The Renewables Story
Proserv is the fresh alternative in global energy services.

We are a technology-driven company providing value-driven products, services and bespoke solutions to the renewables sector.

Combining technical ingenuity with design, engineering, manufacturing and field services expertise, we support clients throughout the life cycle of their assets with a focus on maximising operational performance and efficiency.
Who are Proserv

‘Ingenious Simplicity’ is not just our company tag-line; it is an ethos embedded into everything we do.

From our clients’ viewpoint, it is about being more **efficient, flexible and responsive**, reducing unnecessary levels of complexity to get the job done.
Global Operations, Local Delivery

1300 Employees 6 Regions 22 Sites 12 Countries
Our Values

A FRESH Perspective

Proserv has a distinctive delivery-focused culture. At the heart of everything that we do, the five Proserv values guide our decisions and behaviours. Internally, we refer to our values as FRESH.
Our Evolution

We have strengthened our engineering, technology and services over the years through the strategic acquisition of companies with complementary strengths and values.
Award Winning

2017

Workforce Engagement Awards
Oil & Gas UK Awards 2017

Innovator & Technology Award
Subsea UK Awards 2017

2015

Subsea Company of the Year
Subsea UK Awards 2015

Great Large Company of the Year
Offshore Achievement Awards 2015

2014

Apprentice of the Year
Oil & Gas UK Awards 2014

Business of the Year
Spirit of Enterprise Awards 2014, Great Yarmouth

Great Engineering & Manufacturing Company
Spirit of Enterprise Awards 2014, Great Yarmouth

2013

Technology of the Year
Middle East Oil & Gas Awards 2013

Entrepreneur of the Year
Ernst & Young Awards 2013
Technology Challenges

- Turbine blade erosion inspection, repair and maintenance
- Control system replacement, retrofit and diagnostics
- Survey monitoring of cable routes and foundations
- Marine growth removal, foundation cleaning and monitoring
- Monitoring, prevention and repair of scour
- Export cable failure reduction and repair
- Corrosion monitoring and protection
With a decade of experience within offshore renewables, Proserv delivers low cost, high value solutions to our clients in this sector.
Areas of Expertise

Conceptual and Planning

Construction, Installation and Commissioning

Inspection, Operations, and Maintenance

Late Life and Decommissioning
Our Services

Conceptual and Planning

- Survey services
- Data management
- Standard and bespoke design solutions

Construction, Installation and Commissioning

- Certified offshore technicians
- Structural installation positioning
- Marine growth removal
- WROV/ROV tooling
- Precision machining and manufacturing
- Cathodic protection and retrofit systems
- Pile refusal

Our Expertise

1000 + Monopiles removed of marine growth

90 + Corrosion prevention projects completed
**Inspection, Operations and Maintenance**

- Certified offshore technicians
- Balance of plant
- General offshore maintenance
- Asset integrity monitoring systems
- Condition monitoring
- Remediation services
- Water jetting / abrasive water jetting
- Precision machining and manufacturing

**Late Life and Decommissioning**

- Pre/post decommissioning survey and data management
- Dredging / soil plug removal
- Scour removal
- Turbine foundation removal
- Monopile removal
- Met mast removal
- Control and monitoring retrofit systems

100+
Offshore survey and positioning projects carried out
Our Capabilities

**Project Management**
Valuable knowledge, expertise and experience gained from partnerships with industry leading clients.

**On-Site Project Execution**
Experienced and reliable offshore and onshore personnel committed to the safe and timely execution of projects.

**Design Engineering**
Dedicated engineering department for the design and manufacture of reliable and bespoke tooling.

**Offshore Management**
Robust QHSE and change control planning and procedures delivered by our experienced teams.

**Project Engineering**
Precise planning for the development and execution of projects.
Centres of Excellence

Test and Assembly
Location: Great Yarmouth, Aberdeen (UK)

Acoustic Positioning and Communications
Location: Great Yarmouth, Aberdeen (UK)

Inspection, Repair and Maintenance
Location: Great Yarmouth, Aberdeen (UK)

Controls Manufacturing, Engineering and Offshore Wind Services
Location: Great Yarmouth (UK)

5 + Test and assembly facilities

6 + Cranes ranging between 25-75ft

60,000 ft Workshop, clean rooms, test cells space
Committed Locally

- Firmly committed to growth and investment in the region
- Established presence for over 35 years
- Over 180 employees
- Strong commitment to CSR in the local area
- Local apprenticeship programme
- Investors in Young People (iiYP) accreditation based on our close links with local schools and colleges to support the next generation of talent
- Recognised for our **local capabilities and achievements**
  - Innovator & Technology Award 2017 for Proserv’s A2G technology (*Subsea UK Awards*)
  - Great Manufacturing & Engineering Company 2014 (*Spirit of Enterprise Awards*)

The development of our new purpose-built facility in Great Yarmouth is underway
Monopile and Pin Pile Cleaning Solutions

Marine Growth Removal

- Internal and external cleaning equipment
- Off the shelf solutions up to eight metres outer diametre (OD) straight and tapered piles - Proserv’s MGR tool delivers an SA 2.0 surface finish
- A complete 360° surface clean on a ten metre section will take on average 60 minutes based on a five metre OD
- Suits a variety of pile diameters and can be used in a full range of water depths
- Environmentally friendly diverless technology operated remotely from the surface
- Easy and quick to deploy with minimal personnel intervention required
- Variable operating pressures up to 2500 bar (36,000 psi) with flow rates up to 200 litres per minute (55 gpm)
- Uses fresh or sea water, dependent on vessel set up

Previous projects include:

Thanet, Walney 1, Borkum West, Greater Gabbard, Sheringham Shoal, London Array, Meerwind, Veja Mate, Wikinger
Remedial Solutions

Structural Integrity

The Scenario

- Long term remedial solution required for the grouted connection between the monopole and transition piece
- Lack of axial capacity of the grouted connection and observed slippage

Advantages

- Time/cost savings
- Traditional methods used to manually weld support plates
- Tried and tested method using friction welding and bolted connection techniques
- Continual development of the friction welding technology to overcome challenges
Cathodic Protection Solutions

Anode Attachment

- Friction stud welding subsea to monopiles offshore with an ROV for connection of anode mattresses, cages and sleds
- Over 360 M16 welds made using subsea stud changer on HMS 3000
- These studs then allowed for cables from the anode mattresses placed on the seabed to be directly connected to the monopile, therefore providing the required cathodic protection
- Proserv technology allows for the welding tool control panel to be integrated with the ROV and the hydraulic feed to be taken directly from the ROV’s HPU
Asset Integrity and Monitoring Solutions

Proserv offers award winning and industry leading control and monitoring packages to suit your operational needs. Utilising wireless acoustics and/or multiplexed control technology, Proserv’s systems have the ability to process data, ensuring the wellbeing of an asset.

Specific instrumentation can be integrated into Proserv’s monitoring and communication packages. The data is then passed to a central point for analysis to enable planning for ongoing maintenance.

Monitoring points include:

- Cathodic protection
- Corrosion
- Erosion
- Structural
- Vibration
- Subsidence
- Visual/camera
- Scour
- Grout
- Collision avoidance transponder for vessels
- Temperature
- Pressure
Service Technicians and Engineering Support

Proserv offers a wide range of certified offshore personnel to cater for all aspects of your projects, from construction through to decommissioning.

Proserv’s technicians are all Global Wind Organisation (GWO) certified, with the knowledge and expertise to undertake onshore and offshore scopes of work. Technicians can be provided as individuals for long term project solutions or as bespoke teams for specialist work.

Services include:

- Project management
- Engineering support
- Construction
- Testing
- Installation and commissioning
- Inspection
- Operations and maintenance
- Balance of plant
- Troubleshooting
- Late life
- Decommissioning
Machining and Turn Key Precision Manufacturing

Proserv’s Coatbridge facility is our Global Centre of Excellence for the design, engineering, manufacturing, repair and refurbishment of critical components and assemblies. We specialise in asset new build and life cycle solutions for clients in the renewables sector.

Our fully integrated service offering means we can provide clients with a ‘one stop shop’ solution for their complete precision engineering and manufacturing needs, resulting in greater operational and cost efficiencies.

Proserv has a well established track record dating back almost 40 years and we continue to invest in our fleet of equipment to ensure the highest standards of quality and service.

Services include:

- Precision engineering and manufacturing
- Special purpose machining
- Non destructive testing (NDT)
- Welding, cladding and heat treatment
- Coordinate measuring machine (CMM) and quality management
- Surface treatments
- Assemblies and testing
- Refurbishment and upgrade
The Proserv Value

**Capability and Expertise**
- Dedicated renewables division but can draw upon our group strength and capabilities to deliver larger and more complex projects
- Large pool of equipment spreads and technicians

**Competency and Efficiency**
- Award winning technology that focuses on operational efficiency and reducing complexity and cost to get the job done - it’s what we are all about

**Trust and Reliability**
- Proserv has been involved in some of the most high profile projects in the energy sector for life of field services and support

**Low Cost Engineering**
- Using existing, proven tooling, Proserv can easily modify any of its technology solutions to meet any renewable energy challenge

**Track Record**
- Some of our tooling and methodology has been used to deliver client projects for over 50 years
- Standard approach across multiple client projects

**Early Engagement**
- Early involvement in detailed design prior to a stage where change is difficult
- Understanding the methodology and opportunities for efficiency savings results in design and equipment integration and efficiency savings
Proserv has been involved in many of the high profile offshore wind projects globally. Below is a selection of projects since 2009.

### Planning

<table>
<thead>
<tr>
<th>Client</th>
<th>Work Scope</th>
<th>Year</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carnegie Wave Energy</td>
<td>Design and fabrication of tidal turbine interconnection</td>
<td>2017</td>
<td>CETO 6 Project, Australia</td>
</tr>
<tr>
<td>Carnegie Wave Energy</td>
<td>Design, manufacture and test of vertical connection system for one MW tidal turbine</td>
<td>2010</td>
<td>Aegir, UK Sector</td>
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</tbody>
</table>

### Maintenance

<table>
<thead>
<tr>
<th>Client</th>
<th>Work Scope</th>
<th>Year</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statoil/Global Maritime</td>
<td>Retrofit cathodic protection to 86 windfarm monopoles, with over 360 underwater M16 welds</td>
<td>2014</td>
<td>Sheringham Shoal Windfarm, UK Sector</td>
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</tbody>
</table>

### Decommissioning

<table>
<thead>
<tr>
<th>Client</th>
<th>Work Scope</th>
<th>Year</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPI Offshore</td>
<td>Tapered met mast removal and pre/post survey services</td>
<td>2016</td>
<td>Ijmuiden Ver Windfarm, Dutch Sector</td>
</tr>
<tr>
<td>E.ON Energy</td>
<td>Met mast removal</td>
<td>2015</td>
<td>Robin Rigg Windfarm, Irish Sector</td>
</tr>
<tr>
<td>E.ON Energy</td>
<td>Met mast removal</td>
<td>2015</td>
<td>Amrumbank West Windfarm, German Sector</td>
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</table>
## Installation

<table>
<thead>
<tr>
<th>Client</th>
<th>Work Scope</th>
<th>Year</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geosea</td>
<td>66 off 6 m straight piles</td>
<td>2018</td>
<td>Merkur, German Sector</td>
</tr>
<tr>
<td>Jumbo Maritime</td>
<td>60 off 6.5 m straight piles</td>
<td>2017</td>
<td>Arkona Becken Sud Ost, German Sector</td>
</tr>
<tr>
<td>Seajacks</td>
<td>Straight monopile marine growth removal (88)</td>
<td>2016</td>
<td>Veja Mate Windfarm, German Sector</td>
</tr>
<tr>
<td>Seaway Heavy Lifting</td>
<td>Straight internal monopile marine growth cleaning</td>
<td>2016</td>
<td>Wikinger Offshore Windfarm, German Sector</td>
</tr>
<tr>
<td>Hochtief</td>
<td>Straight monopile marine growth removal (38)</td>
<td>2014</td>
<td>Baltic 2 Windfarm, German Sector</td>
</tr>
<tr>
<td>Ballast Nedan</td>
<td>Straight monopile marine growth removal (80)</td>
<td>2014</td>
<td>Butendiek Offshore Windfarm, German Sector</td>
</tr>
<tr>
<td>RWE</td>
<td>Straight monopile marine growth removal (52)</td>
<td>2013</td>
<td>Gwynt-y-Mor Offshore Windfarm, Irish Sector</td>
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<tr>
<td>Seaway Heavy Lifting</td>
<td>Straight Subsea Pinpile Marine Growth Removal (54)</td>
<td>2013</td>
<td>Borkum West, Phase 3, German Sector</td>
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<tr>
<td>Seaway Heavy Lifting</td>
<td>Straight subsea pinpile marine growth removal (66)</td>
<td>2013</td>
<td>Borkum West, Phase 2, German Sector</td>
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<tr>
<td>Seajacks</td>
<td>Straight monopile marine growth removal (80)</td>
<td>2012</td>
<td>Meerwind Offshore Windfarm, German Sector</td>
</tr>
<tr>
<td>Van Oord</td>
<td>Tapered monopile marine growth removal (27)</td>
<td>2012</td>
<td>Teesside Offshore Windfarm, UK Sector</td>
</tr>
<tr>
<td>Aarsleff Bilfinger</td>
<td>Tapered monopile marine growth removal (24)</td>
<td>2012</td>
<td>London Array Project, Thames Estuary, UK Sector</td>
</tr>
<tr>
<td>Seaway Heavy Lifting</td>
<td>Straight monopile marine growth removal (13)</td>
<td>2011</td>
<td>Sheringham Shoal Windfarm, UK Sector</td>
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<tr>
<td>Dong Energy</td>
<td>Straight monopile marine growth removal (55)</td>
<td>2010</td>
<td>Walney 1 Windfarm, Irish Sector</td>
</tr>
<tr>
<td>Fluor</td>
<td>Straight monopile marine growth removal (140)</td>
<td>2010</td>
<td>Greater Gabbard Windfarm, UK Sector</td>
</tr>
<tr>
<td>MPI Offshore</td>
<td>Engineering solutions for straight monopile marine growth removal (120)</td>
<td>2009</td>
<td>Thanet Windfarm, UK Sector</td>
</tr>
</tbody>
</table>
Anode Attachment - Friction Welding

Client: Statoil
Location: North Sea, UK Sector
Equipment: Friction Welding

Project Background
The client required a solution for attaching retrofit cathodic protection to 88 wind farm monopiles using remote intervention. Four connection points per monopile were required to allow the installation of anode mattresses, which were to be positioned on the seabed around each pile.

Solution
Proserv provided their HMS 3000 friction welding technology and worked together with a third party tooling supplier to provide a solution that enabled the welding of M16 carbon steel studs directly to the monopiles. These studs then allowed for cables from the anode mattresses placed on the seabed to be directly connected to the monopile, therefore providing the required cathodic protection. The Proserv technology allowed for the welding tool control panel to be integrated with the ROV and the hydraulic feed taken directly from the ROV’s HPU.

Scope
Proserv carried out an initial weld qualification process, which was approved by DNV, laying the foundations for the offshore scope to be undertaken at a later date. During offshore operations Proserv provided a complete HMS 3000 friction welding system consisting of a subsea weld head, subsea control system, which was integrated into the project ROV, subsea stud changer and qualified personnel. Full contingency of equipment was provided and all welds were completed to the client’s full satisfaction. Real time data was recorded and issued to the client to show the operation was carried out as per the approved procedure by DNV.
Conclusion
The provision of the HMS 3000 system and stud changer allowed for the project to be completed without the need for diver intervention. The DNV qualified weld procedure gave the client confidence that welding operations would provide the requisite cathodic protection without compromising the structural integrity of the monopiles during the welding operation. The provision of the cathodic protection has extended the working life of each monopile.

Benefits
• No need for diver intervention
• Cost savings through preventative maintenance
• High quality, high integrity approved cathodic protection solution
Mono Pile Cleaning Solution

Client: MPI Offshore  
Location: Thanet Windfarm, UK  
Equipment: Marine Growth Removal (MGR) Tool

Project Background  
Proserv was approached by MPI to develop a solution that would speed up the pile cleaning process during wind turbine installation and avoid possible ongoing maintenance. Pile cleaning using a diving team is time consuming and costly so it was necessary to develop a solution that was fast, effective and reliable, with ease of deployment and recovery. Furthermore, it was requested that the solution require minimal human intervention and could also be adjustable for a range of different pile diameters.

Solution  
Proserv designed, developed, manufactured and tested an MGR tool. This specialised solution was deployed from a support vessel and located directly upon the open pile.

Scope  
The functions of the tool, including the circular track speed, jet rotation and jet pressure, were all fully adjustable and controlled by the operator on board the deployment vessel. The hydraulic power, high pressure water and electrical power to the observation camera system were supplied via an umbilical. All support equipment including the high pressure, high volume jetting pump was located on the support vessel.

Conclusion  
Using the MGR tool, piles of 4.7 metres in diameter were completely prepared to a depth of eight metres in less than two hours. Considering it would take a diving team over 30 hours to achieve the same result, this was a significant time saving for the customer. The MGR tool has been supplied to
major industry leading contractors within the European offshore renewable energy sector, producing excellent results every time.

Benefits
• A complete 360° surface clean in 90 minutes
• Prevents costly maintenance work after installation
• Suits a variety of pile diameters and can be used in a full range of water depths
• Environmentally friendly diverless technology operated remotely from the surface
• Easy and quick to deploy with minimal human intervention required
• Variable operating pressures up to 2500 bar (36,000 psi) with flow rates up to 200 L/min (55 gpm)
Internal Jacket Pile Cleaning

Client: Leading Vessel Contractor
Location: Baltic Sea, German Sector
Equipment: Bespoke Internal Marine Growth Removal (MGR) Tool

Project Background
Proserv was contracted by a leading vessel contractor to conduct marine growth removal services for the autonomous internal cleaning of six jacket piles prior to the jacket installation phase at an offshore wind substation located in the German sector of the Baltic Sea.

Solution
This was the first internal marine growth removal (MRG) project to be undertaken by Proserv and the first phase of the work scope included the design, manufacture and test of a bespoke internal MGR tool. The solution also had to feature specific capabilities ranging from the inner surface cleaning of 3557.6 millimetres Id jacket piles, surface finishes to SA 2.0 within pile depths of 35 to 40 msw and from the top of pile internal cleaning depths ranging between seven to 7.5 metres.

Scope
Proserv based the design and functionality on existing tooling that had external cleaning capability and modified the design to allow for internal cleaning. A new cleaning frame was fabricated with central guide cone and modified stabbing legs that engage with the pile outer diameters. A successful FAT was carried out at the Proserv Birchmoss facility prior to mobilisation. During offshore execution all six piles were cleaned within 25 hours from first deployment to final recovery, resulting in a total active cleaning time of six hours 50 minutes to complete the project.
Conclusion
By choosing Proserv the client received a bundled service including project management, engineering, design, fabrication, testing, skilled technicians and offshore execution, reducing the requirement for multiple contractors saving the client cost and time. The new tooling was also successfully brought to market based on existing technology expertise and the autonomous solution omitted the need for divers or ROV intervention, reducing personnel on board.
**Amrumbank West Wind Farm Decommissioning**

**Met Mast Removal - Water Abrasive Cutting**

**Client:** A Leading UK Power & Gas Group  
**Location:** North Sea, German Sector  
**Equipment:** Airlift tool, 15k JetCut System, Internal Pipe Cutter (IPC)

**Project Background**  
The client required a solution for the removal of a met mast within the Amrumbank West wind farm field located in the North Sea, German Sector. In order to complete the work scope Proserv designed bespoke tooling solutions to overcome the engineering challenges offshore within a tight timeframe.

**Solution**  
Proserv provided a decommissioning solution by using and implementing design modifications to a suite of existing tooling. These included extending water depth capabilities from ten to 13 metres to a 50 metre depth and amending a cutting tool so it could detect and cut around a steel channel obstacle within the pile. An aluminium external guide band was also designed in-house to fit one of the largest diameter monopiles to date in Proserv’s history (4.3 metres). A series of trials were carried out in one of Proserv’s test tanks within the time frame prior to mobilisation.

**Scope**  
The met mast decommissioning operations were carried out in two stages and included soil plug and cutting operations. The first stage consisted of internal airlifting within the met mast using Proserv’s augmented soil plug tool (the Airlift tool) and a high flow / high lift submersible pump, ensuring the internals of the met mast remained flooded. The cutting operations in the second stage used a modified internal pipe cutter (IPC09) to perform a subsea internal severance cut, completing the scope of work.
Benefits
The required design modifications were executed within the short time frame and the offshore work scope completed on schedule. The client received a fit-for-purpose solution necessary for the decommissioning works using a safe cutting system with no ROV or diver intervention required.
Met Mast Removal - Water Abrasive Cutting

Client: A Leading UK Power & Gas Group  
Location: Solway Firth, Irish Sea, UK Sector  
Equipment: Airlift tool, 15k JetCut System, External Guideband & Hole Cutter

Project Background
The client required a solution for the removal of two met mast monopiles within the Robin Rigg wind farm field located in the Irish Sea. In order to complete the project Proserv designed a bespoke tool to overcome an engineering challenges offshore within a tight time frame.

Solution
Proserv provided a decommissioning solution by carrying out all dredging and cutting operations for the client, which included the construction of a purpose built external guide band capable of cutting up to 4.3 metres. Trials were carried out at Proserv’s Birchmoss facility, which consisted of full guide band carriage installation and 360° hydraulic rotational tests on the guide band prior to mobilisation.

Scope
The work scope included internal monopile dredging operations, followed by external cutting operations using hole cutters alongside Proserv’s 10k psi abrasive slurry to enable rigging/lifting equipment to be attached. The purpose built guide band and cutting carriage was attached to the monopole subsea using a single diver operation and connected to Proserv’s 15k JetCut water abrasive equipment topside by means of a lightweight umbilical. The cutting operations were carried out in two separate stages. The first consisted of the hole cuts, which allowed for shackles to be installed, followed by external subsea cutting operations on the monopile that completed the work scope.
Benefits
The quick turnaround and bespoke tool was executed within the short time frame and the offshore work scope completed on schedule. The client received a fit-for-purpose solution with experienced personnel on site, necessary to complete the decommissioning works. This is believed to be the first known monopile successfully decommissioned within the offshore renewables sector.
Ijmuiden Ver Wind Farm
Decommissioning

Met Mast Removal

**Client:** Leading Vessel Contractor - Jack Up Vessel  
**Location:** Southern North Sea, Dutch Sector  
**Equipment:** Airlift tool, Hydraulic Grab, 15k JetCut System, Abrasive Hole Cutters, External Guideband, Circumferential Chain Manipulator (CCM) & Internal Pipe Cutter (IPC)

**Project Background**
Through a strong existing relationship Proserv was contracted by the client to provide met mast removal services as part of a wind farm decommissioning workscope. The client required a solution for the removal of a met mast structure within the Ijmuiden Ver wind farm located in the Southern North Sea, Dutch Sector. In order to complete the work scope Proserv designed bespoke tooling solutions to overcome the engineering challenges offshore.

**Solution**
Proserv provided site survey services and engineered and manufactured bespoke cutting tooling to complete the decommissioning operations. Prior to the cutting scope and due to the size of the monopile, Proserv constructed a purpose built external circumference guide band capable of cutting up to a 10.4 metre circumference. Working closely with the client to implement modifications meant the bespoke guide band had the necessary diver friendly interfaces. Trials were carried out at Proserv’s Birchmoss facility prior to mobilisation offshore.
Benefits

• Bundled service allowed the client to source fewer contractors to complete the decommissioning scope
• Cross utilisation of personnel and equipment allowed for reduced personnel on board and overall cost and time savings
• Early engagement and collaboration with the end client and sub-contractors allowed for a better understanding of project challenges and parameters, allowing for safe and efficient operational execution on time and on budget
Survey Services

**Client:** Leading Vessel Contractor - Jack Up Vessel  
**Location:** Southern North Sea, Dutch Sector  
**Equipment:** Vessel Mounted Multi-beam Echo Sounder (MBES) Towed Side Scan Sonar (SSS) & Magnetometer

**Project Background**  
Working with an existing Proserv decommissioning project, the client approached Proserv to provide a site survey around an existing meteorology mast in advance of it being cut and recovered. A 200 metre area around the mast was to be surveyed to acquire seabed bathymetry and identify seabed targets and obstructions and an as-left survey upon completion of the decommissioning work.

**Solution**  
Proserv was selected to provide survey services and made use of a small vessel, vessel winch and A-frame to deploy a side scan sonar and magnetometer. Seabed mapping was performed using hull mounted MBES. The survey was performed with five metre line spacing, a survey speed of four knots and monitoring of online data acquisition, ensuring full data coverage.

**Conclusion**  
The survey was completed on schedule. The team successfully completed a vessel mobilisation, transit and demobilisation within three days. The final deliverables were generated onshore at Proserv’s Howe Moss facility, providing final reports, bathymetric chart with annotated targets, bathymetry XYZ listing and magnetometer and SSS target listings.
Benefits

• Flexibility and responsiveness
• Survey was completed on schedule
• Single sub-contract for multiple Proserv services