

**PennyNuclear**

Lifting & Mechanical  
Handling Specialists

In a word

**REASSURANCE**

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# Introduction



Hydraulic fire doors



Hydraulic export crane



30t lifting beam

Penny Nuclear designs and manufactures lifting equipment, mechanical handling solutions and hydraulic systems for all stages of the nuclear plant lifecycle and nuclear fuel cycle. Whether it is for decommissioning, generating, research or new build sites, we have the knowledge and experience to provide you with robust, cost-effective solutions within extremely competitive lead times.

The majority of our nuclear products are designed and manufactured bespoke, in order to fulfil activity-specific customer requirements, yet sometimes our serial production products may be more than suitable for your needs. All projects are carried out under detailed consultancy with the customer, and draw upon over 36 years' experience of providing mechanical handling equipment to various industries.

## > CORE IN-HOUSE CAPABILITIES

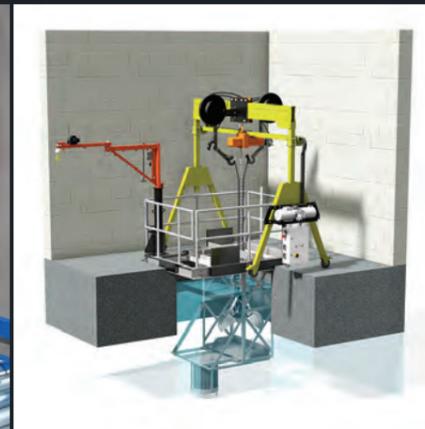
- Design
- Manufacture
- Inspection & testing
- CE marking
- Quality documentation
- Delivery
- On-site installation & commissioning
- Service



Hydraulic cutter



Drum handling



Design services

All of our team are Suitably Qualified and Experienced Personnel (SQEP) and are able to add value to any project. Working to the latest regulations and standards, our design team utilises the latest 3D CAD and FEA packages, as well as applying FMEA, risk assessment tools and ALARP principles. As a UK manufacturer, Penny Nuclear can provide complete traceability and assurance throughout the project, understanding the need for high quality products and complete documentation in the form of Lifetime Quality Records (LQRs) for all items.

All items are produced in accordance with our ISO 9001 procedures, and we work within the principles of the NDA's Supply Chain Charter – ensuring good working practices and relationships are established and maintained well beyond just the lifespan of the project.

Penny Nuclear is a division of Penny Hydraulics Limited, a company specialising in lifting equipment, mechanical handling solutions and hydraulic systems since 1978. We provide equipment and services to not only the nuclear industry, but also to other utility, power generation, energy, public sector, service and engineering organisations.

Whether you require a bespoke mechanical handling device, a new piece of lifting equipment or simply some project support, Penny Nuclear has the solution you need.

# Retrieval Systems & Tooling



Clamshell grab

Lead ILW pot & lifter

Hinkley retrieval system

Penny Nuclear has a successful history of providing retrieval systems to the nuclear industry. Legacy waste within vaults, cells or ponds poses a huge challenge on all sites. We can support decommissioning activities by providing complete mechanical systems which have been proven to be effective already, thereby reducing project risk and development costs.

Utilising proven or off-the-shelf technology where possible, Penny Nuclear have developed a unique and rapidly deployable solution to retrieval projects. A modular approach also allows the customer to acquire a toolbox of different pieces of interchangeable kit, allowing them to cater for various or unexpected items without having to design or procure additional full systems.

Successful retrieval activities have been carried out by Penny Nuclear at sites such as Dungeness, Bradwell and Hinkley Point. Equipment has been designed to cater for both dry and wet vault conditions, as well as retrievals of various items, including Magnox Fuel Element Debris (FED), lugs, ILW items, sludge, gravel and even nuclear fuel.

We also supply the ancillary items to provide the customer with a complete solution, thereby giving you a true turnkey package to ease installation and commissioning.

## > SOLUTIONS INCLUDE:

- Gantry cranes
- Articulated arms
- Grabs
- Sort trays
- Size-reduction/cutting tools
- Shield doors
- Waste drums/pots
- Transport cranes
- Export bogies
- Power packs
- Control systems



Dungeness retrieval system



Sellafield plank removal beam

## Lifting Beams



AVDS transport frame



Sellafield plank removal tool



Sellafield cell cover lifting frame

A lift within a nuclear environment can be one of the most safety-critical activities, therefore it is imperative that the lifting equipment is suitably specified, designed, manufactured and tested for the task in hand. Drawing upon over 36 years' worth of experience supplying lifting equipment to various industries, you can take reassurance that our systems will not let you down.

Our lifting beams can range from simple structures used to spread awkward or large loads, to innovative hydro-electrical beams for when positive engagement is paramount or the lift must be carried out remotely.

All of our lifting equipment is passed through our stringent Quality Assurance controls, including full material traceability, non-destructive testing (NDT), overload testing and CE-marking. All items are supplied fully certified in accordance with current lifting regulations.

### > COMPLIANCES

- The Machinery Directive 2006/42/EC
- Lifting Operations & Lifting Equipment Regulations 1998 (LOLER)
- Provision and Use of Work Equipment Regulations 1998 (PUWER)

# Hydraulic & Electric Cranes



Bradwell hydraulic export crane

Hydraulic export crane

Hinkley knuckle joint crane

Our Vehicle Mounted Equipment division has a wide range of Hydraulic and Electric Cranes which are suitable for use within a nuclear environment. Having designed, developed and manufactured these in the UK for over 36 years to stringent quality and safety standards, the cranes are fully supported through proven field experience, full technical support and a host of off-the-shelf accessories.

Although commonly found mounted on vehicles, these types of cranes are also suitable for static mountings within buildings or other facilities. All come with the same level of safety and quality assurance documentation you would expect from any high-quality, CE-marked piece of lifting equipment.

Penny Nuclear are able to provide all bolt loadings or mounting data to ensure that the supporting structure is capable of withstanding turning moments, as well as designing and manufacturing bespoke mounting frames or interfaces to suit.

## > CRANE SIZES

- SwingLift Electric cranes from 100kg to 1,000kg
- PH Hydraulic cranes from 500kg to 3,300kg

## > OPTIONS

- Manual or hydraulic slew
- Pendant operated or wireless control
- Electric or hydraulic winches
- Additional control valve banks
- Power options ranging from 24VDC to 400VAC



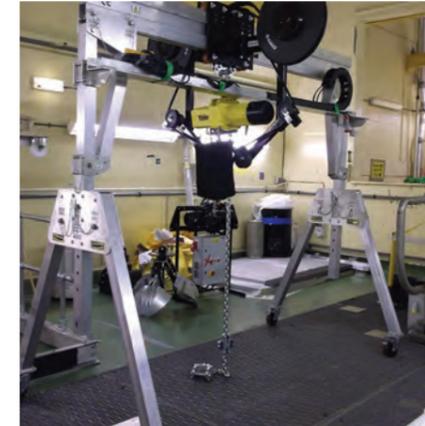
FV500 hydraulic crane

Penny Nuclear is able to provide a range of gantry cranes to suit your requirement, whether this be a small portable gantry, a modular lightweight gantry, or a large permanent overhead travelling crane. Working closely with the customer and our carefully selected partners, we have provided a variety of gantry crane combinations to the nuclear industry, and you can therefore be safe in the knowledge that you will be supplied with proven technology in the fastest of lead times.



Overhead travelling crane

## Gantry Cranes



Hinkley portable gantry



Modular gantry



On-site OHTC work

### Portable Gantry Cranes

Portable gantry cranes offer the user the ability to perform quick lifts in various locations, and through their aluminium construction they are both lightweight and portable. Securely held together using simple pin arrangements, they can also be quickly assembled or disassembled as required, meaning they take up minimal space within a facility or can even be stored elsewhere.

Our standard sizes range from 250kg to 2,000kg, and 2m to 6m spans, but please do enquire if you require a larger assembly.

### Runway Beams & Modular Gantries

For performing lifts in a fixed location then runway beams and modular gantries are ideal. Modular designs and standard items allow for these types of gantries to be erected in any facility in minimal time. Typically offering up to a 2,000kg Maximum Working Load (MWL), the beams and gantries themselves can be built to any size and even suspended from the ceiling if floor space is at a premium. The crane systems can be fitted out with a variety of tools, including powered bogies, festoon systems, load/spring balancers and fall-arrest systems.

### Overhead Travelling Cranes (OHTC)

Penny Nuclear offer cost-effective solutions for large lifting requirements, with the full suite of services provided to the customer, including design, calculations, manufacture, testing and installation. Various design options are available to ensure you receive the right crane for the application – these include:

- Variable speed drives
- Zoning & collision avoidance systems
- Pendant & radio control
- Load sensing
- Power & cable management systems
- Suitable environmental protection for outdoor or harsh environments



Bradwell drum grab & export conveyor

## Drum & Waste Package Handling



Bradwell 25t DCIC export bogie



Drum tipper



Drum stillage

Penny Nuclear recognises that although the industry is still in debate with regards to how our legacy waste will be finally disposed of, decommissioning and waste retrieval activities must progress to allow for the wave of nuclear new build. We therefore offer a range of products designed to assist in drum and waste package handling.

The majority of items are off-the-shelf, giving you reassurance that they are tried and tested within the marketplace, as well as offering both significant project cost and timescale benefits.

Some items will be manufactured for use with industry specific packages, thereby requiring a level of bespoke design. However, the same principles can be adopted across various packages, such as Ductile Cast Iron Containers (DCICs) or 3m<sup>3</sup> boxes. Penny Nuclear has the experience of providing cost-effective and reliable solutions that will withstand the test of time, long after the packages have been sent for final disposal.

### > SOLUTIONS INCLUDE:

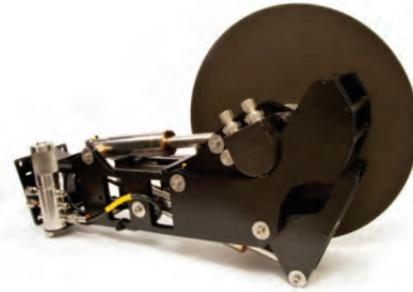
- Drum Grabs
- Drum Tipper
- Drum Stillages
- Export Cranes
- Export Conveyors
- Export Bogies



Manipulator arm



Hydraulic grab



Rotary cutter

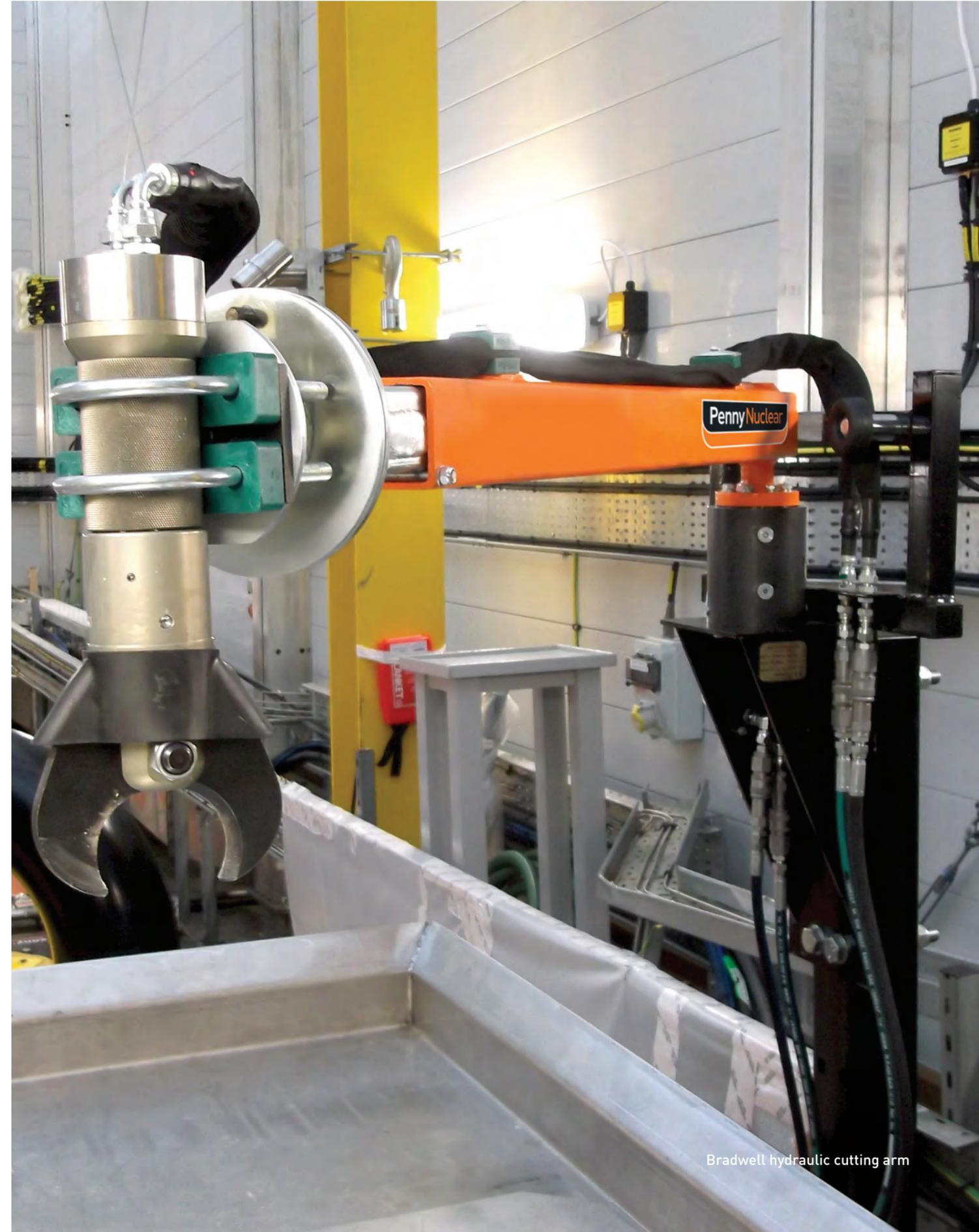
Due to the nature of radiological environments, physical contact with items is not always possible. Therefore Penny Nuclear offer a wide range of manipulators and tooling to allow remote working to be safely carried out. Whether this be a gripping tool, a cutting arm or a different tool altogether, we can help you size and select the correct tool for the job.

Working with our selected partners, we are able to offer a full turnkey package, including the manipulators, power pack and control system/telemetry. This means it can be fully tested at our works and the operators can familiarise themselves with the system in a safe and controlled environment.

Typically, items are designed for both wet and dry environments, and are available as off-the-shelf solutions.

#### > TOOLS INCLUDE:

- Manipulator arms
- Gripping tools
- Cutting arms
- Camera booms
- Rotary actuators
- Pan and tilts
- Specialist tool interfaces



Bradwell hydraulic cutting arm

Positioned within the Penny Hydraulics Group is a dedicated Goods Lift division, offering reliable and cost-effective methods of moving items safely and efficiently between two or more floors. These are typically found in warehouses, factories and workshops, but are also suitable for nuclear environments. With thousands of these lifts in service across the country every day, often in applications where the lift is integral to business processes, you can take reassurance that these lifts will not let you down.

These lifts are often fitted into existing facilities, so before any project is undertaken, one of our team members will carry out a full site survey to determine the exact lift specification for the required application.



250kg MezzLift with interlocking gates

## Goods Lifts



Indoor 250kg MezzLift



Outdoor 500kg MezzLift



Scissor Lift

### MezzLifts

MezzLifts are vertical platform lifts that enable users to move goods such as crates, trolleys or pallets safely and efficiently to secondary storage areas within buildings. Having a surface-mounted design avoids costly and time-consuming structural changes to the building commonly associated with pit-fitted installations. Instead, the compact, free-standing design of all mezzanine floor lifts in the range maximises usable floor space in customer's premises, perfect when space is at a premium.

#### > MEZZLIFT OPTIONS

- 250kg, 500kg and 1,000kg options
- Standard sizes available off-the-shelf
- Bespoke platform sizes
- Increased heights
- Increased stops
- Outside installation
- Range of coatings and finishes

### Scissor Lifts

The Penny Hydraulics Scissor Lift enables users to handle a wide range of loads of generally up to 2,000kg, but can be manufactured up to 10,000kg capacity. It is ideally suited to heavy duty applications where the performance of the company's MezzLift is unsuitable, for example where loads exceed 1,000kg or where much larger platforms are required.

#### > SCISSOR LIFT OPTIONS

- Safety cages
- Interlocked gates
- Side rails
- Access ramps
- Mesh curtains
- Turntables
- Tilting platforms
- Limit switches
- Various control systems
- ...and much more

Each Scissor Lift is configured and installed by Penny Hydraulics to meet the application requirement. Simple design and robust construction ensure the unit delivers reliable performance in even the most arduous and heavy duty cycle applications.



Complete hydraulic lifting system

## Hydraulics



Hydraulic hoses



Pressure safety systems



Bradwell gantry power pack

**Penny Nuclear is a division of the Penny Hydraulics Group, and can therefore offer expert design and manufacturing capabilities of hydraulic systems.**

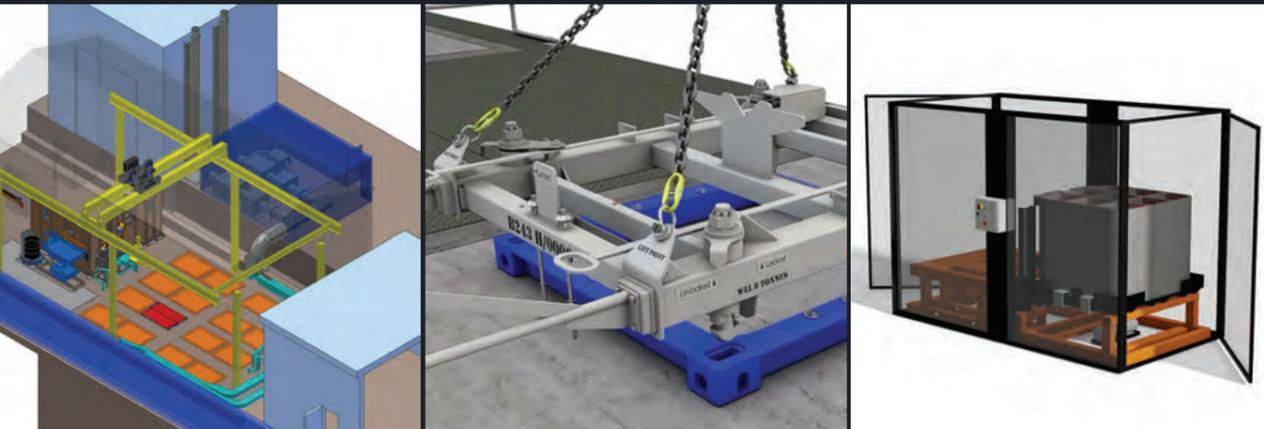
For over 36 years, Penny Hydraulics has been offering bespoke manufacturing and support services for a wide range of hydraulic products, including rams, valves and power packs. The company has extensive expertise in manufacturing, servicing, maintaining and refurbishing hydraulic components for industries where operational conditions are harsh or extreme, such as in the mining or nuclear industry where downtime can be extremely costly.

We provide a one-stop shop for all hydraulic items, and can supply a complete, tested, plug-and-play system to suit your requirements. All systems will be built and tested thoroughly at our works before being despatched, giving you the reassurance that the systems are both effective and safe.

Safety case specifics can also dictate hydraulic requirements. We have proven experience of working with various pressure safety systems, as well as special hydraulic oils such as biodegradable or fire-resistant types. Systems can also be powered by mains supply or by a dedicated battery if no power source is available, making hydraulic systems accessible for all scenarios.

### > SOLUTIONS INCLUDE:

- Hydraulic rams
- Control valves
- Pressure safety systems
- Power packs
- Manifolds
- Accumulators
- Rotary actuators
- Hoses & hose reelers
- Specialist hydraulic oils
- Quick connectors



Bradwell FED retrieval

Sellafeld lifting frame

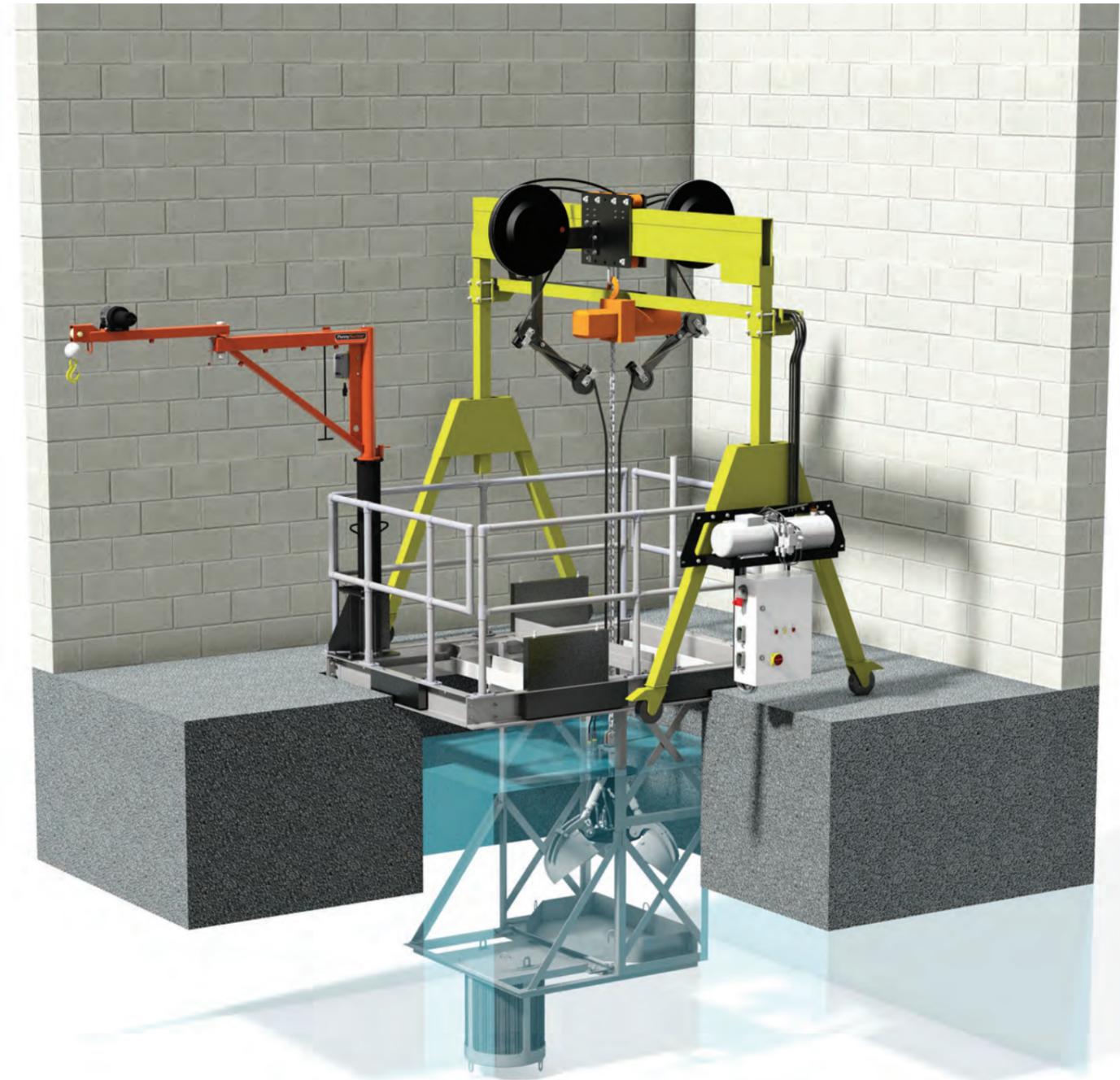
Stillage tilting mechanism

Utilising the latest 3D Computer Aided Design (CAD) software, Penny Nuclear is able to offer customers the ability to model up the entire project on-screen. This gives you the advantage of being certain the design is suitable for the job before it reaches the manufacturing or testing stage, as well as providing more effective communication tools than 2D design when speaking to stakeholders.

Working on site or remotely, Penny Nuclear can either start putting concepts together from scratch, or model up existing environments from historical drawings or site surveys. Usually starting at the high-level concept design phase, different ideas can be easily communicated and discussed, thereby streamlining the decision process and allowing the detailed design to commence early. Our software also allows for other parties' models to be incorporated into the designs, so you have the reassurance that all systems will interface correctly, thereby minimising project risk.

Designs can either then be progressed to manufacture, or high-quality renders or animations produced which can be used for stakeholder management or marketing purposes.

Utilising Penny Nuclear for Design Services on a call-off basis means there is no requirement for the project to invest in expensive CAD software, and project costs are kept to a minimum as you only pay for the hours worked. Designs are kept securely behind our server's firewall and backed up daily, so you have the certainty that nothing will be lost.



Hinkley FED retrieval system



Milling

Drilling

CNC machining

Being situated close to Sheffield, our history with The City of Steel has provided us with great opportunities to become experts in high quality fabrication and machining services to the nuclear industry.

## Fabrication

With dedicated fabrication bays within our factory, all of Penny Nuclear's welders are coded to the latest British Standards and follow approved Weld Procedure Specifications, so you have reassurance that the welds are to the highest quality.

Although our range of qualifications are comprehensive, we understand that we cannot maintain codings for all types of weld. Therefore we have established an excellent relationship with a local welder-approval firm who can streamline new qualifications to minimise or even eliminate any programme impacts whilst new approvals/procedures are gained.

### > FABRICATION CAPABILITIES

- Coded welders
- Carbon steel
- Stainless steel
- Aluminium
- MIG
- MAG
- MMA
- TIG
- Visual inspection
- Magnetic particle
- Liquid penetrant
- Ultrasonic
- Radiographic

## Machining

We can also offer precision machining services for the industry, whether this be for individual components or items to be integrated into complete systems. In-house capabilities include profiling, turning, boring and milling, as well as having a robust, local supply chain which allows us to offer CNC machining, large-scale milling and other precision services. As with any of our products, all sub-contracted items are rigorously inspected before being released for use, as well as the sub-contractors meeting our full quality assurance requirements.

### > MACHINING CAPABILITIES

- Profiling
- Turning
- Boring
- Milling
- CNC machining



# Lead & Shielding Products

To complement our waste retrieval capabilities, Penny Nuclear design and manufacture lead-lined products, often used to store high dose rate items before being sent for processing or placed into final disposal packages. With all items manufactured in the UK, you can be sure that the material and products are of the highest quality, providing full peace of mind when you need it most.



Bradwell hydraulic shield doors



Drum shield & weigh scale



Lead ILW pot & lifter

We offer shielding capabilities for operators who are required to work in close proximity to radioactive sources. This includes both lead and steel products, and typical applications are shield doors, hatches or rotating drum shields. Shielding can be simple, manually-operated pieces of kit, or fully-powered items with safety interlocks. We take our time to understand your process and ensure that the product supplied is correct for the application and allows everyone to work in a safe environment.

- > SOLUTIONS INCLUDE:**
- Shield doors
  - Fire doors
  - Hatches & access covers
  - Rotating drum shields
  - Shield walls
  - Shielded walkways

## Lifting & Handling Accessories

Along with bespoke mechanical handling products, Penny Nuclear are also a supplier of standard lifting equipment to the industry. Items include:

- Winches
- Webbing straps/Slings
- Chains
- Shackles
- Hooks
- Eyebolts
- Clamps
- Vacuum lifters
- Grabs
- Cylinders & Jacks
- Pallet trucks
- And much, much more...

Knowing the quality assurance requirements for lifting accessories, Penny Nuclear ensures that all items are despatched with the correct documentation to ensure a smooth transition onto site.



Bradwell hydraulic shield doors

Penny Nuclear designs and manufactures lifting equipment, mechanical handling solutions and hydraulic systems for all stages of the nuclear plant lifecycle and nuclear fuel cycle. Whether it is for decommissioning, generating, research or new build sites, we have the knowledge and experience to provide you with robust, cost-effective solutions within extremely competitive lead times.



Accreditations:



**Penny Nuclear is a division of Penny Hydraulics Limited**

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