



White Paper

Addressing the maintenance challenge

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The development of surface and humidity tolerant epoxy technology to meet and exceed these requirements.

With increasing demands on offshore project schedules - and the need for longer seasonal maintenance periods in harsh environments particularly in Europe - the further development of the technology and science to meet these challenges has moved up the oil and gas sector's agenda.

The pressures on those managing offshore projects to meet tight time and quality schedules has never been higher, and with it comes the need to develop the coatings technology to ensure protection from corrosion without compromise.

This paper highlights the development of surface and humidity tolerant epoxy technology to meet and exceed these requirements.

For maintenance work, time is of the essence for contractors and asset owners, with the need to predict budgets and meet them a pre-requisite of the industry to minimise downtime and cost.

A disproportionate cost. The process of coating during typical offshore projects is a relatively small component but is often a disproportionate cost of the overall project due to weather delays, the disturbing effects of abrasive blasting during surface preparation stages and the need for re-blasting or re-painting when the agreed coating standard has not been achieved.

Therefore, enabling year-round coating work where required has become increasingly important, particularly in Europe where plunging temperatures in harsh environments often prohibits or delays vital work on these projects.

The application, durability and performance of coatings for these offshore projects requires the very highest levels of quality to meet the challenges presented by the diverse types of environments and structures.

Driven by customer requirements worldwide, the coatings industry has developed many kinds of products for different needs whether they are intended for use in consistently warm climates or colder environments.

At Sherwin-Williams, we are meeting this challenge through our Dura-Plate™ 301 line of products. To date, more than 15 million square metres of steel has undergone protection from the renowned suite of Dura-Plate™ 301 worldwide, including offshore platforms, ships, steel bridges, refineries and tanks.

For years, this technology has enabled durable application

over damp surfaces, flash rust, existing coatings and with the comfort of excellent adhesion sometimes reaching 25 MPa (3625 PSI), one of the results of a technology designed to provide 25-year service life for offshore conditions.

One of the most impressive impacts of the Dura-Plate™ 301 technology is the way it has transformed the perception about the use of Ultra High Pressure water jetting (UHP) as the preferred surface preparation method. This method has a number of advantages, namely reduced environmental impact and better surface cleanliness.

But it also poses three challenges: steel surface gets damp, flash rust quickly develops before coating application and no surface profile is generated. Conventional coatings struggle to cope with such challenges.

Dura-Plate™ 301 perfectly addresses each one of the three key challenges of UHP. It has become a symbol of the safe adoption of UHP for high durability projects like no other technology since starting its expanded global use more than a decade ago.

UHP water jetting, offering reduced health and safety dangers compared to abrasive blasting and potentially reduced labour costs, is particularly relevant for the maintenance of offshore structures, refineries, storage tanks, marine vessels, ballast tanks and steel bridges.

This has included applications at onshore and offshore locations in Europe on storage tanks at the Sines Refinery - one of the largest refineries in the Iberian Peninsula - and the Setubal terminal in Portugal for Galp Energia as well as projects in America, Brazil and Singapore.

Cold curing in action. Now the Dura-Plate™ 301 product line has been extended further to meet the demands of the market.

Working with our key customers, our technical team in Bolton, Greater Manchester, has researched and developed a cold curing expansion of our surface and humidity tolerant epoxy technology, keeping the same broader field of application covering its use in immersion as well as atmospheric service conditions in offshore, marine, industrial and construction applications.

We have sought to provide a balance of uses for the Dura-Plate™ 301 technology and add to the options for the asset owner and maintenance contractor worldwide and in Europe particularly.

The Dura-Plate™ 301W - the product version that reflects

the recent expansion developments - is now offering cold curing down to 0°C and extended re-coatability of up to six months, two important extensions of this technology reach.

The cost of downtime on maintenance has long been an issue in many offshore European locations, with shortened seasons for coating depending on how low temperatures have fallen in winter. The Dura-Plate™ 301W now offers a longer painting calendar and with it increased efficiencies and reduced overall project costs.

Customer advantages. The low temperature trials conducted in the UK in the recent past have been successful, and we are proud to say that Dura-Plate™ 301W is meanwhile being used in South Brazil, China and Japan at low temperatures, its use expanding fast as it surpasses the hundreds of thousands of litres being successfully applied so far.

Petrobras, the Brazilian state-run energy company, is reporting positive advantages of using the 301 technology combined with UHP water jetting at the world's largest offshore new building contract to date, for a total of eight FPSO hulls at the Ecovix shipyard in Rio Grande do Sul, south-east Brazil.

Here, the largest Goliath gantry crane in the world helps assemble the eight hulls. Four UHP chambers are being used, with efficiencies in time and costs being reported all round. Dura-Plate™ 301W has been used during the winter season, following its approval by Petrobras.

For shipbuilding, too, the 301 series has been used successfully, with the first application utilising the 301-UHP combination being applied at Atlantico Sul shipyard in Brazil on 10 Suez Max oil tankers. Started in 2009, this project continues to prove the benefits and features of this combination with open-space UHP working alongside other operations such as welding, cutting and painting and strong adhesion data being returned over a low texture profile.

The advantages for new-build projects speak volumes, with comparative savings against abrasive blasting including reduced chamber operating costs, fewer weather constraints, a reduced environmental impact and reduced labour costs.

Approvals from all recognised international bodies have been granted for the suite of Dura-Plate™ 301 products including Norsok, Navsea/US Navy and the IMO, including the world's only IMO PSPC approval over UHP water jetting and a zinc-free shop primer. Full approvals are expected soon for Dura-Plate™ 301W.



About the Author. Joao Azevedo is Oil & Gas Market Director (EMEA region) for Sherwin-Williams Protective & Marine Coatings. He joined Euronavy in 1999 as sales and marketing director, and from 2006-2008 he was director and one of the founders of Euronavy Coatings Singapore, managing mainly offshore projects. Since Euronavy's acquisition by Sherwin-Williams in 2008, he has assumed additional business development roles, with emphasis on protective coatings for offshore applications. He is a Certified Level 3 NACE Inspector, qualified as a chemical engineer at the Technical University of Lisbon and an MBA specialising in marketing from the Catholic University of Lisbon.

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