HEGGEL®

You Build, We Protect!

NEWSLETTER

HEGGEL® Coat 111

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Built to Withstand the Ocean

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High-Performance Coatings for Harsh Marine Environments

> Marine Corrosion: A Relentless Challenge!

Offshore structures are continuously exposed to some of the harshest environmental conditions found in industrial settings. These include salt-laden atmospheres, submersion in seawater, high humidity, UV radiation, wave impact, and temperature fluctuations. Such conditions accelerate the corrosion of metallic surfaces, especially on carbon steel, which remains the most commonly used structural material due to its mechanical strength and cost-effectiveness.

Without reliable protection, degradation begins almost immediately, leading to material thinning, structural weakening, and ultimately system failure. This not only endangers operational safety but also leads to frequent maintenance, unplanned shutdowns, and high repair costs.

A specialized high-performance coating system serves as a physical and chemical barrier, preventing corrosive agents from reaching the steel surface and maintaining the structure's integrity throughout its service life.

Engineering for Corrosion Protection in Marine Applications

HEGGEL GmbH designs and manufactures advanced protective coatings, linings, and floorings for industries where performance under extreme exposure is critical. In the offshore sector, our coating systems are developed to handle multi-zone marine exposures, from full immersion to UV-exposed steel.

Our systems are backed by strict testing, compliance with international standards and performance-proven applications across diverse sectors.

With **HEGGEL**, asset owners benefit from:

- Extended service life of steel structures
- Minimized maintenance frequency
- Lower lifecycle costs
- Enhanced operational safety and reliability

A Case Study: Protecting Wellheads and Boat Landings

In a recent offshore project, **HEGGEL's** advanced coating system was specified to protect a wellhead and boat landing jacket destined for open-sea platform installation. These structures faced some of the harshest conditions in offshore operations - and their failure was not an option.

How Seawater Triggers Corrosion

Seawater is a highly conductive, oxygenated electrolyte containing approximately 3.5% dissolved salts and primarily chlorides. It promotes multiple types of corrosion, depending on exposure zone:

- **Immersed zones** are susceptible to uniform corrosion, pitting, and MIC (Microbiologically Influenced Corrosion) due to stagnant water, anaerobic conditions, and microbial activity.
- **Splash and tidal zones** are the most aggressive because of cyclic wetting and drying, high oxygen content, salt deposition, and UV exposure. These factors cause coating fatigue, cracking, and underfilm corrosion.
- **Atmospheric zones** suffer from saltwater mist, condensation, and photodegradation of coating surfaces.

The Critical Role of Wellheads

Wellheads control oil and gas flow at the surface, keeping operations safe by preventing leaks and blowouts. As the crucial interface between reservoirs and facilities, they must:

- Withstand internal pressures
- Resist corrosive hydrocarbons
- Withstand constant seawater immersion
- Maintain integrity across decades of service

Boat Landings

Boat landings face some of the toughest conditions in offshore environments. Located where sea meets air, these structures get constantly wetted and dried by waves and weather. These structures bridge safety for personnel transfers - their failure could endanger lives during critical operations.

Offshore's Tough Challenge

These two offshore structures require specialized protection to ensure both operational safety and long-term performance. To withstand extreme marine conditions, they demand coating systems that exceed standard specifications by resisting:

- 24/7 seawater immersion
- UV and weather extremes
- Chemical and mechanical resistance attack
- Abrasion and erosion caused by waves, impact and suspended solids
- Water and oxygen permeation to prevent underfilm corrosion
- Low maintenance requirements

The Project Overview

This project involved protective coating systems for a new carbon steel wellhead and boat landing jacket for ocean service. The structures, fabricated from uncoated carbon steel, would operate in typical ocean seawater with 50% permanent submersion, demanding exceptional corrosion protection.
Coating application occurred under controlled workshop conditions, ensuring optimal surface preparation (abrasive blasting to SA 2½) and precise application of **HEGGEL's** high-performance systems:

1 HEGGEL Coat 111: The First Line of Protection

HEGGEL Coat 111 is a high-solids, two-component epoxy coating engineered for corrosion protection in aggressive environments like offshore and marine structures. Designed for direct-to-metal application without requiring a primer, this innovative coating system delivers:

- Solvent-free formulation and enhanced film build
- Exceptional adhesion on prepared steel (Sa 2½)
- Good resistance to seawater, diluted acids, alkalis, and hydrocarbons
- High abrasion and erosion resistance

HEGGEL Coat 111 was meticulously applied to all structural components, with special attention to critical areas. All corners and weld seams received standard stripe coating application. The system achieved approximately 700 microns dry film thickness (DFT) in a single layer, applied using an approved airless spray system.

2 HEGGEL Coat 195: UV and Weather Resistance

While **HEGGEL Coat 111** offers outstanding corrosion resistance, they are inherently susceptible to discolouration and UV degradation when exposed to sunlight. That's where **HEGGEL Coat 195** comes in.

HEGGEL Coat 195 is a high-performance polyurethane topcoat designed to provide:

- Superior UV resistance, protecting the underlying epoxy from degradation
- Colour and gloss retention, maintaining aesthetics and visibility in safety-critical areas
- Excellent resistance to abrasion

HEGGEL Coat 195 was applied at 80-120 microns DFT (140-200 g/m²). Applicators proceeded with topcoat application once the **HEGGEL Coat 111** base layer achieved touch-dry cure - typically occurring within 6 hours at 23°C.

Proven Results

The selected coating system achieved a seamless, defect-free film with excellent edge retention, high build, and long-term chemical resistance. The use of **HEGGEL Coat 195** in the exposed zones further ensured resistance to UV degradation and mechanical wear. The result was a field-ready, two-layer protection system tailored to the structure's operational demands.

This project demonstrated **HEGGEL's** capability to engineer and deliver targeted, high-performance coating solutions for complex offshore requirements. The combined use of **HEGGEL Coat 111** and **HEGGEL Coat 195** ensures full-spectrum protection, underwater, in the splash zone, and in atmospheric conditions.

Planning an Offshore or Coastal Project?

HEGGEL's technical team is ready to assist you in selecting the right products and application methods to meet your specific exposure, budget, and durability needs.

Click here to contact our team and let us help you build the right insulation solution for your project.

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