

SUBSEA PIPELINE SOLUTION

ABANMARINE CO.

A wide range of integrated services in Offshore Pipeline
Inspection, Maintenance, and Repair





ABAN MARINE CO.
Engineering & Marine Solution

A Comprehensive Offshore Pipeline IMR Solution

ABAN Marine Co provides a wide range of integrated services in Offshore Pipeline Inspection, Maintenance, and Repair (IMR) designed to meet the complex and ever-evolving needs of the offshore oil and gas industry. Our expert team, advanced technology, and unwavering commitment to quality allow us to offer reliable, safe, and cost-effective solutions.

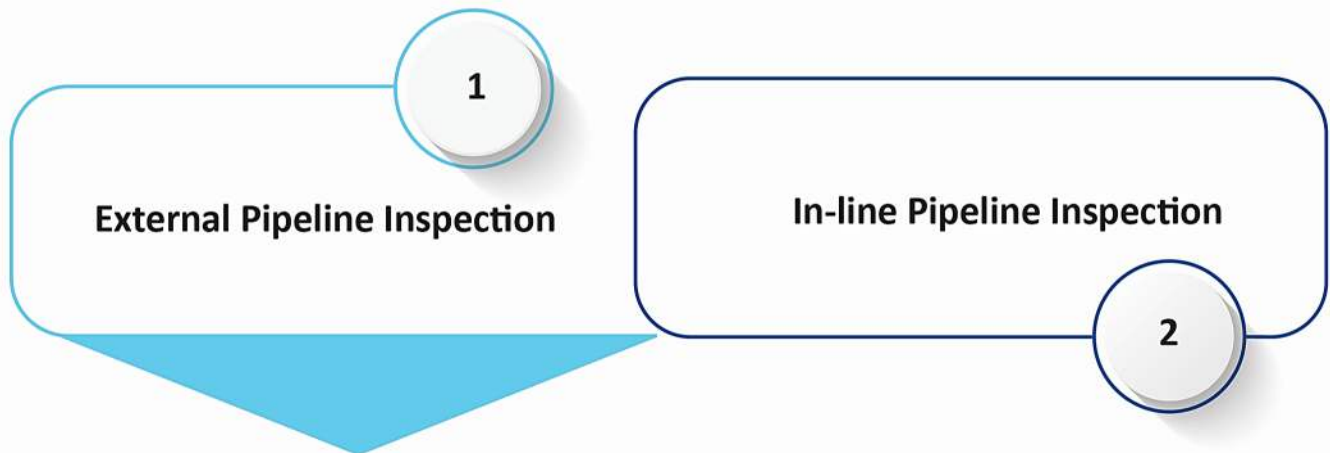
- 1. Offshore Pipeline Inspection Services**
- 2. Offshore Pipeline Maintenance Services**
- 3. Offshore Pipeline Repair Services**
- 4. Pipeline Life Extension Services**

1 OFFSHORE PIPELINE INSPECTION SERVICES



1. Offshore Pipeline Inspection Services

ABAN Marine Co provides comprehensive Pipeline Inspection Services to ensure your offshore pipeline systems are maintained at optimal operational levels. Our inspection techniques are designed to identify and mitigate risks, avoid costly downtime, and ensure pipeline integrity.



External Pipeline Inspection:

- 1. ROV (Remotely Operated Vehicle) Monitoring
- 2. CP (Cathodic Protection) Measurement
- 3. Acoustic Leak Detection (ALD)
- 4. U-Scanner

ROV (Remotely Operated Vehicle) Monitoring

We deploy ROVs equipped with advanced cameras and sensors to conduct visual inspections of offshore pipelines, assessing the external condition, identifying corrosion, damage, and any potential threats.



CP (Cathodic Protection) Measurement

Our team carries out CP measurement to evaluate the effectiveness of corrosion protection systems and ensure the pipeline is adequately protected against corrosion in the marine environment with Rov & Diver.



Acoustic Leak Detection (ALD)

Using Acoustic Leak Detection (ALD) systems, we identify leaks and defects in pipelines by analyzing sound waves, providing real-time detection of even the smallest leakages.



U-Scanner

Our state-of-the-art underwater 3D scanner delivers ultra-precise digital replicas of subsea assets, capturing details down to sub-millimetre accuracy. This advanced capability enables accurate assessment and continuous monitoring of asset condition over time.

By eliminating the need for hours of video review and subjective human interpretation, our solution streamlines inspections, reduces costs, and provides unparalleled clarity and confidence in asset management.



In-line Pipeline Inspection:

Aban Marine Along with an international collaboration found a diligent firm which carries out in-line inspection of pipelines from 159 mm (6") to 1420 mm (56") with the use of self-developed and self-produced in-line inspection equipment. By functional purpose, the in-line inspection equipment is subdivided into in-line cleaning tools – cleaning pigs and magnetic cleaning pigs which prepare the line for inspection – and inline inspection tools – geometry tools and intelligent tools which do the technical inspection of the pipeline.

- | | |
|-----------------------------------|---|
| 1. Internal Pipeline Cleaning | 4. TFI (Transverse Field Inspection) |
| 2. Geometry survey and Navigation | 5. EMAT (Electromagnetic Acoustic Transducer) |
| 3. MFL (Magnetic Flux Leakage) | |

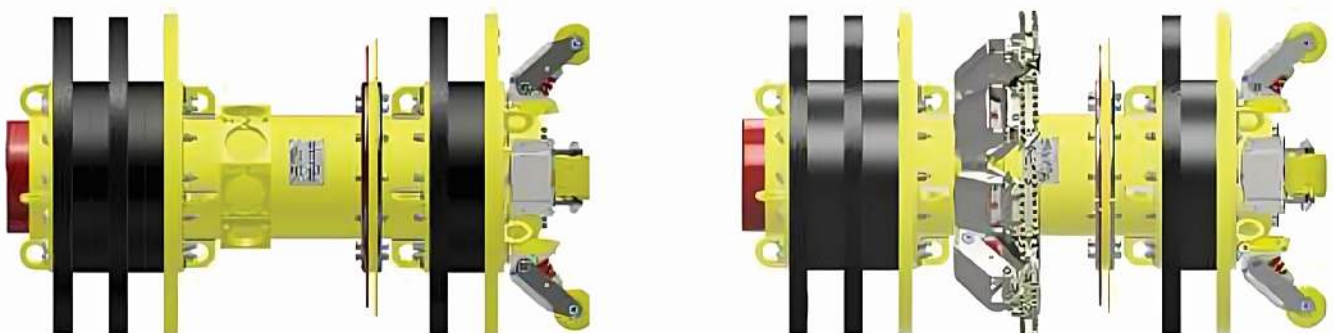
All in-line inspection activities are carried out in compliance with internationally recognized standards and recommended practices, including but not limited to:

- DNV-ST-F101 (Submarine Pipeline Systems)
- DNV-RP-F116 (Integrity Management of Submarine Pipeline Systems)
- POF Specifications (Pipeline Operators Forum guidelines for In-line Inspection)
- API 1163 (In-line Inspection Systems Qualification)

Internal Pipeline Cleaning:

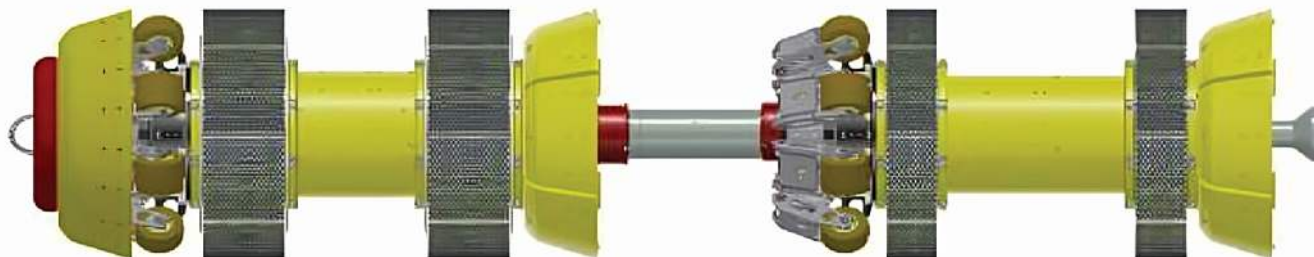
Cleaning Pig – CP

Cleaning pig – an in-line cleaning tool consisting of one body, having lightweight cylinder-shaped metal body frame with polyurethane discs installed on it, has good sealing abilities and remains efficient for long pipeline sections. Is highly maneuverable, first to be launched in the pipeline.



Magnetic Cleaning Pig – MCP

Magnetic cleaning pig – an in-line cleaning tool consisting of one or several bodies, having thick-walled cylinder-shaped metal body frame with magnets and metal brushes installed on it. Maneuverability is identical to that of inspection tools which makes it possible to estimate pipeline piggability by inspection tools prior to their launch.

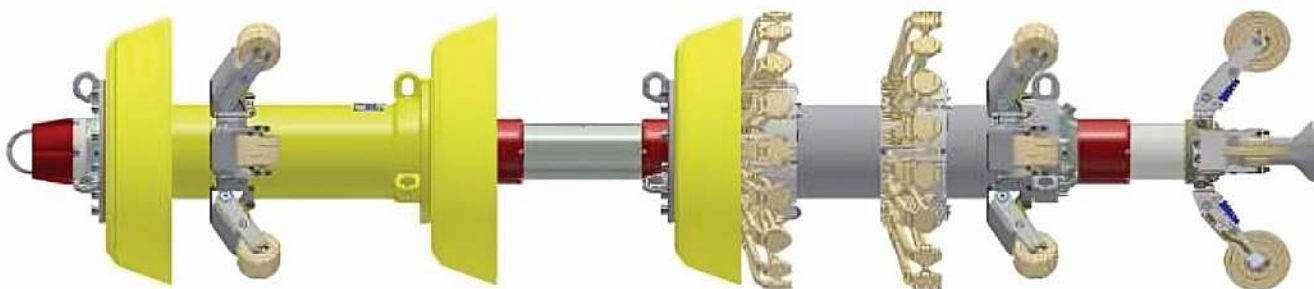


Geometry survey and Navigation

Electronic Geometry Pig – EGP

In-line inspection tool consisting of one or several inspection and hardware bodies. It is highly maneuverable.

EGP – uses an electronic-mechanical way of pipeline internal dimension by recording the angular position of levers covering the pipe internal surface.



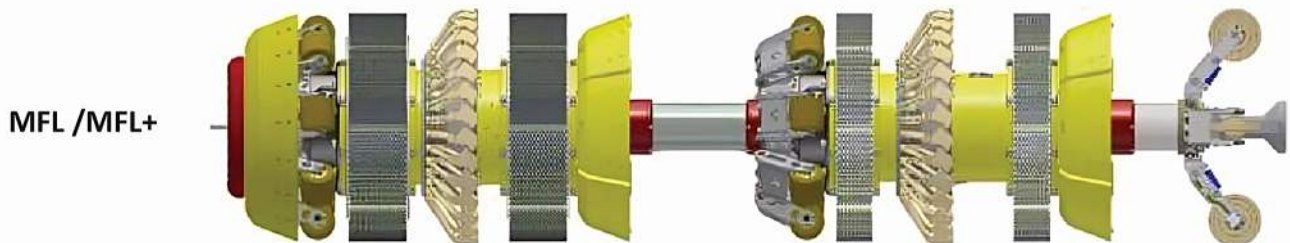
Navigation Unit (XYZ)

Inertial navigation system consists of high-accuracy angular velocity sensors (gyroscopes) and acceleration sensors (acceleration meters). Can be installed onboard any in-line inspection tool.



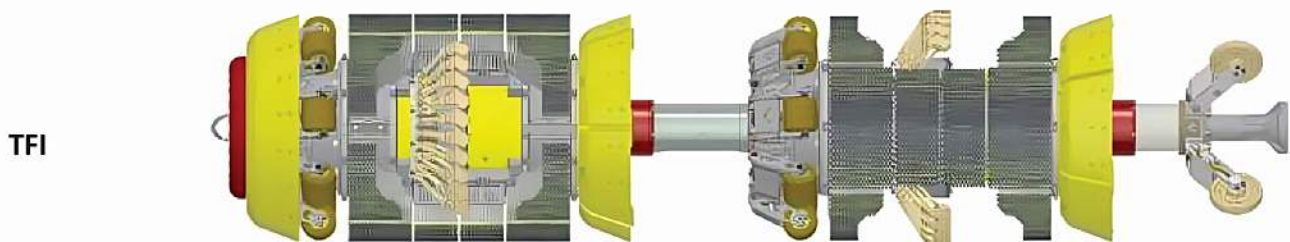
MFL (Magnetic Flux Leakage)

MFL is a non-destructive inline inspection technology that detects corrosion, pitting, and structural anomalies within pipelines. It works by inducing a magnetic field in the pipe wall between two magnet poles and detecting changes in the magnetic flux caused by defects. This technique enables precise identification and sizing of pipeline faults.



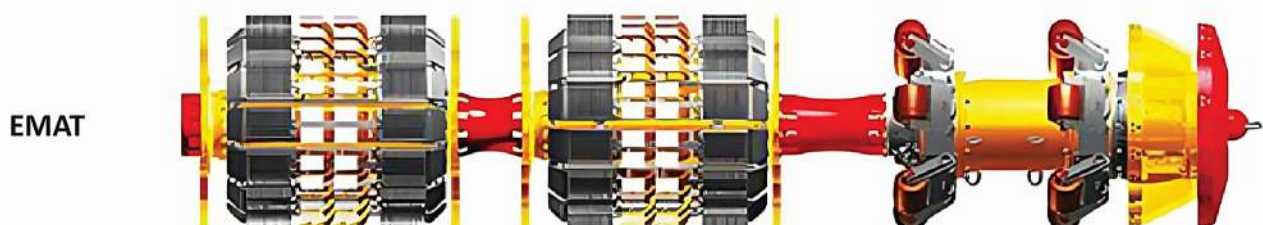
TFI (Transverse Field Inspection)

We own and operate advanced TFI tools that magnetize the pipe wall in the circumferential direction to detect corrosion, weld anomalies, and stress corrosion cracking. This non-destructive inspection technology provides precise detection and sizing of complex pipeline defects, ensuring reliable and accurate pipeline integrity assessment.



EMAT (Electromagnetic Acoustic Transducer)

EMAT pigging is used to inspect pipelines for cracks, corrosion, and defects without physical contact. It is a non-invasive method that is highly effective for offshore pipelines.





OFFSHORE PIPELINE MAINTENANCE SERVICES



2. Offshore Pipeline Maintenance Services

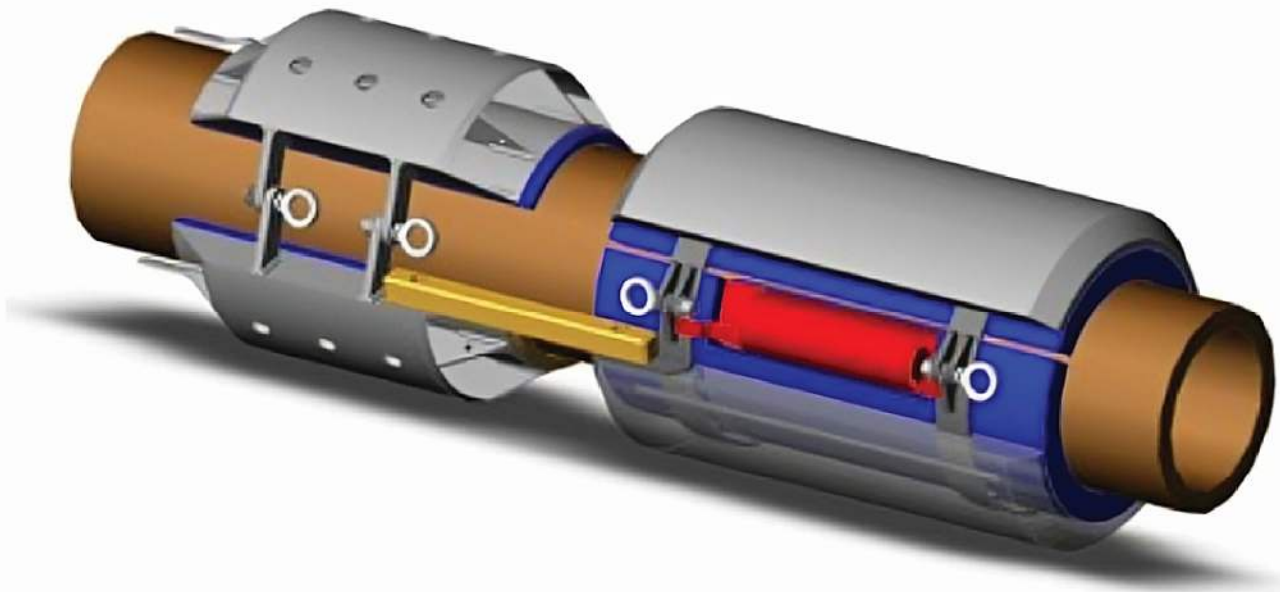
Our Offshore Pipeline Maintenance Services are meticulously designed to enhance the longevity and reliability of your pipeline infrastructure. We provide cutting-edge solutions tailored to a wide range of maintenance requirements, from routine inspections to urgent repairs, ensuring seamless and efficient operations.

Pipeline Maintenance Services:

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|---|---|
|  1. Anode Installation & Maintenance |  3. Internal Pipeline Cleaning & Pigging |
|  2. Build-up Clamp Installation |  4. Pipeline Pressure Testing |

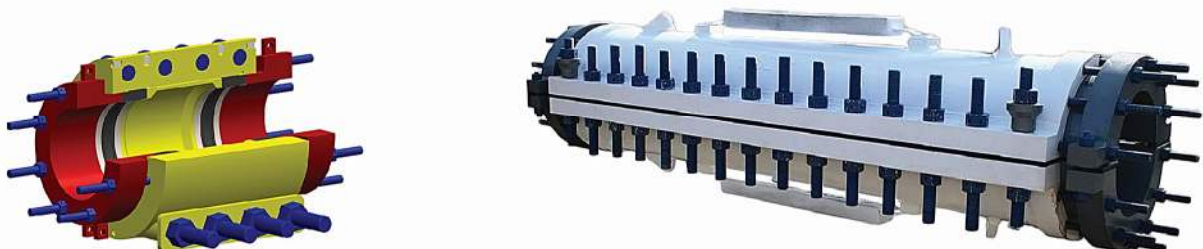
Anode Installation & Maintenance

We replace sacrificial anodes to restore corrosion protection to pipelines in both submerged and above-water environments, enhancing pipeline longevity.



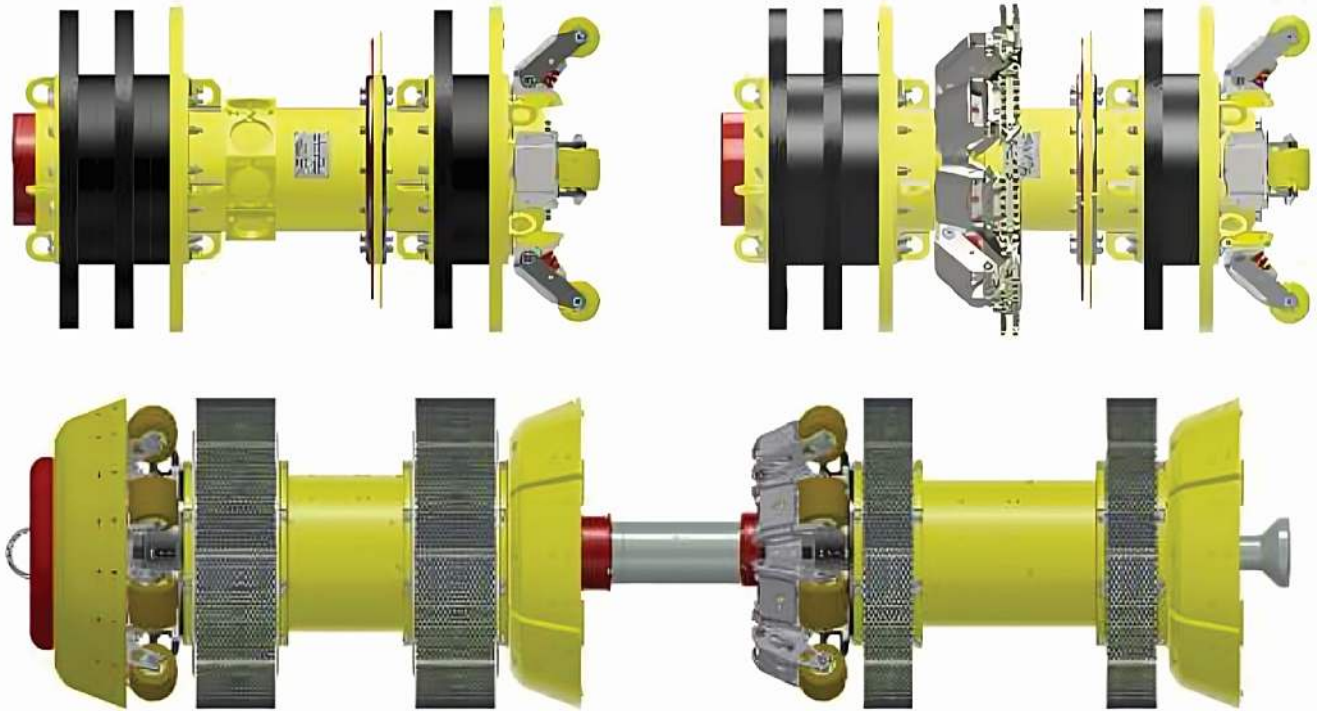
Build-up Clamp Installation

We offer build-up clamp installation to strengthen pipelines affected by corrosion or mechanical damage, effectively restoring their structural integrity and ensuring continued safe operation.



Internal Pipeline Cleaning & Pigging

Our specialized pigging and cleaning service designed to effectively removal of debris, scale, and wax build-ups, that's why our solution is vital for reliability and optimized flow assurance of pipelines.



Pipeline Pressure Testing

ABAN Marine conducts rigorous hydrostatic and pneumatic pressure tests to verify pipeline integrity under operational conditions. Our testing ensures compliance with industry standards, enhances safety, and prevents potential failures, safeguarding the longevity of your pipeline infrastructure.



A large-scale offshore pipeline repair operation in the ocean. A long, grey pipeline is suspended by several thick blue cables. The pipeline has several sections wrapped in yellow protective material. A large, curved section of the pipeline is being lowered into the water, with a red cable attached to its end. The background is a deep blue sea with some ripples.

3

OFFSHORE
PIPELINE
REPAIR

SERVICES

3. Offshore Pipeline Repair Services

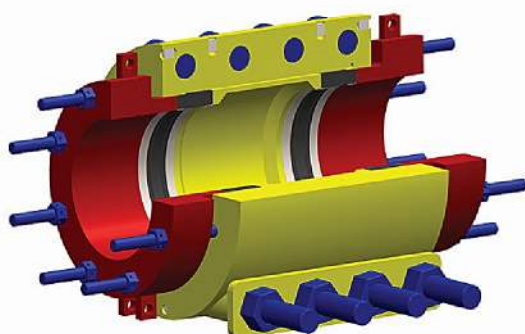
ABAN Marine Co offers a comprehensive range of Pipeline Repair Services, utilizing state-of-the-art technology and equipment to restore pipeline integrity and prevent further damage. We recognize the critical nature of pipeline repairs and are committed to delivering rapid response times, precision-driven solutions, and superior service quality to ensure operational reliability

Pipeline Repair Services:

- | | |
|--|---|
|  1. Leak Sealing & Repair |  3. Spool Installation & Tie-ins |
|  2. Hot Tapping and Plugging Services |  4. Emergency Pipeline Repair |

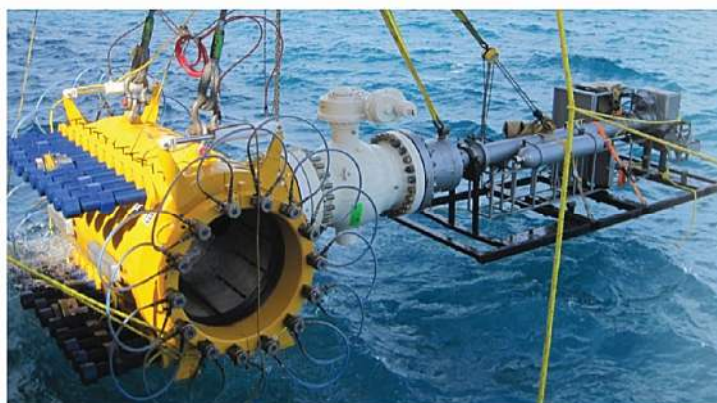
Leak Sealing & Repair

We offer leak sealing and repair services to quickly address any pipeline leaks, utilizing advanced techniques such as, clamps, and Stop Kit Installation.



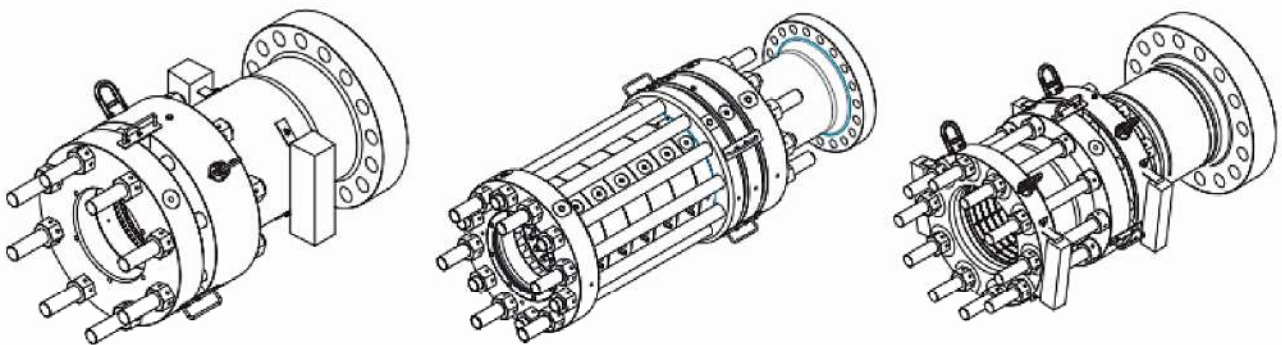
Hot Tapping and Plugging Services

Our hot tapping and plugging services allow pipeline repairs to be made without shutting down the pipeline system, ensuring continuous operations and minimal disruptions.



Spool Installation & Tie-ins

We provide spool installation, Tie-ins services to reconnect pipelines and integrate new sections to the existing pipeline network.



Emergency Pipeline Repair

Our dedicated team is available 24/7 to respond to urgent pipeline repair needs, ensuring that any pipeline failure is promptly addressed and minimized, with least Ooperation downtime



A full-page background image showing a diver in a blue and yellow suit inspecting a large, heavily rusted and encrusted pipeline underwater. The scene is set in deep blue water with some bubbles visible. The pipeline runs diagonally from the bottom left towards the top right.

4

OFFSHORE
PIPELINE
LIFE EXTENSION

SERVICES

Pipeline Life Extension Services

ABAN Marine Co. specializes in pipeline life extension services, designed to maximize the lifespan of offshore pipeline infrastructure. Through innovative solutions, we can extend the operational life of pipelines beyond their initial design limits.

Pipeline Life Extension Services

- 1. Structural Modifications & Reinforcements
- 2. Operational and Design Modifications
- 3. Ageing Pipeline Life Extension Using Super Flexible Pipelines



Structural Modifications & Reinforcements

We conduct structural assessments and apply reinforcements to sections of the pipeline that are deteriorating due to corrosion or fatigue, ensuring they meet the required safety standards for extended service life

Operational and Design Modifications

Our engineers assess and implement operational and design modifications to enhance pipeline efficiency and safety, extending its operational life

Ageing Pipeline Life Extension Using Super Flexible Pipelines

Our innovative service provides a proven and cost-effective solution for pipelines experiencing pressure loss due to internal leaks or structural degradation. By utilizing advanced rehabilitation technology, we restore the internal structural integrity of the pipeline without the need for complete replacement. The system works by deploying a specialized reinforcement mechanism inside the existing (host) pipeline, effectively sealing leak paths and strengthening the pipe walls. This trench less approach minimizes operational downtime, reduces environmental impact, and extends the service life of aging pipeline infrastructure. Our technology is especially effective in offshore and onshore oil and gas pipelines where pressure retention is critical and traditional repair methods are costly or impractical."



Why Choose ABAN Marine Co?

Comprehensive Solutions:

offer a full range of IMR services for offshore pipelines, ensuring complete pipeline care from inspection to repair, maintenance, and life extension.

State-of-the-Art Technology:

We use the latest technology, including ROV inspections, pigging, and NDT methods, for accurate results and faster turnaround times.

Proven Expertise You Can Trust :

Our team of highly skilled engineers and offshore technicians brings years of hands-on experience in offshore pipeline IMR.

24/7 Availability:

We provide round-the-clock services to ensure that offshore pipeline emergencies are resolved swiftly and efficiently.

Cost-Effective Solutions:

Our innovative IMR strategies help reduce operational costs while ensuring uncompromising safety, superior quality, and peak efficiency

ABANMARINE CO.

SUBSEA PIPELINE SOLUTION

CONTACT US

Aban Darya Mobin Company,
3rd Floor, No. 27, Corner of
Bostan Street, Opposite the
Chinese Embassy, Movahed
Danesh Street, Aqdasieh,
Tehran, Iran
Postal Code: 1957653152

021-26297443 , 021-26297481
Info@abanmarine.com
www.abanmarine.com

