ENGİN SHİPYARD A.Ş.

PRECISION IN SURFACE SOLUTIONS & SHIPYARD SHIPYARD SERVICES

Corporate Catalogue | 2025

A Legacy of Engineering Excellence

Founded in 2006 in Tuzla by Macit Engin, ENGİN SHIPYARD A.Ş. has become a cornerstone of Turkey's ship repair and maintenance industry. Our journey has been defined by a relentless focus on quality, reliability, and technical mastery.

After relocating to the strategic hub of Yalova/Altınova in 2013, we deepened our expertise through major projects at leading shipyards like Cemre, Tersan, and Hatsan.

Today, with over 300 skilled professionals, we provide comprehensive surface preparation, coating, and maintenance services to Turkey's most demanding industrial and maritime clients.

Our philosophy is built on three pillars:

- **International Standards:** Adherence to the highest global benchmarks for every process.
- **Operational Excellence:** A focus on speed, quality, and timely delivery.
- **Client Partnership:** Building trust through transparency and superior results.

The Journey of Renewal Begins: Arrival & Meticulous Assessment

Every project begins with a comprehensive evaluation. Upon the vessel's arrival and dry-docking, our teams conduct a rigorous series of inspections to establish a precise scope of work. This foundational stage ensures that every subsequent action is targeted, efficient, and aligned with class society requirements.

Key Assessment Procedures:

- **High-Pressure Washing:** The entire underwater hull, including sea chests and bow thruster tunnel, is washed with 400-bar fresh water to remove marine fouling and contaminants.
- **Ultrasonic Thickness Measurement:** As per Türk Loydu rules, we perform extensive ultrasonic steel thickness measurements on the hull, decks, tanks, and internal structures to identify areas requiring renewal.
- **Class & Client Consultation:** We work directly with class surveyors and client representatives to confirm repair plans, ensuring full compliance and transparency.

Chapter 1: The Foundation of Longevity – Surface Preparation (Raspa)

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The service life of a protective coating system is 60% dependent on the quality of the surface preparation. Our primary objective is to completely remove all contaminants—old paint, rust, salt, and oil—to create a clean, profiled surface with maximum adhesion for the new coating.

Our Surface Preparation Methods:

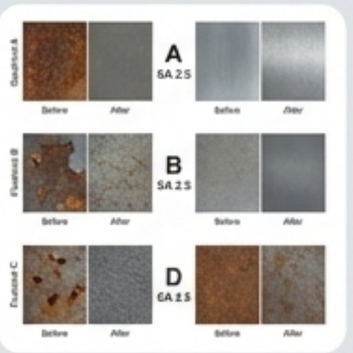
- **Abrasive Blasting (Kumlama):** The industry standard for achieving superior cleanliness and profile. We utilize garnet, steel grit, and other abrasives to meet surface standards from SA 1 to SA 3, targeting a precise roughness of 40-75 microns.
- **Ultra-High Pressure (UHP) Water Jetting:** An environmentally friendly method using 700-3000 bar pressure to remove coatings, rust, and soluble salts simultaneously without damaging the steel substrate.
- **Mechanical Preparation:** For targeted repairs and areas where blasting is not feasible, our teams use needle scalers, flap discs, and grinders to prepare surfaces to the required standard.

Proof of Capability: The Enginshipyard Standard for Surface Integrity

Our quality control is not just a final check; it's a systematic process embedded in every step. We use a real-world project, the comprehensive refit of the tugboat "Taşkömürü-1," to illustrate the exacting standards we apply to every vessel.

Our Standard QC Protocol Includes:

1. **Environmental Monitoring:** Continuous measurement of surface temperature, dew point, and humidity to ensure optimal application conditions.
2. **Corrosion & Cleanliness Assessment:** Visual inspection and classification according to ISO 8501-1 standards (e.g., SA 2.5).
3. **Salt Contamination Testing (Bresle Test)**: We conduct tests to ensure the surface is free of soluble salts, a primary cause of premature coating failure.
4. **Surface Profile Measurement:** Verification that the blast profile (roughness) is within the 40-75 micron specification required for optimal paint adhesion.
5. **Certified Oversight:** All paint and blasting operations are supervised by a technical service expert with FROSIO or NACE certification, with daily progress reports submitted to the client.



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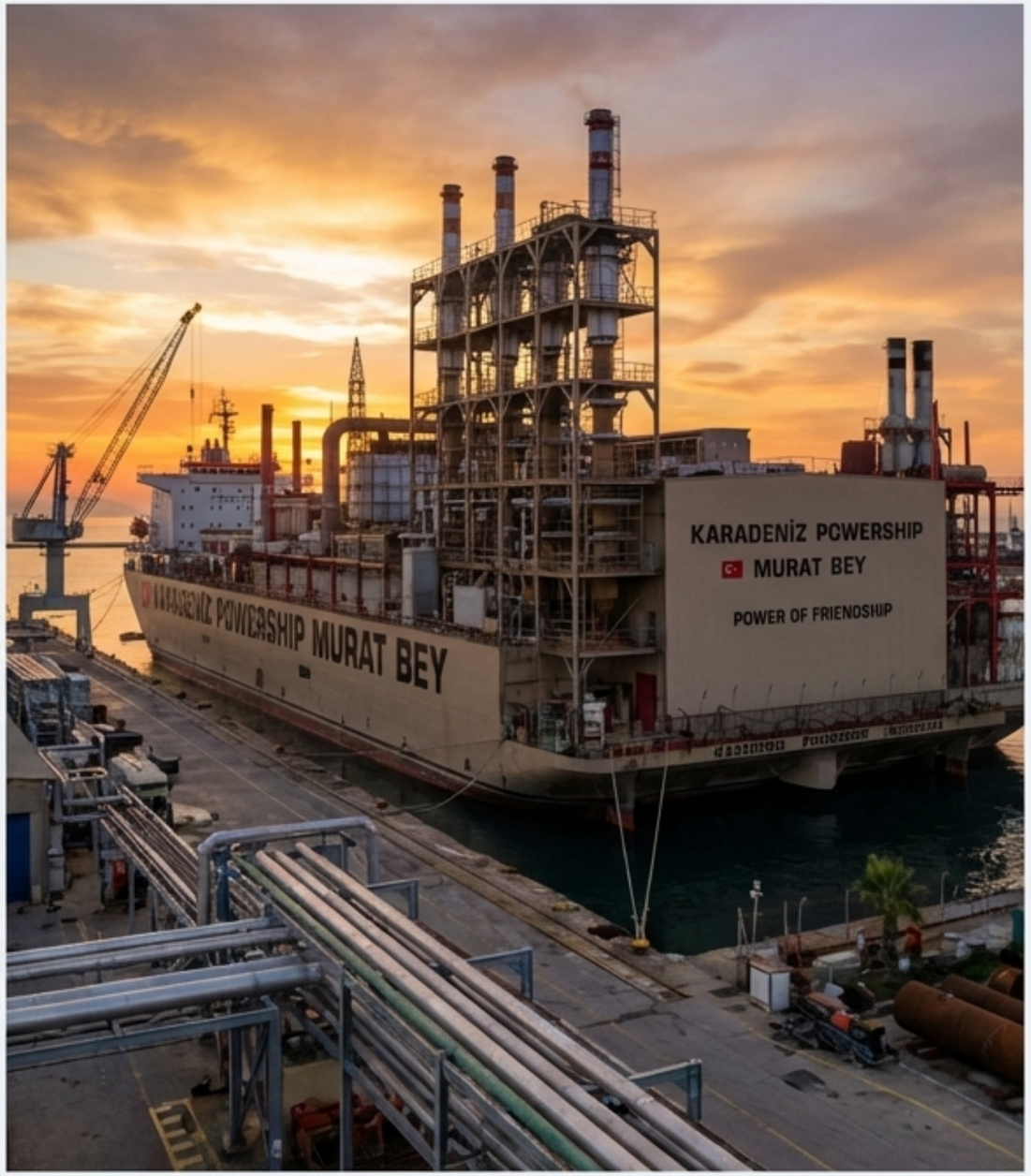
Chapter 2: Applying the Protective Shield – Advanced Coating Systems

A vessel's coating is its primary defense against corrosion, chemicals, and the harsh marine environment. We apply high-performance coating systems with meticulous attention to film thickness and curing times, ensuring robust, long-term protection.

Our Standard 5-Year Protection System (Case Study: Taşkömürü-1):

- **Primer Coat:** Two coats of epoxy primer applied to a minimum dry film thickness (DFT) of **150 microns** each. This initial layer provides the foundational anti-corrosive barrier.
- **Tie Coat:** A single coat of binder paint applied to a minimum DFT of **75 microns** to ensure adhesion between the primer and the antifouling layers.
- **Antifouling Coat:** Two coats of antifouling paint (minimum **150 microns DFT** each) applied to the underwater hull and bow thruster tunnel to prevent marine growth.
- **Top Coat:** Two coats of high-durability polyurethane paint (minimum **150 microns DFT** each) for UV resistance and a high-quality finish on the topsides, superstructure, and decks.



Precision Down to the Last Detail: Cathodic Protection & Finishing

Comprehensive protection extends beyond the paint system. We install and verify a vessel's cathodic protection system, ensuring it meets class-approved plans for a 5-year service life. Every final detail is executed to perfection.

Finishing and Marking:

- Ship's name, port of registry, and class society marks are applied using chemically compatible, high-visibility white paint.
- Deck walking areas are treated with a non-slip material application.

Anode (Tutya) System Installation

We install TL-AL type aluminum anodes as specified by the cathodic protection plan. All anodes are sourced from KOSGEB or TÜRKAK approved firms, complete with analysis reports.

- **Total Anode Weight**: 367 kg
- **Hull & Nozzles**: 34 units, AC8A type (8 kg each)
- **Skeg & Sea Chests**: 10 units, AC5A type (5 kg each)
- **Rudders**: 16 units, AC25A type (2.5 kg each)
- **Bow Thruster Tunnel**: 5 units, AC1A type (1 kg each)

3 Chapter 3: Restoring Mechanical Integrity – Propulsion & Steering

A vessel's reliability depends on the health of its propulsion and steering systems. Our mechanical teams, in collaboration with authorized service providers, undertake complete overhauls of critical machinery to ensure peak performance and safety.

Propulsion System Overhaul (Example: Berg Propulsion BCP 620f)

- Complete disassembly and inspection of propellers, hubs, and blades.
- Repair of blade tip damage, followed by polishing.
- Renewal of OD box seals, shaft seals (fore and aft), and blade o-rings.
- Shaft withdrawal for measurement, alignment checks (on dock and afloat), and non-destructive testing (NDT) of keyways.
- Replacement of stern tube bearings (Ø=210mm and Ø=195mm) with original parts.

Steering System Maintenance

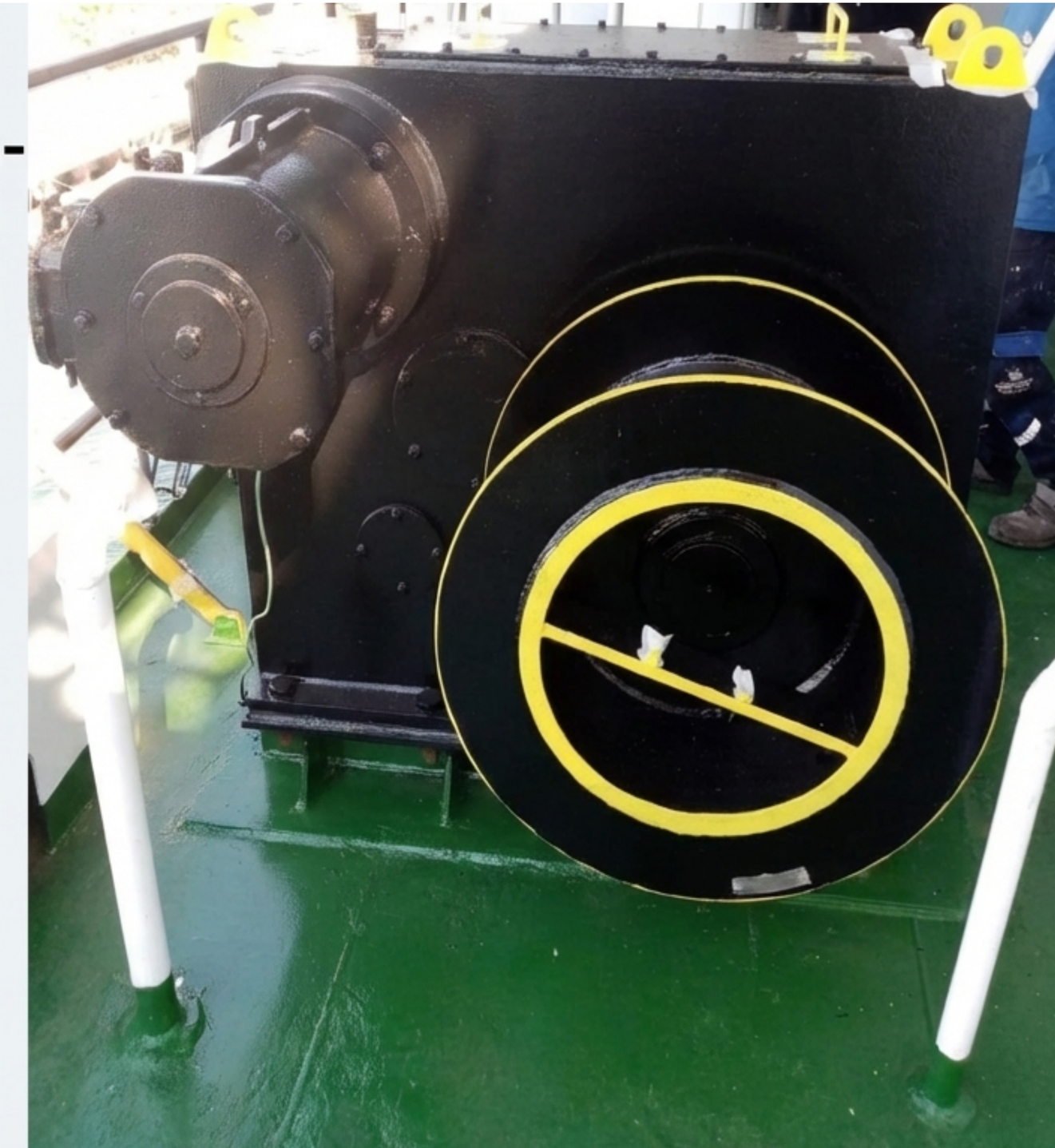
- Removal of all four rudder blades and stocks for cleaning and inspection.
- Measurement of rudder stock and bearing clearances.
- Overhaul of the Data Hidrolik DDS 2x5000-4 steering gear, including hydraulic oil and filter changes.

4 Chapter 4: Overhauling On-Deck & Auxiliary Systems

Operational readiness requires that every piece of equipment, from deck machinery to tank systems, functions flawlessly. We provide comprehensive maintenance for all auxiliary systems, ensuring total vessel integrity.

Key System Overhauls:

- **Deck Machinery:** Full maintenance of Data Hidrolik towing winches and hooks, including brake lining replacement and gearbox oil change (250L Petrol Ofisi Gravis M100).
- **Anchor & Chain:** Chains are ranged, inspected, grit blasted, and coated with 150 microns of mastic epoxy. Swivels are freed, and chain lockers are cleaned and painted for 5-year protection.
- **Hydraulic Systems:** Overhaul of central hydraulic systems, including replacement of all filters and 1500L of Petrol Ofisi Hydro Oil HD 46.
- **Fender Systems:** Replacement of all damaged fenders, including five Ø600mm cylindrical bow fenders and eight Ø300mm D-type side fenders. New installations use hot-dip galvanized fittings and stainless steel locks.



5 Chapter 5: Renewal of Structural & Internal Systems

We go beyond the surface to restore the vessel's core structural and systemic integrity, from steel plate renewals to comprehensive tank and electrical maintenance.

Structural Repairs

- Correction of dents and buckling in bulwarks and hull plating using appropriate heating and fairing techniques.
- Replacement of damaged steel plates, such as the 10x1000x500mm plate on the port bow, with new, class-approved material of the original thickness.

Tank Cleaning & Coating

- Gas-freeing and cleaning of four 10 m^3 fuel tanks (service and settling) and renewal of all manhole gaskets and bolts.
- High-pressure washing and coating of two 5 m^3 ballast tanks and one 20 m^3 fresh water tank to provide three years of protection.

Electrical & System Maintenance

- Valid Megger testing of all 27 onboard electric motors, with results certified by Türk Loydu.
- Overhaul of the ALFA-LAVAL MAB 103B-24 fuel separator.
- Repair and servicing of two sea chest valves.

Our Commitment to Certified Quality and Partnership

Our work is benchmarked against the highest industry standards and validated by leading class societies and manufacturers. We believe in a collaborative approach, working as a trusted partner to ensure every project's success.

Key Partners & Certifications

- **Class Society Approval:** All major repairs, measurements, and tests are conducted in accordance with and approved by Türk Loydu.
- **OEM Collaboration:** Critical system overhauls are performed under the supervision of authorized technical personnel from manufacturers like Berg Propulsion and Data Hidrolik.
- **Certified Paint Application:** Our paint supervisors hold internationally recognized FROSIO or NACE certifications, guaranteeing application quallty.
- **Verified Materials:** All materials, from steel plates to cathodic anodes, are class-approved and fully certified.

Our Valued Clients Include:

Karmarin – Karadeniz Holding
Gemak Tersanesi
Sefine Tersanesi

Zeman Çelik
Cemre Tersanesi
Tersan Tersanesi

Tersan Tersanesi
Hatsan Tersanesi

The Enginshipyard Transformation: From Corrosion to Perfection

Large-Scale Surface Preparation

Engine Room Refit

Ballast Tank Coating

Project Delivery

Partner with Enginshipyard

For comprehensive, reliable, and high-quality ship repair and surface solutions, partner with the experts. We are located in the center of Turkey's shipbuilding industry, ready to serve your fleet.

ENGİN SHIPYARD A.Ş.
Hürriyet Mah. Bursa Cad. No:38/4
Altınova / Yalova
Türkiye

info@enginshipyard.com
www.enginshipyard.com