

Supporting vessel for Marine UXO project



ROV



Land mine washed up on beach



Recovered sea mine from the Baltic

The Professional Approach

It is paramount to Dynasafe that all personnel are qualified and experienced; appropriate tried and proven equipment is always available for site specific projects to insure the safety and efficiency of a project.

Dynasafe Marine Services has a very clear understanding of the uniqueness of UXO hazards which could affect proposed marine developments; providing consultation, risk assessment, survey, solutions and operations experience, to meet the demanding situations associated with marine and underwater explosive ordnance.

Keeping up to date with emerging technologies, having competent professionals available and working closely with all stakeholders of a project ensures the efficiency, of often complex and dangerous projects.

Dynasafe Marine Services has extensive worldwide experience, working on many varied projects, including off shore wind farms in the UK, mine clearance in the Baltic and harbour clearance in Iraq.



DYNASAFE AREA CLEARANCE Marine Services

About Dynasafe

Dynasafe protects mankind from threats caused by explosives and hazardous materials. The company is the global market leader in the removal, management and disposal of Chemical, Biological, Radiological, Nuclear, explosive (CBRNe) materials both on and off shore.

Through its three business units, Area Clearance, Protection Systems and Demil Systems, Dynasafe is the only global company capable of addressing the entire ordnance disposal value chain.

Dynasafe has its headquarters in Stockholm, Sweden, and a strategic network of subsidiaries and sales partners for global reach. The company has around 400 permanent staff and, at any one time, a large number of additional contracted staff mainly involved in area clearance projects. Dynasafe operates in more than 70 countries with customers in both the public and private sectors.

Dynasafe's innovative products and extensive knowledge has made it possible to deliver:

- More than 1,000 unexploded ordnance clearance and demining projects worldwide, both on and off shore
- Over 250 containment chambers and integrated protection systems
- More than 25 chemical and conventional demilitarisation plants globally



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Make the world a safer place

Make the world a safer place



Wind turbines at sea



Marine services surveying wing



A 500lb bomb corroded by the sea



EOD diver

The Marine Environment

Many areas of the world's marine environment have been contaminated by Unexploded Ordnance (UXO) as a result of years of conflict, military use and sea dumping; leaving behind a legacy of UXO, including Land Service Ammunition (LSA), bombs and sea mines.

Dynasafe Marine Services is able to provide a comprehensive range of marine Explosive Ordnance Disposal (EOD) and UXO risk mitigation services; from risk assessment through to full clearance when required, for both conventional and chemical munitions.

The service is able to provide experienced personnel and specialist equipment for in-shore and off-shore marine operations worldwide.

Utilising in house expertise Dynasafe Marine Services deploys the latest techniques and technologies for survey, area clearance and disposal. Developing and implementing UXO risk mitigation strategies either to provide complete clearance or to reduce the risk in accordance with the ALARP (As Low As Reasonably Practicable) principle, dependent upon the level of UXO risk, the operating environment and the requirements of the project.

For situations where proactive survey or clearance is not possible, Dynasafe Marine Services is able to supply on-board, on-shore or on-call marine EOD experts to deal with encountered threats; supported with pre-prepared response plans designed to minimise delays to operations without compromising safety.

Underwater clearance services have been specifically developed for sea ports, docks and harbour developments, off-shore and near shore structures and bridge abutments.

Dynasafe Marine Services has worked on a wide variety of marine projects worldwide including:

- The construction of off shore wind farms
- The laying of sub sea cables
- Pipe laying projects, oil / gas/mineral exploration
- Capital dredging projects

Dynasafe Marine Services capabilities:

- Desk Top Studies / Risk Mitigation Strategies
- Consultancy
- Non-Intrusive and Intrusive Surveys
- Clearance, Disposal, Certification
- UXO Support to Dredging Operations
- Emergency Response
- Client Representative Services

Marine Surveys

Risk Assessment

Dynasafe Marine Services undertake a risk assessment prior to any task to establish the nature and quantity of any potential explosive ordnance hazard that may be present in the survey area. A risk assessment provides the opportunity to identify and implement the appropriate risk mitigation measures based on scientific and objective principals.

Technology and Application

For marine underwater surveys Dynasafe employs state of the art technologies, utilises specialist vessels and continually invests in current hardware and software including:

- Bespoke low magnetic signature survey platforms
- Deep-water multi-sensor non-intrusive survey frame (up to 100 meters water depth)
- Non-intrusive Magnetometry
- Pulse Induction Instrumentation
- Side Scan Sonar
- Sub-bottom Profiling
- Intrusive Magnetometry
- Bathymetry
- Geo referencing system (DGPS)

Positioning

Navigation is critical in the survey and in the repositioning of the targets on the sea or river bed; to provide the highest accuracy of positioning possible Dynasafe use the most appropriate systems available, specific to the project.

These include:

- Differential Global Positioning Systems (DGPS)
- Fixed land station laser sighting systems
- Acoustic underwater positioning systems

Survey Analysis

Dynasafe's in house geophysicists examine and interpret the data from the survey to identify targets that should be investigated or avoided.

Clearance and Disposal

Dependent upon the environment and depth of targets Dynasafe will deploy either EOD clearance divers or geometric backhoe dredgers to relocate, investigate and clear individual targets or relocate to designated areas.

Target Investigation

All diving operations undertaken are carried out in accordance with the relevant International Health and Safety regulations in the country of operation, always employing qualified, highly trained and equipped divers.

Target investigation methodologies include one or a combination of the following elements:

- Visual search
- Hand-held instrument detection
- Diver supported water jetting
- Underwater photo and video
- Mechanical assistance

UXO Dredging Support

When it is not possible to carry out proactive marine explosive ordnance surveys ahead of a dredging operation Dynasafe is able to provide experienced marine EOD engineers, who will be on board, on-shore or on-call to deal with any issues with explosive ordnance, bombs or other types of munitions.

EOD and UXO services for dredging operations include:

- EOD Threat Assessment
- EOD Safety and Awareness Briefings
- On-Board and Onshore Dredging Support
- On-Call and Rapid Response Support
- Stand-by EOD Divers and Equipment
- Ordnance Hazard Recognition
- Clearance and Disposal

Safe Storage of Recovered Ordnance

Prior to a dredging operation taking place suitable storage areas are prepared on board the dredger, for the securing and the segregating of different types of ordnance and scrap; similar facilities are prepared on shore if required. Dynasafe's Standard Operating Procedures determine the quantity of UXO, based on Net Explosive Quantity (NEQ), that may be safely held on-board, before it is necessary to offload for final disposal.

Emergency Response Capability

In the event an item of UXO or a suspicious object being discovered Dynasafe Marine Services will provide an Emergency Response Capability, by deploying UXO engineers to deal with the situation.