolysis by enzymic reactions. She is presently a member of the Fluid Sealing working group in the ISO Fluid Power Systems and Components Technical Committee.

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TAKE THE NEXT STEP

Every situation is different. BHR Group would like to help solve your fluid engineering problems. Call us for a pre-consultancy discussion with one of our experienced industry specialists. We can support you in defining what we can achieve when working together in partnership.