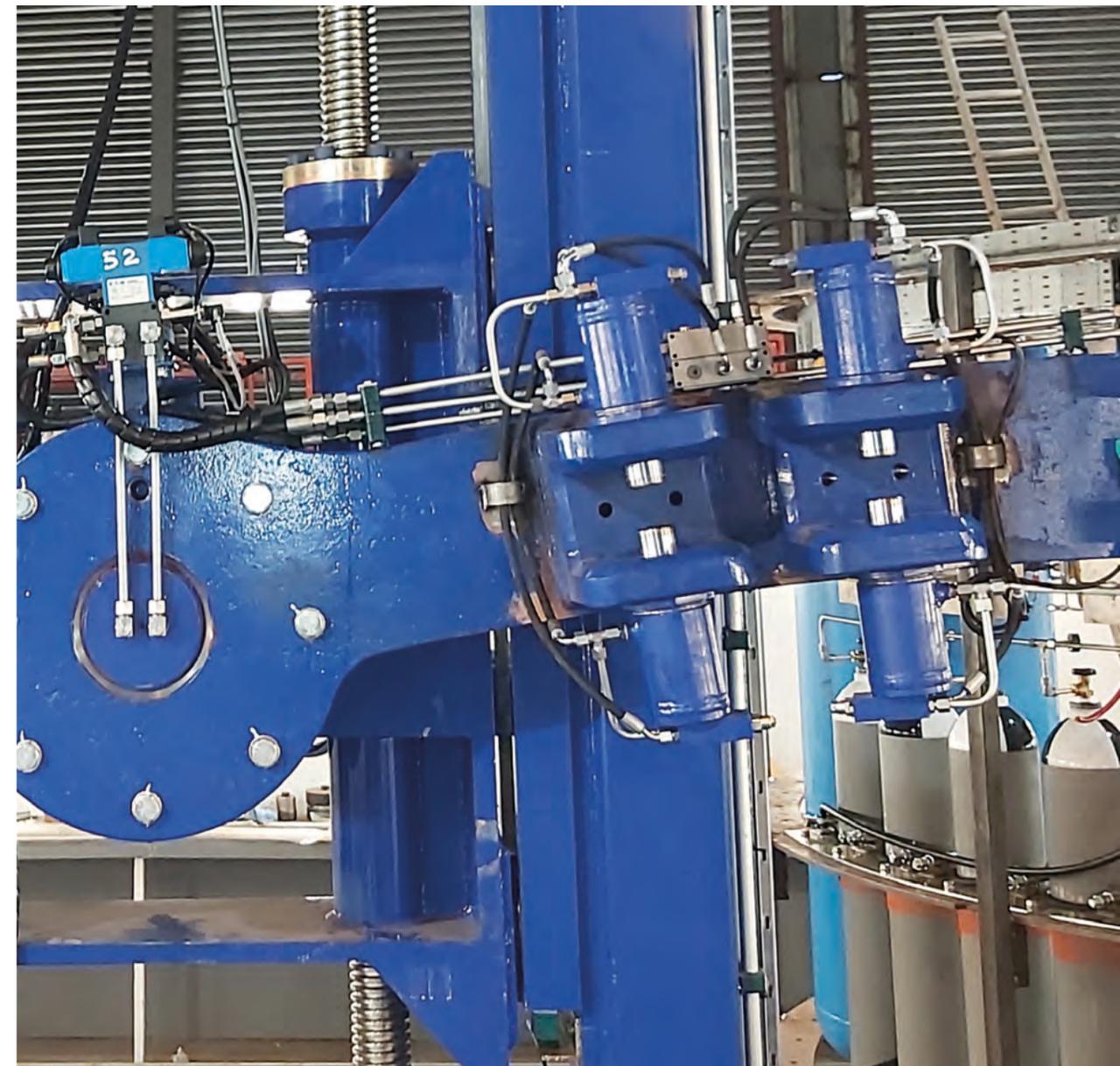


**MALIN ABRAM**  
SOUTH ROTUNDA  
100 GOVAN ROAD  
PACIFIC QUAY  
GLASGOW  
G51 1AY

T: (+44) 0141 221 3075  
E: MECHANICALHANDLING@MALINABRAM.COM  
MALINABRAM.COM

**INNOVATING  
HEAVY LIFT  
SOLUTIONS**

PART OF THE  
 **Malin Group**

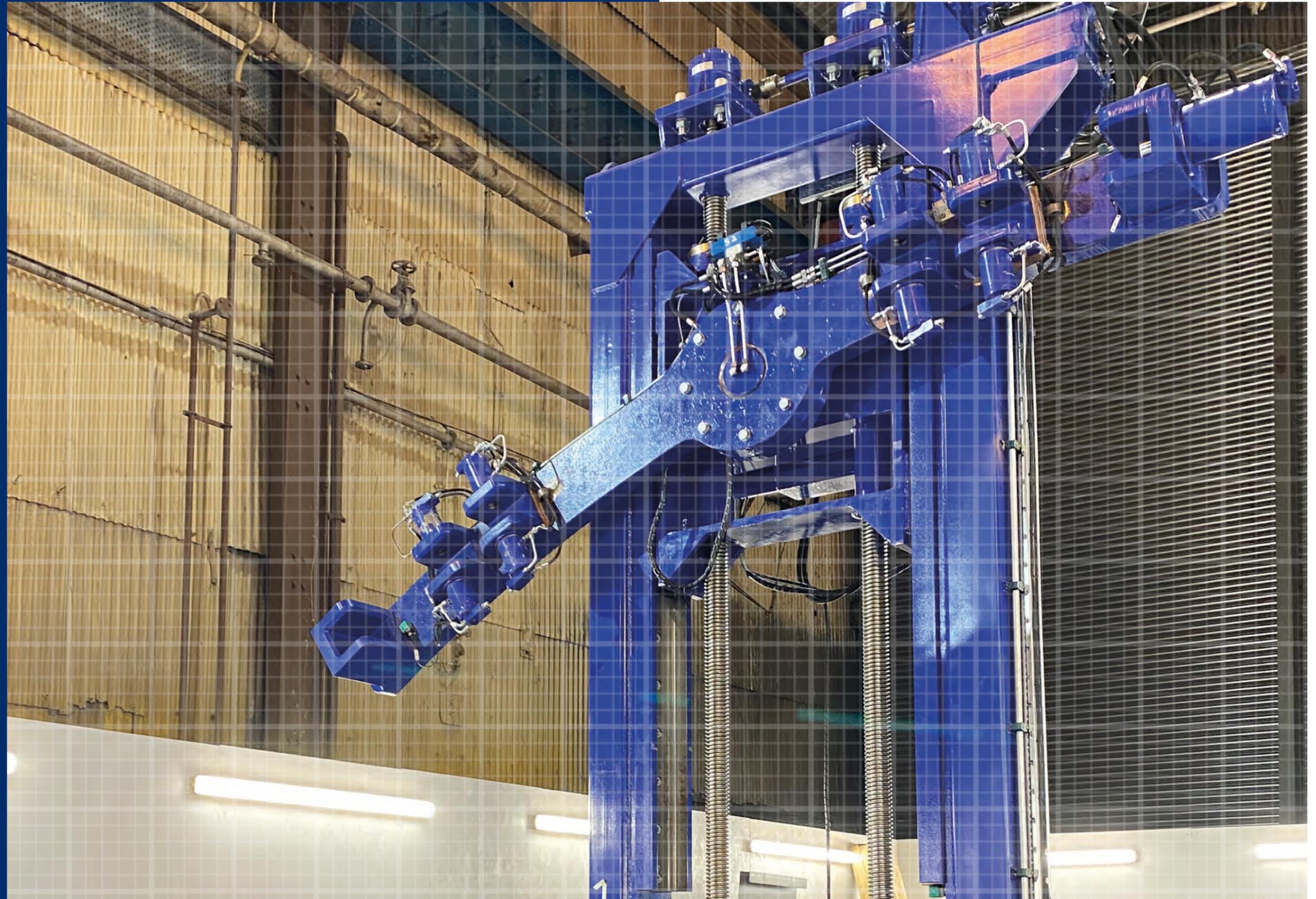


**BESPOKE MECHANICAL  
HANDLING EQUIPMENT**

PART OF THE  
 **Malin Group**

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# OUR APPROACH

Malin Abram is your trusted advocate for all things heavy lift. From the beginning as a ship delivery outfit in the 19<sup>th</sup> century, Malin Abram has evolved to a full marine engineering service, working with a variety of clients worldwide, to deliver complex projects encompassing many disciplines. We do this by focusing on what matters: our client and their needs.

**USING OUR EXPERT KNOWLEDGE, WE PROVIDE A BESPOKE SERVICE BASED ON INTEGRITY, EXCELLENCE, CREATIVITY, AND IMPARTIALITY.**

We are experts in the handling and relocation of abnormal loads and cargoes. For many logistics projects this primarily involves hired in equipment, which ranges from cranes, heavy haulage, tugs and barges, through to specialist hydraulic jacking and skidding equipment.

Servicing client's specialist needs, we have through these heavy lift logistic projects, designed, developed and fabricated an enviable range of specialist steelwork and project specific equipment.

Steelwork can range from simple transport frames and beams, to more complex cradles and modular supports, all critical to assist with the reorientation of the cargo during transport and installation.

The complexity of the lifting and handling aids, utilised on many of our projects, are such that the design becomes critical, not only for movement and handling, but also as an aid during the construction and erection of our client's equipment.

This has enabled an evolution of our role, developing to become an ever more integrated element of their build processes, and installation methodologies. We are proud to act as the first port of call for many clients who require assistance in mechanical handling and lifting operations beyond the realm of heavy lift logistics.

# OUR TEAM

**AS THE COMPLEXITY OF THE EQUIPMENT WE HAVE DESIGNED HAS EVOLVED, SO TOO HAS THE CAPABILITY OF THE MALIN ABRAM ENGINEERING TEAM, SPECIALISING IN THE DELIVERY OF MECHANICAL LIFTING AND HANDLING AIDS.**

The team is comprised of a unique mix of naval architects, structural engineers, mechanical engineers, lifting engineers, and project managers, as well as hydraulics and control systems specialists.

Our diverse range of skills and expertise enables us to deliver bespoke solutions for our clients, whether the task is in their workshop, on site inland, at the water's edge or at sea above and below the waterline.





# OUR SERVICES

**YOUR MALIN ABRAM TEAM ARE HERE TO NOT ONLY UNDERSTAND BUT ALSO REDEFINE YOUR TECHNICAL HANDLING REQUIREMENTS, OFFERING INNOVATIVE, CREATIVE SOLUTIONS.**

The term mechanical handling covers a range of applications, but at its core, it represents the requirement to:

- Temporarily support an item during fabrication, erection, integration or transport. This temporary support may be designed such that it features as part of the end support solution post installation or integration, and/or
- Provide means of relocating or re-orientating an item using motive force either internal to the support mechanism or external to it.

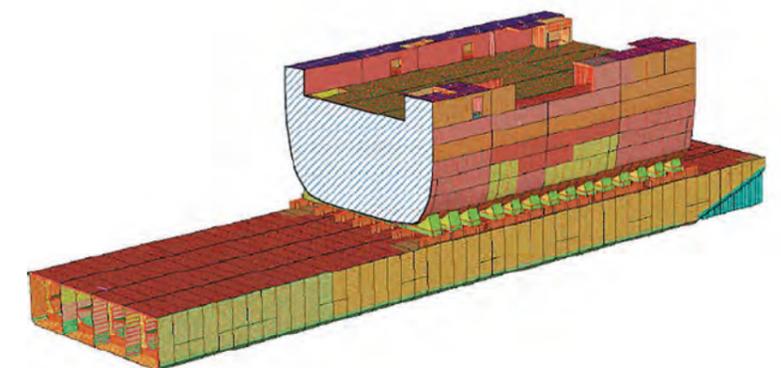
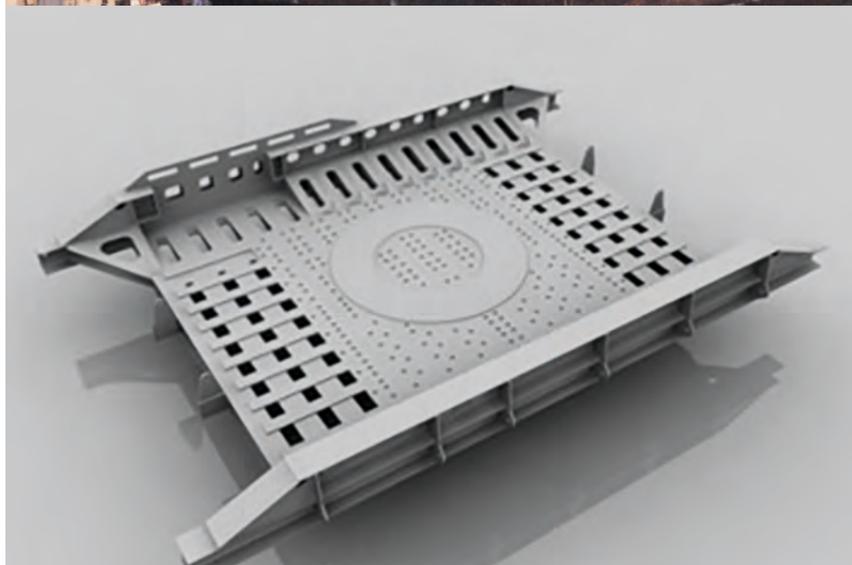
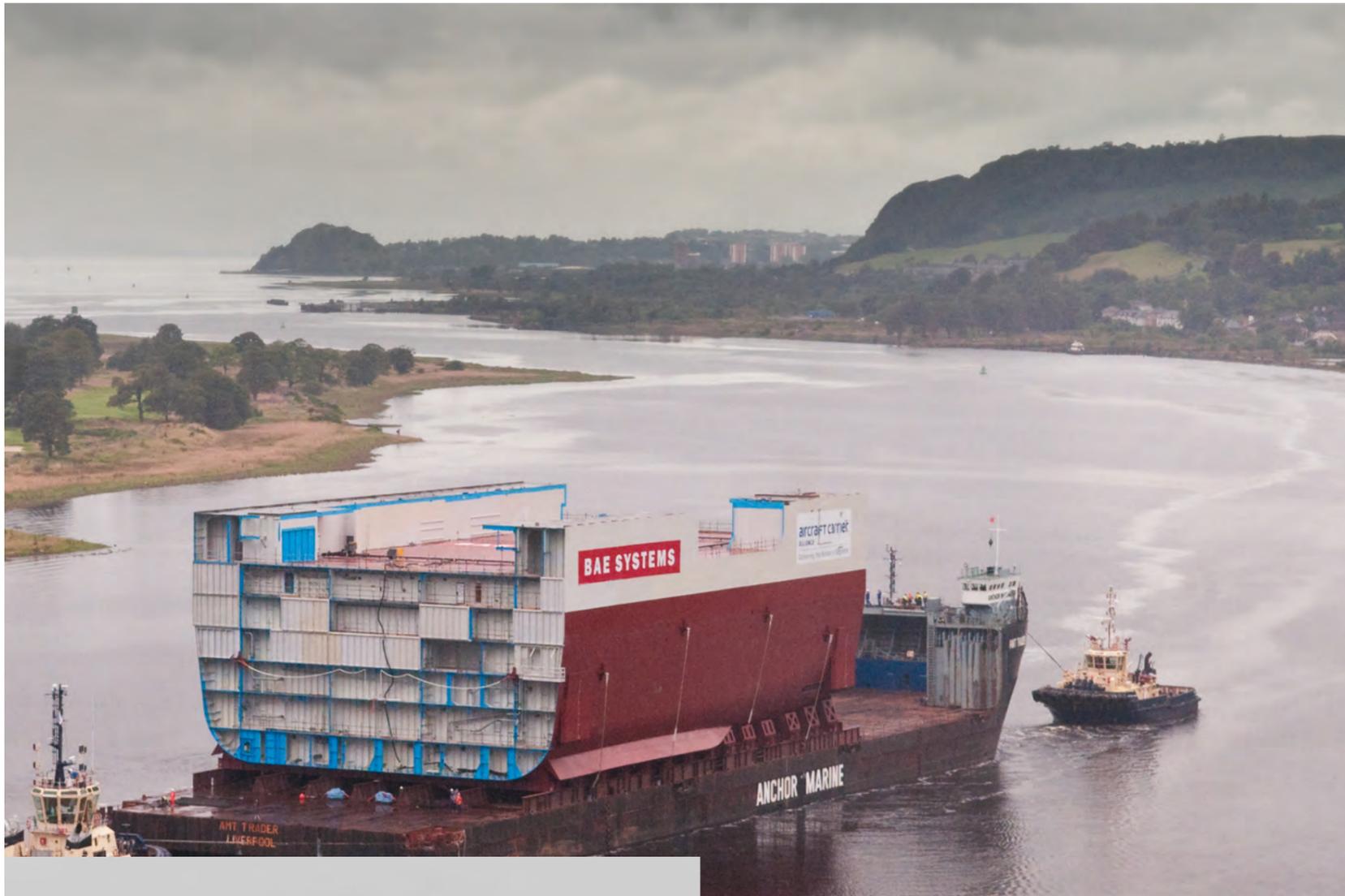
The Malin Abram team can assist clients at any stage of their operation, whether concept, construction, relocation, installation or through life use. Our team implicitly understands the risks, complications and wide range of solutions available to help with supporting and reorienting complex items of equipment.

# STRUCTURAL SUPPORTS AND LIFTING AIDS

**AT THEIR MOST BASIC, MECHANICAL HANDLING AIDS ARE SIMPLE STRUCTURAL SUPPORTS, JIGS, CRADLES AND LIFTING BEAMS.**

These range from simple steelwork used for laydown of equipment, to bespoke static build and transport jigs. These may also need to consider dynamic loads associated with any intermediate movements, whether by land or sea, as well as a range of other load orientations during operations such as lifting and turning.

Even the most basic orientation of lifting a piece of equipment, turning it and then setting it back down again can involve a range of tasks such as designing temporary lifting and jacking attachments, checks on the integrity of the cargo, designing and optimising internal and external temporary supports and specifying a mixed range of bespoke and existing steelwork and equipment.



# COMPLEX ARTICULATED MECHANICAL AIDS

**SIMPLE STRUCTURAL SUPPORTS AND LIFTING AIDS RELY ON EXTERNAL MOTIVE FORCE TO LIFT, MOVE AND TURN CLIENT'S EQUIPMENT. THIS CAN BE VIA INTERACTION WITH YARD TRAILERS, CRANES OR HIRING IN EXTERNAL EQUIPMENT WHERE REQUIRED. THIS MAKES SENSE WHERE THE EQUIPMENT SPENDS MOST OF ITS TIME SITTING STATIC AND IS ONLY EVER MOVED OCCASIONALLY.**

Where the equipment must undergo multiple movements, or there are many repeat operations, significant benefits can be realised by introducing more capability into the jigs and handling aids. These benefits range from reducing the amount of external equipment and man hours needed to execute an operation to reducing the risk and increasing the safety of operations by mechanising and removing the operator from harm's way. All equipment handling operations must be as low as reasonably practical (ALARP) and increase in frequency of use, drive their own set of risks and this is where more bespoke equipment can offer significant improvements.

The capability that can be added to handling equipment is infinite and this is where Malin Abram's team can bring their experience and skills to bear.

Whether you have a tightly predetermined view of what is necessary, or you require a top down review of the processes to see where specific improvements and equipment can assist, our team of experts are here to assist you, every step of the way.

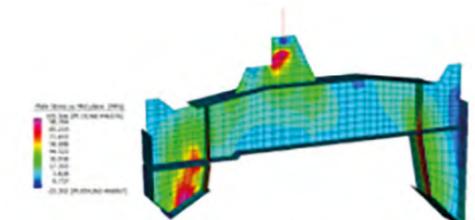


Figure 15 - Local yy Stress - Lifting Beam - 90 Deg

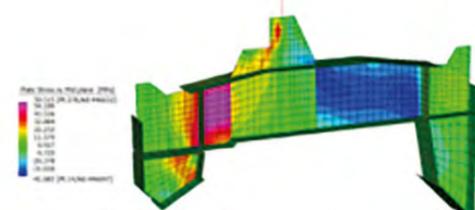


Figure 16 - Local xy Stress - Lifting Beam - 90 Deg

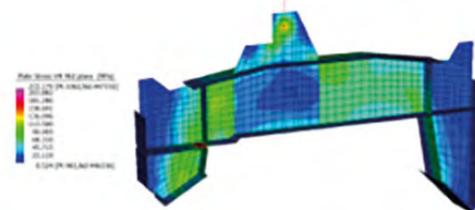


Figure 17 - Von Mises Stress - Lifting Beam - 90 Deg



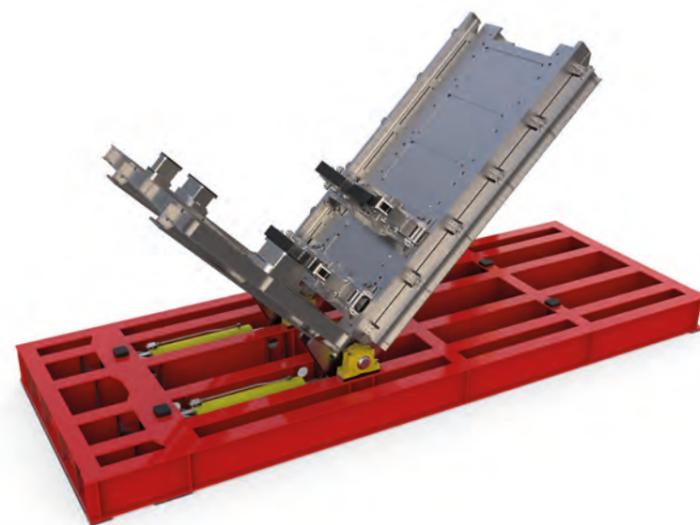
# SIMPLE FRAMES

**WE CAN DESIGN SIMPLE FRAMES THAT USE HYDRAULIC POWER TO ARTICULATE ABOUT ONE AXIS TO ROTATE EQUIPMENT FROM ONE ORIENTATION TO ANOTHER.**

This could be in the workshop during build or offshore A-frames to be fitted to the deck of a vessel. The sheer variety of aids based on a simple selection of core components such as structural steel, bearings, paired hydraulic rams or linear slides are huge.

As well as powered solutions, there are passive options such as rotary support tables that allow easy and safe manipulation of equipment for access and outfit.

Many clients have found significant production and safety benefits from a relatively simple addition to their in house capability via a small piece of bespoke equipment.



# ROTARY EQUIPMENT

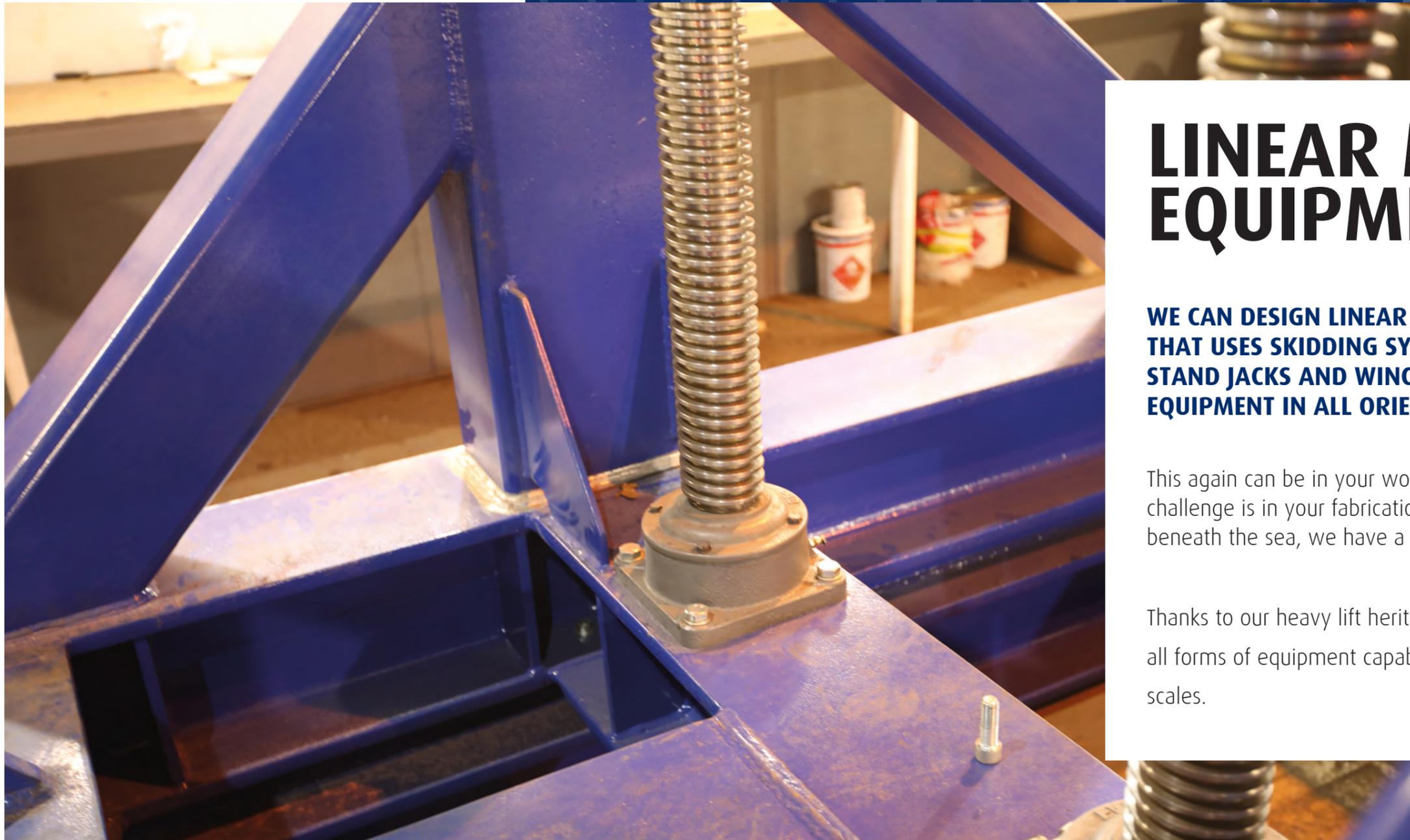
**WE CAN DESIGN ROTARY EQUIPMENT THAT CAN GRIP AND TENSION EQUIPMENT FROM SPOOLING TO WELDER MANIPULATION TOOLS.**

Whether rotational motion is used to grip, spin, power or lift equipment, we can help design an actuator to help.

Our team have experience in implementing a wide range of solutions that employ electrical and hydraulic power to generate a rotary motion used in all forms of manipulation and alignment.

We can incorporate live feedback and limit state sensors to give accurate real time control and position information.





# LINEAR MOTIVE EQUIPMENT

**WE CAN DESIGN LINEAR MOTIVE EQUIPMENT HANDLING THAT USES SKIDDING SYSTEMS, TRACKED POWER OR STAND JACKS AND WINCHES TO LIFT, PULL AND LOWER EQUIPMENT IN ALL ORIENTATIONS AND SITUATIONS.**

This again can be in your workshop, site or at sea. So whether your challenge is in your fabrication and assembly facility, on site, at or beneath the sea, we have a team experienced who can help.

Thanks to our heavy lift heritage, we are experienced in working with all forms of equipment capable of providing linear motion at all scales.





# MECHANICAL HANDLING TOOLS

**WE CAN DESIGN MECHANICAL HANDLING TOOLS THAT ARE USED TO GRIP UNDER APPLIED TENSION, OR ACTIVELY APPLY COMPRESSIVE FORCE AND FRICTION IN A CAREFULLY CONTROLLED AND DESIGNED MANNER.**

We understand that manipulating and moving your equipment is only half the story. Ensuring that the equipment is held in position in a manner that does not affect the structural integrity or surface finish is also equally important.

We have experience of incorporating all forms of securing, from friction to pinned joints with a capacity from tens of tonnes to several hundred. Our equipment is capable of providing linear motion on any scale.



# INCORPORATED SOLUTIONS

**WHEN CONSIDERING ALL THIS, A FULLY BESPOKE SOLUTION IS NOT ALWAYS REQUIRED AND THERE IS AN ALMOST BEWILDERING ARRAY OF MASS AND SMALL BATCH RUN PRODUCED EQUIPMENT.**

This means that very often, by combining our knowledge of the full range of readily available equipment, with our skills in designing a full range of bespoke solutions, we can bring the most cost effective and practically efficient solution to your equipment handling challenges. This may mean adopting a process and delivering a solution that uses both bespoke and hired in elements.

In this way maximum benefit with minimum outlay can be achieved.



# YOUR PARTNER

## WE PLACE YOUR NEEDS AT THE HEART OF ALL THAT WE DO.

We focus on the project requirements and are committed to finding the most suitable solution. This means we are not tied to using certain equipment or suppliers and can truly obtain the best working, and most cost-effective solution.

We are proud of this commitment and our mission to find the most innovative methods to solve even the most difficult problems, often with a relatively simple solution. We are here to act as your partner, to guide you through all of your options at each stage, outlining the opportunities along the way and working to minimise any potential risks.

We provide our clients with one point of contact who has an overall view of the project and who will select a dedicated team, tailored to your requirements.

We also provide, if required, project management services to enable us to manage the project for you, from start to finish.

Additionally, we hold ISO 9001, ISO 14001 and ISO 45001 accreditation with DNV GL and our fabrication facility is accredited with ISO 1090-1 Execution Class 4 and ISO 3834-2. Our IT systems are protected and accredited to Cyber Essentials Plus.



# QUALITY ASSURED

## QUALITY ASSURANCE IS PARAMOUNT TO ALL THAT WE DO

Our quality procedures for design and implementation of technical analysis is rigorous and we pay particular attention to model quality checks and standardised use of software throughout our Group.

Our Safety procedures onsite and while working on vessels have been formed and developed to cover the specific risks associated with our work and the expectations of our clients.

We are committed to safety and risk management at all stages of a project from concept through to detailed design and implementation to deliver a system fit for purpose. This is achieved through our phased approach to design and development together with a safety assessment processes (HAZOP) to ensure that potential hazards are captured early in the design development phase and that risk reduction measures are implemented to ensure that the remaining risks are considered to be as low as is reasonably practicable (ALARP).

We hold ISO 9001, ISO 14001 and ISO 45001 accreditation with DNV GL and our fabrication facility is accredited with ISO 1090-1 Execution Class 4 and ISO 3834-2. Our IT systems are protected and accredited to Cyber Essentials Plus.



DID YOU KNOW...



# MEET THE TEAM



**JAMES IAN BOWIE**  
**ENGINEERING DIRECTOR**

James began his career as a summer intern with Malin Abram, before gaining a degree in Naval Architecture and joining full time as a graduate. Having worked through the graduate programme and serving numerous years as a Team Leader, James now holds the position of Engineering Director. James has experience in a variety of projects from marine heavy lift transportation, to design and manufacture of bespoke jigs and has been involved in major site operations worldwide.



**JONATHAN HILL**  
**DESIGN ENGINEER**

Jonathan Graduated from Newcastle University in 2004 with an MEng in Mechanical engineering and has gained experience across multiple sectors, with a significant portion of his career working for a major supplier to the Oil and Gas sector. Jonathan has an array of technical skills and abilities specifically in areas of new product development and innovation, appearing as a named inventor on multiple patents. Jonathan also has a BA in Leadership and Management and has led the successful commercialisation of a number of innovations.



**ALEX MCKENNA**  
**SENIOR STRUCTURAL ENGINEER**

With a comprehensive knowledge of design to British Standards and Eurocodes, Alex has worked on a broad range of commercial and residential projects, and has experience in both finite element analysis (FEA) of steel plated structures and 3D frame analysis software. He has a keen focus on the buildability of structures and takes a holistic approach to design to ensure that every aspect meets the client's requirements.

**ALASDAIR MACDONALD**  
**SENIOR STRUCTURAL ENGINEER**

Alasdair cut his teeth delivering complex offshore structural engineering worksopes, such as caisson removal/installations and modular structures, gaining experience in framework design, lift/ transportation analysis and hydrodynamic loading. In recent years he has gained experience in the wider marine industry designing plated structures and use of finite element analysis software, undertaking design to a wide range of design codes including AISC 360-10 and Eurocodes and classification societies such as Lloyds Register and DNV.



**SANDY HAMILTON**  
**PRODUCTION MANAGER**

With over 40 years of experience spanning machining, oil and gas, construction, off highway and marine engineering, Sandy has previously held a number of managerial and director level roles, before joining the Malin Group as Production Manager. With a solid health and safety background (IOSH), combined with an HNC in management, Sandy brings a diverse skill set to the role.

