

# BOULTING



"Our approach is to listen carefully and think creatively and we aim to add value to your project and your business."

## About Us

Boulting is a multi-disciplined engineering solutions provider, operating in a diverse range of industry sectors in the UK and overseas. We deliver design and build services from front-end design and consultancy through to construction, commissioning, validation and ongoing maintenance services.



We provide a wide scope of project services from project management, design, fabrication and installation to commissioning and ongoing maintenance services.

We have strong in-house resources in all the major Engineering Construction disciplines, including:

- Mechanical
- Electrical and instrumentation
- Technology (from system integration to LV assemblies)

Your project is our passion. With high standards and a strong customer focus together with innovative design and engineering excellence, we can provide a fully integrated solution tailored to your needs.

Our approach is to listen carefully, think creatively and add value to your project and your business.

### Offering a full scope of project services including:

- Project management
- Engineering and design
- Electrical, instrumentation and control
- Mechanical
- HVAC systems
- System integration
- LV assemblies
- Industrial networks
- Maintenance and asset care

These diverse but complementary range of services and expertise can be tailored to meet the exact demands of a wide range of industry sectors and specialised environments, both in the UK and internationally:

- Pharmaceuticals
- Nuclear
- Petrochemicals
- Oil and gas
- Power generation
- Energy
- Chemicals
- Water and utilities
- Consumer products
- Metals

### International

For your overseas projects, we translate our UK expertise, experience and operating knowledge to each country in which we operate, tailoring the delivery to match local needs, customs and regulations.

Most importantly, our multi-disciplined team remain flexible in their approach and translate processes to drive efficiency, reduce costs and boost service quality in local operational environments.

### Our global reach will support you across:

- Europe
- Eastern Europe
- Russia
- Middle East
- Africa
- Far East
- Caribbean

BOULTING HOUSE

“Our passion is your project. We aim to deliver the most innovative and forward-thinking solutions to the highest quality standards.”

## Committed to HSE&Q

Boulting is committed to ensuring the health, safety and welfare of its employees and of any other person who may be affected by our engineering operations, at all of our sites, works and offices.



### Health and Safety

Boulting is committed to ensuring the health, safety and welfare of its employees and of any other person who may be affected by our engineering operations, at all of our sites, works and offices.

We work proactively with all our clients and subcontractors to implement the highest possible health and safety standards on all of our project sites and in all of our facilities.

The commitment, from the very top to the very bottom of the business, is not only demonstrated by our excellent safety record, but is also recognised in our OHSAS 18001 certification.

Our excellent performance in this area continues to be recognised by several health and safety awards, including the prestigious RoSPA Gold Award and the RoSPA Order of Distinction.

### Quality

Our passion is your project and we aim to understand exactly what you want and how we can deliver the most innovative, forward-thinking solutions in an efficient and cost-effective way.

We encourage a working environment that supports innovation and creativity and we maintain a customer focussed, proactive approach to problem solving. This ensures that we always deliver consistent standards of excellent service, safely and sustainably.

This approach is fostered by all aspects of our business:

- People
- Processes and procedures
- Organisation and structure
- Suppliers and subcontractors

We provide the highest levels of economic efficiency without compromising quality by implementing and continuously improving our certified quality management system based on the requirements of ISO 9001:2015.

### Environment & Sustainability

Boulting aims to make a meaningful contribution to a more sustainable future by successfully managing the social, environmental and wider economic impacts arising from our business activities.

We recognise that sustainability affects every aspect of our business and every industry in which we operate.

#### For us sustainability is about:

- Preserving and improving the environment in which we operate. We are ISO14001:2015 certified and strive to make the most out of the world's limited resources
- Delivering excellent value through resource efficiency, whole-life costing and continuous improvement
- Making a positive contribution to our communities through engagement and investment in local skills and capability
- Providing every employee with development opportunities and career progression, with clear routes for training and promotion

We are committed to building a sustainable business for the long term.

# Project Management



Boulting has the in-house resources, capabilities and tools to offer a full suite of mechanical, electrical, instrumentation and control project services from front-end design and detailed engineering, through fabrication, installation and maintenance, all fully managed by our experienced project managers.

We tailor our methods to suit your business and project goals. Our project engineering team is equipped with the skills and expertise to kick start your project.

Whether it be mechanical, electrical or control, Boulting has the experience and skills to deliver a fully integrated project management solution.

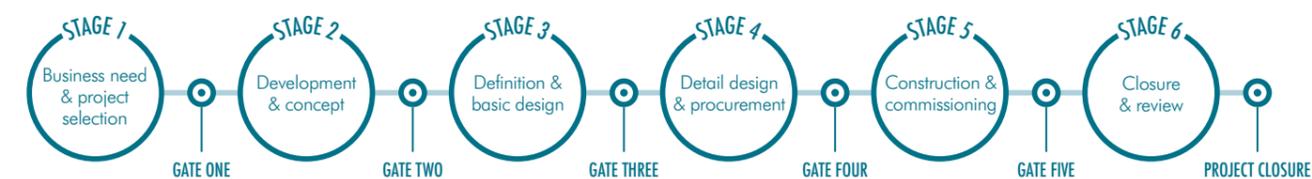
Bringing together a variety of technical disciplines from our in-house resources we can offer advice and support on every aspect of your project including:

- Design
- Electrical, instrumentation and control
- Mechanical services
- Facilities management and term maintenance
- Planning
- Procurement
- HSE&Q

The solutions team intelligently interlink compatible engineering disciplines and project services so that you benefit from:

- Single point management eliminating the difficulties inherent in managing and coordinating multiple subcontractors
- Greater service integration achieved through quicker and easier transfer of information between disciplines
- A consistent, dependable service across the entire project
- Reduced costs, risks and project time

Using a six-stage gated process helps to ensure that projects are delivered successfully while minimising risks and maximising investment returns.



**Stage 1: Business Need and Project Selection**

- Specification of business needs, benefits, risks and objectives of the project

**Stage 2: Development and Concept**

- Generation of engineering project options
- Evaluation and selection of the appropriate project option
- Development of a project definition

**Stage 3: Definition and Basic Design**

- Development of an engineering definition and basic design package
- Preparation of an accurate cost estimate

**Stage 4: Detail Design and Procurement**

- Development of an engineering specification
- Detail design package
- Procurement

**Stage 5: Construction and Commissioning**

- Construction in line with the detail design package
- Commissioning to the agreed performance standards
- Hand over constructed or commissioned project to customer

**Stage 6: Closure and Review**

- Closure of the completed project
- Review of the completed project and publishing of learning

## Engineering and Design

Delivering engineering excellence is our core strength and we offer a comprehensive suite of innovative and cost-effective project engineering and design services. Our in-house mechanical, electrical instrumentation and control engineering expertise allows us to execute both small and large-scale projects, on time and within budget.



### Electrical Engineering and Design

Our electrical engineering and design team is comprised of highly skilled, qualified and experienced personnel capable of providing all aspects of electrical, instrumentation and control design.

Using practical knowledge and extensive experience our core team of in-house designers can deliver a full suite of cost-effective, innovative and safe design solutions to ISO 9001:2015 standard.

We work with our clients from the outset of a project in order to identify and mitigate potential risks early on.

The design team is able to operate on individual discipline projects and as part of a multi-discipline team on complex process plants.

#### Services include:

- Site surveys
- Plant load studies
- Calculations
- Low voltage distribution

- Building Information Modelling (BIM)
- 3D modelling
- Plant services including lighting, earthing, lightning protection, electric surface heating
- Switchroom layouts including motor control centres
- Cable routing layouts
- Cable schedules
- Termination drawings
- Arc flash
- Control data sheets
- Process parameter measurement
- Control and data acquisition
- Safety shutdown systems
- Control and interface room layouts
- Installation schedules including material take off
- Installation drawings including loop and schematic diagrams
- Equipment specification including technical appraisal and recommendations
- Procurement
- Functional tests including test method instruction sheet
- Technical support
- As built document records
- Software engineering

### Mechanical Engineering and Design

Our experienced mechanical engineering and design team combine innovative thinking and engineering expertise to create cutting edge mechanical design solutions for plant, equipment and pipework.

We focus on operability, ongoing maintenance and the practicalities of plant construction. Our aim is to deliver the most cost-effective, innovative and safe design solutions, whilst also identifying and mitigating any potential risks at an early stage.

Our designers work closely with the client and end user from project kick-off to ensure that all elements of a facility are optimally designed and integrated to fulfil requirements over its operating lifetime.

For drawing production, we offer a full service on a 2D or 3D basis. Our experienced team can provide specialist services such as specification and design of high pressure pipework, stress analysis, modular skid design and structural frame design.

#### Typical mechanical design services include:

- Overall layout and piping design
- Mechanical equipment specifications (API-610/ API-650)
- Valve, line, piping specials and tie-in schedules
- Stress analysis (ASME B31.3 or BS EN 13480)
- Piping and insulation specifications (API/ASTM/ANSI/B31.3)
- Modular skid design
- Modularisation of pipework and building services
- Plant general arrangement drawings
- 3D visualisations
- Detailed piping arrangements
- Isometric drawings
- Mechanical and piping installation scopes of work
- Demolition scopes of work
- Small scale detailed designs
- Site surveys and inspection reports
- Proposals, specifications and estimates

### Modular Systems

Boulting is a leading provider of mechanical and electrical prefabrication and modularisation services, including a range of specialist off-site solutions that are more innovative and more cost-effective than traditional construction methods.

Utilising design for manufacture and assembly, and off-site manufacturing techniques, our team will design, build and install mechanical and electrical modular solutions that ensure exceptional levels of:

- Safety
- Productivity
- Quality
- Cost control
- Programme certainty

The key elements of our modular design and build service are:

- A modular process design that addresses all project phases
- Intensive and flexible construction using off-site in-house resources

The outcome is a more sustainable, cost-effective solution through minimised waste, labour, unnecessary components and reduced transportation costs.

"We combine innovation with attention to detail while remaining flexible and adaptable."

## Electrical Instrumentation and Control

As one of the longest established private electrical and instrumentation companies in the UK, Boulting have a well referenced reputation for the successful completion of minor and major electrical projects which have consistently outperformed customer expectations.



We operate successfully in heavily regulated process industries, such as nuclear, petro-chem, chemical, pharmaceutical, utilities and oil and gas, where stringent adherence to operational and documentation requirements are expected.

Our in-house electrical and instrumentation design and engineering team can deliver a complete electrical package, from conceptualisation and design through to installation, commissioning and ongoing maintenance, or a single standalone service.

We combine innovation with attention to detail, while remaining flexible and adaptable throughout any electrical project in order to deliver a solution that is tailored to meet your exact requirements.

Our highly regarded designers, electricians and instrument technicians have a wealth of experience across a wide range of industries and have the capabilities to deliver the following services:

### Electrical Services

- Pre-commissioning and commissioning
- Engineering construction/site installations
- Experienced in COMAH site conditions
- GMP installation specialists
- Energy efficient lighting installations
- NICEIC compliant testing and inspection
- Electrical testing up to 11 kV
- BMS/FMS systems
- PAT testing
- Design

### Instrumentation Services

- Loop and functional testing
- Pre-calibration and calibration of instrumentation
- Small bore pipework
- Profibus and Fieldbus control systems
- Hazardous area installations and inspections

In addition, our electrical and instrumentation services are complemented by our in-house Switchgear and Intelligent Motor Control Centres design capabilities, backed up by a comprehensive and bespoke control panel manufacturing capability.

**Pipework**

Our highly skilled Fitters, Welders and fabricators are trained in the latest fabrication cutting and welding techniques. Our welding procedures comply to ASME IX, EN ISO 15614, BS4515 standards, and capabilities include Manual Metal Arc, Tungsten Inert Gas, Orbital, and Flux-Cored Arc Welding.

We can fabricate pipework from a range of materials, including:

- Carbon steel
- Inconel
- Duplex
- Stainless steel
- Chrome molybdenum
- Monel
- Hygienic pipework
- Hastelloy
- Super-duplex
- Aluminium
- Low-temperature carbon steel
- Copper
- HDPE

**Steelwork**

Boulting has the in-house capabilities and facilities to deliver a comprehensive mechanical steelwork fabrication service, including design and installation. Our experienced team of welders are qualified to ASME-IX, BS EN287-1 and EN ISO 9606, and are supported by our own CSWIP Welding Inspectors and RVC. Boulting Welding Quality Management System is accredited to ISO3834-2, and we also fabricate CE-marked steel structures up to EN1090 Execution Class 3.

- Structural steel
- Mezzanine floors
- Pipe bridges
- Architectural steelwork
- Staircases
- Plant modifications/extensions
- Vessels
- Access platforms
- Skid units
- Pre-assembled units and modules

## Mechanical Services

Boulting offers a comprehensive range of mechanical engineering services, including engineering and design, pipework and steelwork fabrication and installation, commissioning and ongoing maintenance. This is as a single discipline or as part of a fully integrated turnkey solution on major mechanical and electrical projects.



Our competencies include operational and process systems, the ability to carry out all welding procedures, and module and skid fabrication and we have our own purpose built fabrication and modularisation facility. The modern 9,000 square metre fabrication facility is ideal for high-volume off-site fabrication and our three covered fabrication bays allow easy segregation of carbon, stainless, alloy and exotic materials.

**Mechanical Installation**

Skilled in the installation of a wide range of mechanical plant and equipment, our core team of engineers and fitters provide a flexible, efficient and cost-effective approach to mechanical installation, across a wide range of industries and within some of the most sophisticated environments.

Using the safest and most appropriate installation methods for your industry and operating environment, our mechanical installation service can be provided as single disciplines or as part of an integrated project solution fully managed and controlled by a Boulting project management team.

Our team will tailor our delivery to meet your business needs and your project objectives, ensuring:

- Co-ordination of services with the building programme
- Integration with other specialist services and subcontractors
- Lean construction techniques
- Full programme management utilising fast track solutions where feasible
- Environmental certification
- A quality, zero defects approach

**Test, Inspection and Commissioning**

Boulting provides specialist mechanical testing, inspection and commissioning services at the final stage of your project and as part of an ongoing maintenance programme.

Our commissioning teams have the specialist skills and qualifications necessary to check and help certify mechanical installations, giving you the assurance that your equipment operates correctly and safely.

We create on-site manuals for each project utilising reliable, repeatable and relevant checklists and proformas. These act as guidelines for ongoing testing and inspection ensuring your premises and appliances are fully compliant at all times.

# Technology



As the UK's leading supplier of electrical control systems including Systems Integration, LV motor control centres & switchgear, Industrial Networks and Pump System Optimisation, Boulting Technology, allied with a leading UK IT integrator are expertly positioned to enable your digital future.

We strive to maximise the value that our clients gain from their assets by providing innovative solutions to cost effective, efficient and safe control of operations, whilst minimising whole life costs.

**Our services include:**

- IT OT consultancy and implementation
- Cybersecurity consultancy and implementation
- Industrial networks design and implementation
- Service & support, planned maintenance, condition monitoring and 24-7 call out services
- System integration
- LV assemblies, including switchboards, MCC's and control panels
- Pump System optimisation and monitoring

**Digital and Industrial Networks**

With our IT alliance partner (NETBuilder) we offer a seamless and comprehensive range of services covering the entire IT / OT spectrum, from installing a plant level network to cloud hosted data analysis.

Our services include:

- Design, build, installation and support of industrial networks (wired and wireless)
- Cybersecurity services (health checks, vulnerability assessments, improvements and design of new systems)
- Managed services (cloud hosting, monitoring, dashboards, reports, analysis, etc.)
- Development services (Apps for all popular operating systems)

Our seamless approach ensures that all client needs can be addressed from a single source, ensuring a fully functional solution from day one which can be supported for its' whole operational lifecycle.

**Systems Integration**

Boulting offers an extensive range of technical, manufacturing and installation services and we maintain strong relationships with all the major automation vendors.

Our systems experts have a wealth of experience across a range of PLC and SCADA. Our Tick IT plus endorsement to ISO9001:2015 ensures we produce robust applications from specification through to installation and ongoing support.

With over 80 experienced system engineers, we offer a wealth of vendor independent experience drawn from diverse industries, processes and platforms.

**Systems and services offered include:**

- PLC and DCS systems
- SCADA, HMI, MES
- AC and DC drive systems
- Safety systems IEC 61508 and IEC 61511 (functional safety instrumented systems)
- Industrial network design and implementation
- Telemetry systems
- Maintenance and support

**LV Assemblies**

Every system is designed and manufactured in-house to suit the demands of the individual scheme. Constructed from Form 1 through to Form 4, switchboards and MCCs can be configured to provide front or rear access, or a combination of both, and incoming cable entry can be top, bottom or a combination of both.

Each assembly is built to comply with client and plant specifications along with any national or international standards, as well as being BS EN 61439-2 fully compliant. Ingress Protection is supplied in the standard formats of IP31, IP54 and IP65 and we offer Busbar ratings from:

- Non-fault rated cable
- 25kA for 1 second
- 50kA for 1 second
- 50kA for 3 seconds
- 80kA for 1 second
- 100kA for 1 second

The robust and compact enclosures offer reliability and flexibility suitable for all commercial and industrial applications. They are designed and manufactured to meet the exact requirements of your plant design and layout.

**Service & Support 24—7**

Boulting have harnessed vast experience in systems integration, backed by extensive company resources and a professional approach to offer comprehensive, fast response 24-7 Service & Support packages.

**Supporting systems from legacy to the latest**

Boulting service and support combines up-to-the-minute systems knowledge with unparalleled experience of legacy systems.

Our experienced, dedicated engineering team has the tools, knowledge and backing to get your system running again safely and in the shortest possible time.

Services include:

- 24 hours, 365 days a year call handling
- Guaranteed response times
- Next-working-day site engineer visit
- Full site adoption service
- Secure archiving
- Annual technical audit
- Obsolescence planning
- Risk mitigation
- Inventory management
- Security analysis
- Preventative maintenance



“Our specialist maintenance team provide the technical support and skills necessary to the highest standard.”

## Maintenance and Asset Care

As a multi-disciplined engineering solutions provider, Boulting has the skills and expertise to deliver the full scope of mechanical, electrical, instrumentation and control services as part of an ongoing maintenance programme.



Our specialist Asset management teams will provide the technical support and skills necessary to maintain and develop your facilities to the highest standard.

- Analysis of client requirements
- Contract practice
- Procurement and tendering
- Project financial control and reporting
- Facility management
- Supplier management

At the heart of our technical competencies and engineering expertise is a service mentality that ensures we deliver best practice and highest standards of service quality to all of our clients.

This includes:

- Client care
- Communication and negotiation
- Data management
- Health and safety
- Sustainability
- Team working

Our services will provide a safe and reliable infrastructure to minimise risk, disruption and costs while maximising plant efficiency and operation.

We are at the forefront of awareness on new legislation enabling us to provide our clients with early warning of potential impacts on their compliance requirements.

- Health and safety
- Sustainability
- Fire systems
- HVAC installations
- Pressure systems
- Transportation and lifting
- Electrical regulations
- We reduce risks
- We minimise disruption
- We maximise efficiency and savings
- We plan and react
- We do our job so you can do yours

We have the experience and expertise to provide full Asset Life Cycle Management.

## Sophisticated Environments

Combining innovative design and construction excellence we excel in the design and construction of cleanrooms, laboratories and other sophisticated environments.



### Clean Rooms, Sterile Facilities and Laboratories

Boulting can deliver a full turnkey managed and coordinated project for a range of clean room applications, sterile facilities and aseptic environments.

Offering integration from the outset of the project, our experienced solutions team will advise, manage and offer support on all necessary aspects of your clean room project.

Your dedicated project manager will take responsibility for coordinating work packages and interlinking engineering disciplines so that you benefit from:

- Single point management eliminating the difficulties inherent in managing and coordinating multiple subcontractors
- Greater service integration achieved through quicker and easier transfer of information between disciplines
- Consistent, dependable service across the entire project
- Reduced costs, risks and project time

Boulting has the in-house resources to deliver a multi-disciplined turnkey solution. Our highly experienced project team provides a full range of architectural, HVAC, mechanical, electrical and process services, from front-end design and consultancy through to construction, commissioning and validation.

#### Our expertise includes:

- New build & refurbishment projects
- Cleanrooms
- Sterile & Aseptic suites
- Laboratories
- Research and Development facilities
- Oral Solid Dose manufacturing facilities
- Filling lines
- Healthcare
- Warehouse and packing
- Biotech facilities

#### Design Services

We pride ourselves on the strength of our design team who utilise their technical skills, knowledge and experience to develop bespoke solutions.

From front end studies to complex multi-disciplined designs we utilise best practice to provide an excellent service to all of our clients, tailored to meet the needs of each individual project.

Our entire design team are fully conversant with all relevant legislative requirements, including:

- Planning, building regulations and CDM
- Good manufacture practice
- EUGMP (orange guide)
- ISO classifications
- ACDP categories 1 and 4
- HTM's

Our CIBSE accredited energy assessors provide input to all projects to ensure that the stringent requirements of approved document L2 are fully considered.

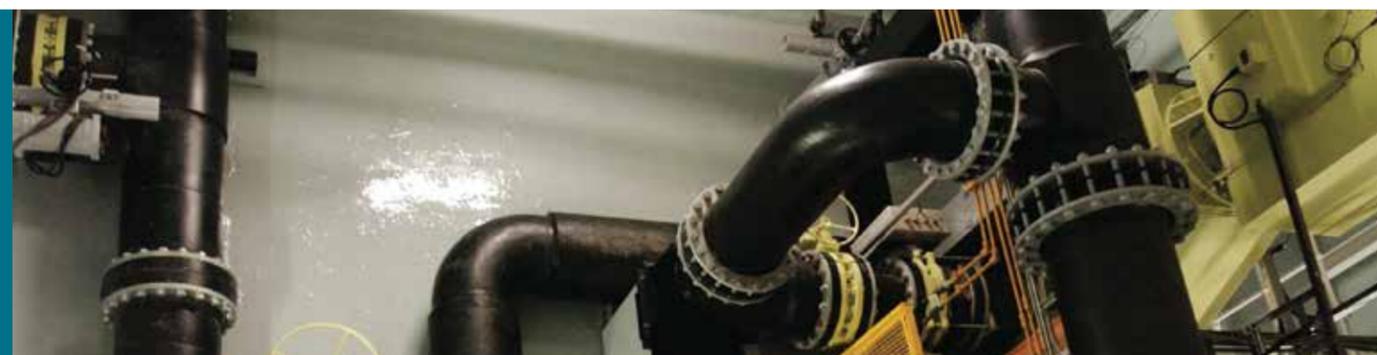
For front-end design our highly experienced team will work closely with you to develop feasibility studies, workflow layouts, concept designs, user requirements and functional design specifications.

For detailed design our engineers utilise the latest 3D modelling techniques including Building Information Modelling (BIM) and Virtual Reality applications to provide a comprehensive, efficient and cost effective design service.

# Nuclear



Boulting Nuclear provides detailed engineering and design, project management, fabrication, manufacture, site installation, test and inspection and commissioning.



Bringing together integrated teams from across our technical business units into one seamless solution, our service is designed to support you through all stages of the nuclear build cycle from new build and plant life extension to decommissioning solutions.

Offering integration from the outset of the project our experienced nuclear solutions team will advise, manage and offer support on all necessary aspects of nuclear projects.

This includes detailed engineering and design, project management, fabrication, manufacture, site installation, test and inspection and commissioning in the following areas:

- Electrical and instrumentation
- Mechanical and process pipework
- Mechanical fabrications
- Modular construction
- High integrity pipework systems

**Construction Management:**

- Supply chain management
- Competitive tendering
- Collaborative agreements
- Risk mitigation and reduction
- Inspection and expediting
- Management of subcontractors
- Principal contractor role

**Boulting Nuclear**

Boulting Nuclear have a well-referenced portfolio of expertise and experience in delivering mechanical, electrical and instrumentation services to a diverse range of technically sophisticated nuclear projects. We are dedicated to providing a reliable, safe and cost-effective engineering solution for all nuclear facilities.

**Nuclear New Build**

With global economies looking towards low carbon energy and the increasing awareness of the benefits of nuclear power as a key part of a low carbon sustainable economy, the demand for new nuclear facilities is increasing rapidly.

Through S&B Nuclear Services Ltd, our 50/50 joint venture with French electrical contracting company Groupe SNEF, we will deliver high quality electrical and instrumentation services to the nuclear power station new build programme.

S&B Nuclear Services Ltd provides high quality, technically focused support which is essential in delivering these major projects, this includes detailed engineering and design, project management, fabrication, manufacture, site installation, test and inspection and commissioning.

**Nuclear Plant Life Extension**

Boulting has over 10 years' experience in extending nuclear plant life and we have a solid understanding of nuclear assets, their operating systems and nuclear engineering.

Through the application of technical improvements, safety upgrades and other modifications we have delivered plant modifications and upgrades to meet regulatory challenges and increasingly stringent safety standards.

Providing a full scope of design and build services for mechanical, electrical and instrumentation schemes, we work closely with clients from the outset to deliver innovative products and solutions, such as the use of HDPE pipework systems based on real plant experience.

Our experienced nuclear project managers will manage and coordinate your entire project, integrating technical services into one complete package and taking into account the demands of working within a nuclear environment including dosimetry, safety and security requirements.

**Decommissioning**

As the older fleet of nuclear facilities had not incorporated many legacy features into their original designs, this has now presented the industry with huge technical challenges, particularly in the areas of legacy ponds and silos.

Working directly for the client or working for other Tier 1 Framework Suppliers as nominated subcontractors, Boulting provides mechanical, electrical and instrumentation support to the decommissioning sector.

We provide highly skilled and productive site teams who work on a number of schemes, within varied commercial frameworks, such as alliance, open-book, fixed-price lump sum, hourly rates, schedule of rates, etc.

Our fully SQEP Teams are all trained via formal Radiological Protection courses and all have been approved via the relevant security aspects. Health and safety, security and dosimetry are all managed in-house and where required we can also provide design and engineering support.

As part of our innovation and productivity improvement initiatives we have developed many fast-track construction and manufacturing aspects to our offering which are proving of great benefit to our clients.

## Pump Management

“We have the equipment, software, monitoring and expertise to optimise any system.”

Boulting has the specialist in-house capabilities to deliver a complete solution for the design, modification, installation and validation of pump systems.



### We have the following capabilities:

- Review
- Design
- Fabrication
- Installation
- Commissioning and validation

### Client benefits:

- Installation in line with latest legislation
- Complete in-house delivery
- Integrated solution
- Lowest life cycle cost installation

As an independent equipment supplier with significant purchasing power in the pump and mechanical seal market, Boulting provides equipment that:

- Meets the client's requirements
- Is suitable for the application
- Considers compatibility with existing equipment
- Provides cost-effective reliable operation
- Has proven reliability

We also provide consultancy and supply for the engineering specification of pumps in critical or complex systems that require performance guarantees from the supplier. This ensures the pump manufacturer is aware of system changes that affect pump selection and operation.

By investing this time and thought prior to installation we can minimise costs and energy while maximising reliability.

### Pump and System Testing

We can provide pump and system performance testing, analysis and formal reporting using one of the following methods:

#### Thermodynamic testing

- Highly accurate individual pump test equipment
- Provides flow, head, power and efficiency data
- High pressure and temperature range

#### Ultrasonic testing

- Non-intrusive flow measuring system
- Combined
- Individual tests
- Simultaneous pump and system measurement

### Pump System Optimisation

With many installed pump systems running significantly below best performance, Boulting has developed a methodology for achieving Pump System Optimisation and maximum savings.

Rather than looking at pumping components in isolation, Boulting's team of pump management experts analyse the system as a whole, identifying clear kWh savings and ROI.

We have the equipment, software, monitoring and expertise to optimise any system and working closely with you we will review and analyse your system to implement recommendations that will help you achieve significant cost savings across your pumping system.

### Understand the system and the inefficiencies

- Where is it pumping from and to
- What changes during operation
- Pump efficiency testing by thermodynamic testing
- Pipeline diameter and pipeline velocities
- Valve arrangement
- Static head variations
- Flow variations
- Reliability and failures
- Specific energy consumption
- Control systems