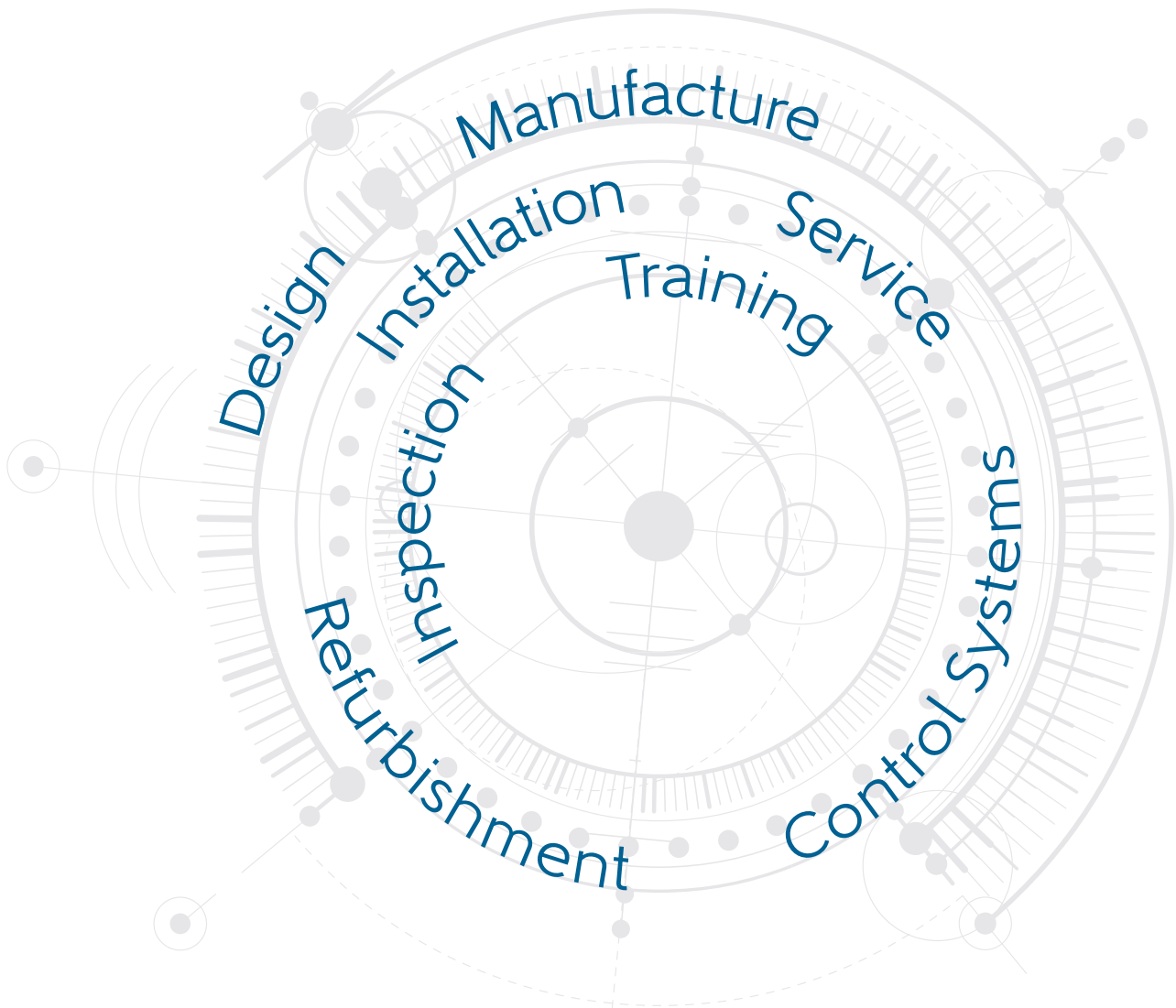


WOODFIELD SYSTEMS LTD

UK OEM MANUFACTURER OF MARINE LOADING ARMS

SERVICING • SPARES • REFURBISHMENT



WOODFIELD
SYSTEMS LTD
**Service
Plan+**

GEHS Accreditation

ISO9001
ISO14001
OHSAS18001

WOODFIELD
SYSTEMS LTD
Genuine
SPARE PARTS

Tyler Way, Swalecliffe, Whitstable, Kent CT5 2RS England.
Telephone: +44 (0)1227 793351 - Email: sales@woodfieldsystems ltd.com
www.woodfieldsystems ltd.com

The Woodfield Albatross structurally supported double counterweighted marine loading arm designed around the latest requirements of OCIMF (Design and Construction Specification for Marine Loading Arms), uses a rigid pantograph link system for accurate balance, smooth operation and minimal maintenance.

The Albatross is specifically designed to be used for cryogenic applications along with the additional safety requirements of an Emergency Release System. Controlled Electro/hydraulically using either a trailing lead or radio pendant the control system can be custom designed to meet the client's requirements.

The Albatross is available in sizes from 6" to 16" diameter with pressure ratings up to 300lbs and operating temperatures from -196°C to +200°C.



Standard design features:

- Stainless steel structurally supported product pipe
- Rigid pantograph link
- Minimal maintenance required
- Electro-hydraulic control system
- Radio remote control or trailing lead pendant
- Fully counterbalanced and OCIMF compliant
- Available in sizes 6" - 16" and 150lb or 300lb pressure rating



Optional design features:

- Emergency release system (ERS)
- Manual or hydraulic quick connect / disconnect coupler (QC/DC)
- Triple swivel support jack
- Ladders and platforms
- Remote lubrication
- Range alarms
- Nitrogen purge
- Vapour recovery
- Product stripping system
- Heat tracing / insulation
- Temperature monitoring
- Constant position monitoring
- Mobile trailer mounted

All of Woodfield's products are designed with the full lifecycle of the equipment in mind. The Woodfield Albatross requires minimal maintenance and has the ability to replace all product seals without the need for cranes, saving both time and money.

The Woodfield Sea Eagle double counterweighted marine loading arm designed around the latest requirements of OCIMF (Design and Construction Specification for Marine Loading Arms), uses a rigid pantograph link system for accurate balance, smooth operation and minimal maintenance.

The Sea Eagle is specifically designed to be used where additional safety requirements of an Emergency Release System is required. Controlled Electro/hydraulically using either a trailing lead or radio pendant the control system can be custom designed to meet the client's requirements.

The Sea Eagle is available in sizes from 6" to 20" diameter with pressure ratings up to 300lbs and operating temperatures from -50°C to +200°C.



Standard design features:

- Rigid pantograph link
- Minimal maintenance required
- Electro-hydraulic control system
- Radio remote control or trailing lead pendant
- Fully counterbalanced and OCIMF compliant
- Available in sizes 6"- 20" and 150lb or 300lb pressure rating



Optional design features:

- | | | |
|--|----------------------------|--------------------------------|
| • Emergency release system (ERS) | • Remote lubrication | • Heat tracing / insulation |
| • Manual or hydraulic quick connect / disconnect coupler (QC/DC) | • Range alarms | • Temperature monitoring |
| • Triple swivel support jack | • Nitrogen purge | • Constant position monitoring |
| • Ladders and platforms | • Vapour recovery | • Mobile trailer mounted |
| | • Product stripping system | |

All of Woodfield's products are designed with the full lifecycle of the equipment in mind. The Woodfield Sea Eagle requires minimal maintenance and has the ability to replace all product seals without the need for cranes, saving both time and money.

The Woodfield Osprey double counterweighted marine loading arm designed around the latest requirements of OCIMF (Design and Construction Specification for Marine Loading Arms), uses a rigid pantograph link system for accurate balance, smooth operation and minimal maintenance.

The Osprey can be either manually or hydraulically operated using lever hydraulic, trailing lead or radio pendant's.

If the manual version is selected, brackets can be fitted for upgrade to hydraulic operation at a later date. The Osprey is available in sizes from 6" to 20" diameter with pressure ratings up to 300lbs and operating temperatures from -50°C to +200°C.



Standard design features:

- Rigid pantograph link
- Minimal maintenance required
- Manual, hydraulic or electro-hydraulic control options
- Fully counterbalanced and OCIMF compliant
- Available in sizes 6" - 20" and 150lb or 300lb pressure rating



Optional design features:

- Manual or hydraulic quick connect disconnect coupler (QC/DC)
- Triple swivel support jack
- Ladders and platforms
- Remote lubrication
- Range alarm
- Nitrogen purge
- Vapour recovery
- Heat tracing/Insulation
- Constant position monitoring
- Product stripping system
- Mobile trailer mounted

All of Woodfield's products are designed with the full lifecycle of the equipment in mind. The Woodfield Osprey requires minimal maintenance and has the ability to replace all product seals without the need for cranes, saving both time and money.

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Woodfield **Fulmar**

The Woodfield Apex Counter Weight marine loading arm designed around the latest requirements of OCIMF (Design and Construction Specification for Marine Loading Arms) is manually operated to give easy operation via ropes that enable the operator to connect the marine loading arm to the ship.

This style of marine loading arm is ideal where the client either requires a simple low cost solution or has no power available for a control system.

The Fulmar is available in sizes from 4" to 12" diameter with pressure ratings up to 300lbs and operating temperatures from -50°C to +200°C.



Standard design features:

- Simple low cost solution
- No electrical or hydraulic controls required
- Available in sizes 4" - 12" and 150lb or 300lb
- Fully balanced and OCIMF compliant
- Low maintenance costs

Optional design features:

- Manual quick connect disconnect coupler (QC/DC)
- Triple Swivel Support jack
- Ladders and access step
- Remote lubrication
- Range alarm
- Nitrogen purge
- Product Stripping system
- Mobile trailer mounted



All of Woodfield's products are designed with the full lifecycle of the equipment in mind. The Woodfield Fulmar requires minimal maintenance and has the ability to replace all product seals without the need for cranes, saving both time and money.

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Woodfield Systems Ltd specialise in the design, manufacture, installation and commissioning of bespoke control systems tailored to the clients specifications.

Our cost-effective control systems will improve industrial performance, efficiency and quality.

Control Systems Solutions



Control System Design

We offer the design and build of bespoke PLC / HMI control systems for industrial and hazardous area automation, ranging from small standalone panels to full process integration. This could be for retro-fitting, or the upgrade of an existing control system to include up to date graphical representations.

PLC Modifications

Interrogate and modify PLC's/HMI's to your business needs, as well as adding additional features or removing programming errors.

SCADA Systems

Supervisory, control and data acquisition systems to monitor and control site systems locally or remotely.

VFD Drive Upgrades

Many older electrical installations simply use direct online starters. By installing VFD's to a system, you could save on running costs especially over a large installation. This could also be incorporated into a SCADA system for remote monitoring/control purposes.

VPN Support

With the addition of a VPN monitoring, system down time and support costs can be reduced for remote and overseas sites.

QEHs Accreditation

ISO9001
ISO14001
OHSAS18001



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Regular maintenance is essential to ensure the reliability of the Marine Loading Arms.

Woodfield have a team of experienced and highly skilled engineers supporting clients around the world to Install, maintain and repair their Marine Loading Arms.

Service & Installation



WOODFIELD SYSTEMS LTD **Service Plan+**

Our Service Plan+ package is tailored to each sites unique requirements and can include:

- Visual inspection of Loading arms / booms and control system
- Lubrication / greasing of swivel joints
- Lubrication of wire ropes (where applicable)
- Insulation test
- Hydraulic oil quality and level check
- Hydraulic oil and filter change
- Function test (inc range alarms)
- Hydrostatic test
- ERS / PERC simulated release
- Complex Installation and Inspection



Training

Woodfield Systems Ltd offers 3 levels of operator and maintenance training to provide site personnel with a good understanding of the safe operation and basic maintenance of their Marine Loading Arm.

Training can be hands on operations training or a fully bespoke package with both practical and classroom training. For more details about our training packages visit our website.



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Spare Parts



Woodfield genuine spare parts are recommended to maintain the quality and life of the equipment. As part of our Global Lifecycle Support philosophy we try to ensure that all equipment supplied over years is supported.

Many parts are held in stock and are available for quick deliveries. Our dedicated sales team will be happy to discuss your site requirements, whether this an enquiry for a single part or to discuss management of spare parts and call off systems.

Woodfield Systems Ltd ambient and cryogenic swivels are well proven within the industry and are fully compliant with OCIMF Design and Construction Specifications for Marine Loading Arms.

The swivels utilise a single ball track for most applications with an internal line contact fluid seal and external dust/environmental seal. The design enables ease of servicing, reduces the need for full swivel replacement and limits equipment downtime. Available in flanged or cassette type

In addition to being used within Marine Loading Arms, the swivels can also be used for onshore or offshore loadings systems.

Swivels



Features:

- Suitable for applications from -196°C to +200°C
- Ambient – available from 3" to 47"
- Cryogenic – available from 6" to 16"
- Different styles to suit all applications

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Woodfield Systems Ltd offers 3 levels of operator and maintenance training to provide site personnel with a good understanding of the safe operation and basic maintenance of their Marine Loading Arm.

Operator & Maintenance Personnel Training Programme Level 1

WSL level 1 training programme is intended for operations personnel with extensive experience of Loading Arms. The training will be performed by a WSL Commissioning Engineer. Training shall take place over one practical session (based on group sizes up to 10 persons). The training package is based on procedures detailed in WSL Operation and Maintenance Manual. Training is not intended to replace the operation manual. Attendees completing the course shall receive a Certificate of Attendance.

OBJECTIVES

Each trainee shall:

- Be able to safely connect and disconnect the loading arm to a ship and arm the ERS*.
- Understand the alarm signals and required actions.
- Be conversant with the events that take place before and during an ERS* event.
- Understand the sequence of events necessary to reassemble the emergency release collar and re-set the electro-hydraulic control system.
- Understand the basic maintenance requirements of the WSL loading arm.

TRAINING SESSION PROGRAMME SESSION PRACTICAL 1

Review of the Woodfield Loading Arm, its component parts – name and functions Electro-hydraulic control system components.

Each attendee shall have the opportunity to start-up and un-stowing the loading arm:

- Power on – hydraulics in 'Control'
- Selection of arm

- Outer arm hydraulic / mechanical stow lock valve
- Main stow lock
- Slew lock
- Manoeuvring the loading arm
- Selecting operation mode – panel or pendant
- Demonstrate overreach alarms and full reach of loading arm
- Connecting to a ship's flange
- Preparation of ships flange
- Preparation of loading arm flange
- Connection – hydraulics in 'Freewheel'
- Arming the ERS*
- Final preparations for transfer of product
- Principle for draining the loading arm, disconnection and re-stowing loading arm
- Draining the outer arm
- Draining the inner arm and riser
- Disarm the ERS*
- Disconnection sequence
- Stowing the loading arm
- System shut-down
- Emergency release system (ERS*)
- Component parts
- Sequence of operation
- Perform a routine simulated release test
- Re-setting the ERS*
- Perform a manual (hydraulic valve) simulated release test
- Re-setting the ERS*
- Maintenance
- Lubrication
- Hydraulic system
- Planned maintenance suggestions
- Testing of loading arm, emergency release system and control system
- Exercising / regular arm manoeuvring
- Monthly check of insulation joint

Attendees will be encouraged to operate the arm / controls and perform regular stowage and simulated ERS* functions..

*Only applicable where fitted.

Training Services 2 & 3

Woodfield Systems Ltd offers 3 levels of operator and maintenance training to provide site personnel with a good understanding of the safe operation and basic maintenance of their Marine Loading Arm.



Operator & Maintenance Personnel Training Programme Level 2

WSL level 2 training programme is intended for operations personnel with limited experience of Loading Arms. The training will be performed by a WSL Commissioning Engineer. Training shall take place over one day (based on group sizes up to 10 persons) and comprise two sessions of practical training. The training package is based on procedures detailed in WSL Operation and Maintenance Manual. Training is not intended to replace the operation manual. Attendees completing the course shall receive a Certificate of Attendance.

OBJECTIVES

Each trainee shall:

- * Be able to safely connect and disconnect the loading arm to a ship and arm the ERS.
- * Understand the alarm signals and required actions.
- * Be conversant with the events that take place before and during an ERS event.
- * Understand the sequence of events necessary to reassemble the emergency release collar and re-set the electro-hydraulic control system.
- * Understand the basic maintenance requirements of the WSL loading arm.

TRAINING PROGRAMME SESSION PRACTICAL 1 09:00 to 12:00

- * Review of the Woodfield Loading Arm, its component parts – name and functions Electro-hydraulic control system components Each attendee shall have the opportunity to start-up and un-stowing the loading arm
- * Power on – hydraulics in 'Control'

- * Selection of arm
- * Outer arm hydraulic / mechanical stow lock valve
- * Main stow lock
- * Slew lock
- * Manoeuvring the loading arm
- * Selecting operation mode – panel or pendant
- * Demonstrate overreach alarms and full reach of loading arm
- * Connecting to a ship's flange
- * Preparation of ships flange
- * Preparation of loading arm flange
- * Connection – hydraulics in 'Freewheel'
- * Arming the ERS
- * Final preparations for transfer of product
- * Principle for draining the loading arm, disconnection and re-stowing
- * Draining the outer arm
- * Draining the inner arm and riser
- * Disarm the ERS
- * Disconnection sequence
- * Stowing the loading arm
- * System shut-down

SESSION PRACTICAL 2 13.00 to 16.00

- * Emergency release system (ERS)
- * Component parts
- * Sequence of operation
- * Perform a routing simulated release test
- * Re-setting the ERS
- * Perform a manual (hydraulic valve) simulated release test
- * Re-setting the ERS
- * Maintenance
- * Lubrication
- * Hydraulic system
- * Planned maintenance suggestions
- * Testing of loading arm, emergency release system and control system
- * Exercising / regular arm manoeuvring
- * Monthly check of insulation joint

Attendees will be encouraged to operate the arm / controls and perform regular stowage and simulated ERS functions.

Operator & Maintenance Personnel Training Programme Level 3

WSL level 3 training programme is intended for operations personnel with no or limited experience of Loading Arms. The training will be performed by a WSL Commissioning Engineer and WSL Training Engineer. Training shall take place over two days (based on group sizes up to 10 persons) and comprise a mixture of classroom and practical training. The training package is based on procedures detailed in WSL Operation and Maintenance Manual. Training is not intended to replace the operation manual. Attendees completing the course shall receive a Certificate of Attendance.

OBJECTIVES

Each trainee shall:

- * Be able to safely connect and disconnect the loading arm to a ship and arm the ERS.
- * Understand the alarm signals and required actions.
- * Be conversant with the events that take place before and during an ERS event.
- * Understand the sequence of events necessary to reassemble the emergency release collar and re-set the electro-hydraulic control system.
- * Understand the basic maintenance requirements of the WS loading arm.

TRAINING SESSION PROGRAMME SESSION CLASSROOM 1 DAY 1 09:00 to 12:00

This session shall be based on a Powerpoint presentation. The topics covered will include: -

- * WSL scope of supply
- * Advantages of the WSL arm
- * Primary component parts
- * Triple swivel assembly (TSA)
- * Locking (stowing) devices
- * Manifold support jack
- * Drains and draining techniques
- * Vacuum breaker
- * Operating envelope
- * Jetty layout
- * Electro-hydraulic control system
- * Loading arm operation

SESSION PRACTICAL 1 13.00 to 16.00

- * Review of the Woodfield Loading Arm, its component parts – name and functions Electro-hydraulic control system components
- * Each attendee shall have the opportunity to start-up and un-stowing the loading arm
- * Power on – hydraulics in 'Control'
- * Selection of arm
- * Outer arm hydraulic / mechanical stow lock valve
- * Main stow lock
- * Slew lock
- * Manoeuvring the loading arm
- * Selecting operation mode – panel or pendant
- * Demonstrate overreach alarms and full reach of loading arm
- * Connecting to a ship's flange
- * Preparation of ships flange
- * Preparation of loading arm flange
- * Connection – hydraulics in 'Freewheel'
- * Arming the ERS
- * Final preparations for transfer of product
- * Principle for draining the loading arm, disconnection and re-stowing loading arm
- * Draining the outer arm
- * Draining the inner arm and riser
- * Disarm the ERS
- * Disconnection sequence
- * Stowing the loading arm
- * System shut-down

SESSION CLASSROOM 2 DAY 2 09:00 TO 12:00

This session shall be based on a Powerpoint presentation. The topics covered will include: -

- * Review of previous sessions and resolution of any points arising.
- * Loading arm alarms
- * Emergency release system
- * Following an ERS
- * Simulated ERS procedure
- * ERS reset procedure
- * Basic maintenance
- * Contact details

SESSION PRACTICAL 2 DAY 2 13.00 to 16.00

A repeat of previous practical session with limited input from the trainer with special emphasis on the following: -

- * Emergency release system (ERS)
- * Component parts
- * Sequence of operation
- * Perform a routing simulated release test
- * Re-setting the ERS
- * Perform a manual (hydraulic valve) simulated release test
- * Re-setting the ERS
- * Maintenance
- * Lubrication
- * Hydraulic system
- * Planned maintenance suggestions
- * Testing of loading arm, emergency release system and control system
- * Exercising / regular arm manoeuvring
- * Monthly check of insulation joint

Attendees will be encouraged to operate the arm / controls and perform regular stowage and simulated ERS functions.

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Refurbishment

Refurbishment of a Marine Loading Arm carried out using Woodfield genuine spare parts and undertaken by Woodfields experienced engineers can greatly extend the life and reliability of the equipment.

Woodfield are able to carry out overhauls of loading arms at customers site, using our network of partners or at Woodfield Systems dedicated loading arm workshop in the UK.

Before



After



Control Systems



Woodfield Systems Ltd design and supply control systems designed to meet the latest requirements of OCIMF (Design and Construction Specifications for Marine Loading Arms) and client's specific requirements along with local and international regulations.

We offer a range of solutions from simple range alarm monitoring to full electro hydraulic radio control with PLC redundancy incorporating communications to the clients DCS.

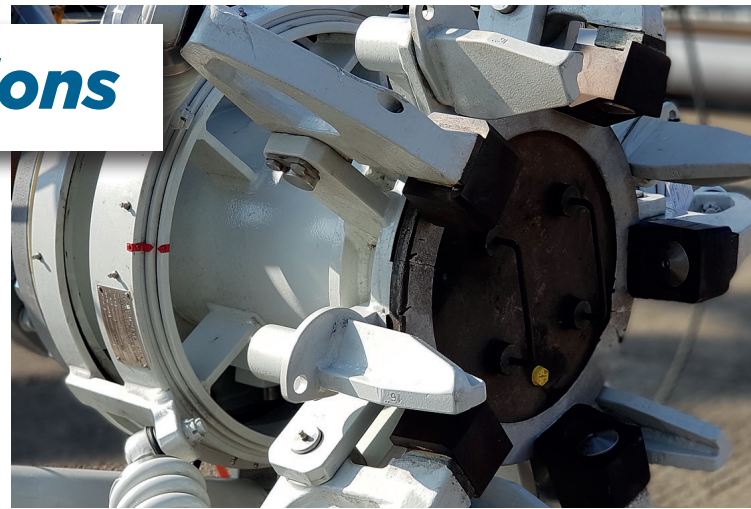
- Lever hydraulic control
- Range alarm monitoring
- Electro hydraulic control using the latest PLC technology
- Radio Control system upgrades
- Constant Position Monitoring
- Control system upgrades

Upgrades & Modifications

The requirements of the industry are ever changing, with increasing focus on safety, the environment and efficiency, as well as the need to adapt to changing markets and customer demands.

Woodfield Systems Ltd understand this and work with our existing customers to find innovative solutions to adapt, modify and upgrade existing equipment to meet these requirements. Possible modifications / services include:

- Engineering Design Study to assess customer requirements
- Installation of radio remote control
- Control system upgrade / modernisation
- Design and supply of modern range alarm system
- Fitting of manual Quick Connect / Dis-connect Coupler (QC/DC)
- Upgrade to hydraulic Quick Connect / Dis-connect Coupler (QC/DC)
- Addition of vapour recovery system
- Addition of Emergency Release System (ERS)
- Addition of modern safety interlocks
- Addition of ladders and inspection platforms



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With many years experience supplying engineering solutions to the Oil & Gas Industry Woodfield Systems Ltd are able to offer a wide range of services to customers



Services Include:

- Fabrication
- Welding
- Machining
- Painting
- Assembly
- NDE
- Instrumental and Electrical hook up
- Complex Installation and Inspection
- Hydrotesting

Engineering Services

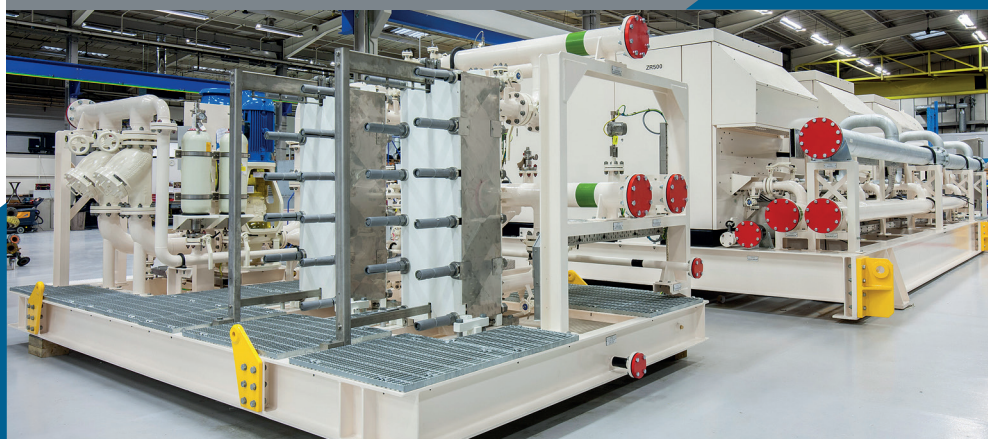


Skid Packages

Working closely with our clients we are able to offer fabrication of bespoke and complex skid and pipework packages, manufactured to client designs and specifications for the Oil and Gas (onshore and offshore), Petrochemical and wider industrial and manufacturing sectors.

Our facility, with 15+ tons of lifting capacity (mobile and overhead), enables the specialist manufacture, welding and assembly of the packages to a high quality, overseen by quality checks throughout the process.

Woodfield are able to support the majority of client welding requirements through coded welder procedures and an in-house European Welding technologist in a wide variety of materials including Carbon Steel, Stainless Steels including Duplex's, Cupro-Nickel, Aluminium, Titanium and other exotic metals.



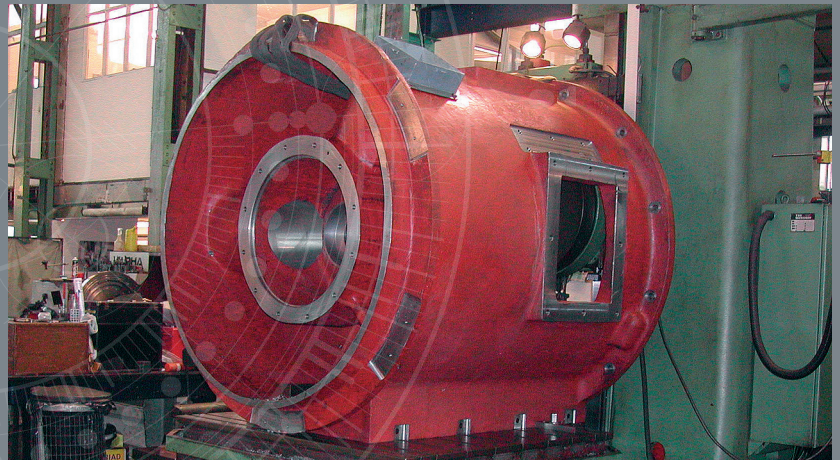
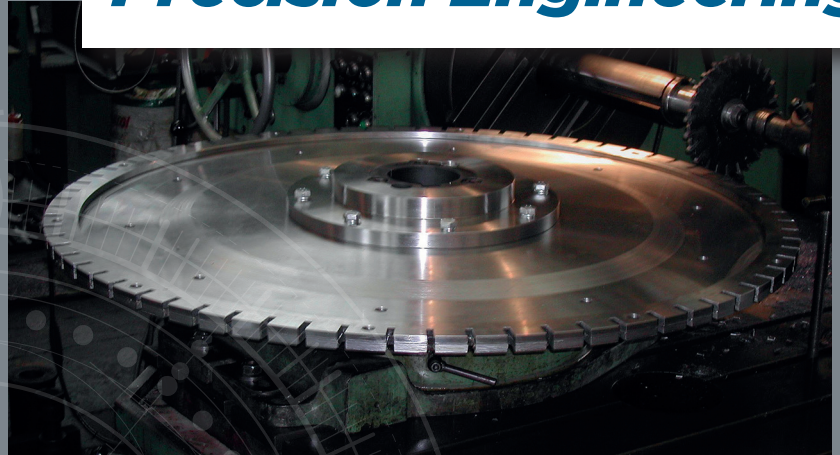
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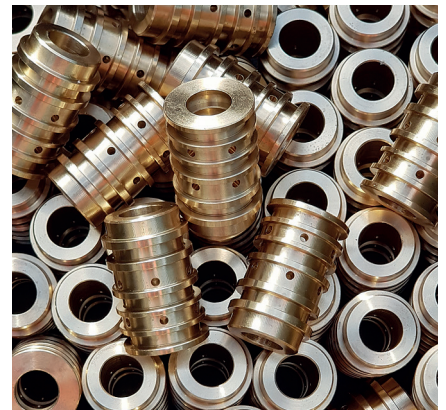
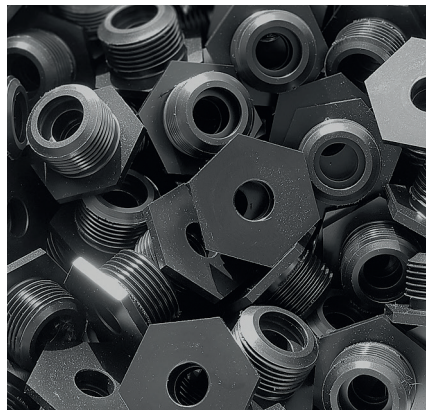
Precision Engineering



With over 50 years of experience, Woodfield Systems are able to offer machined components for electronic, oil & gas, mechanical, pharmaceutical sectors to name but a few. Using our comprehensive range of horizontal and vertical borers, CNC turning, milling, single spindle and multi-axis sliding head auto machines for complete components, combined with extensive 2nd operation facilities.

We can work with an extensive range of materials including: Stainless Steel, Aluminium, Brass, Steel, Plastics, Nickel Silver and Bronze.

Batch quantities can vary from a single large unit to 1000's of very small units and all are subject to the same thorough quality control, fast turnaround and competitive prices. With the focus on supporting our client, Woodfield Systems Ltd can also offer call off or Kanban systems.



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