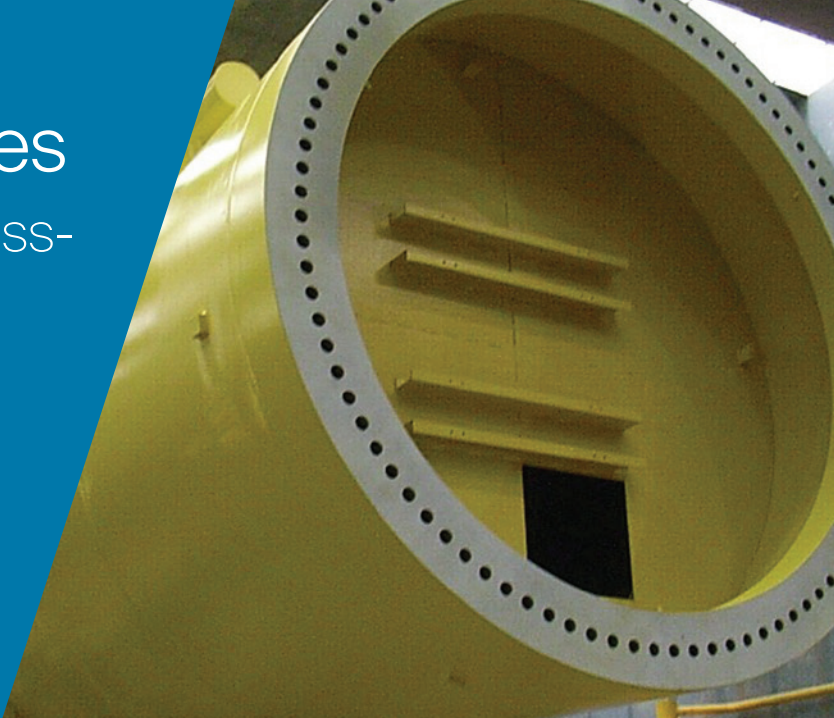


ZPMC wind structures

SIGMASHIELD™ 880 GF (glass-flake) enhances productivity and protects

Case study



The Customer

Zhenhua Heavy Industries, Co., Ltd. (ZPMC)

The Location

Nantong, China

The Challenge

Offshore and tidal zone, saltwater immersion

The Solution

PPG SIGMASHIELD 880 GF (RAL 1018)

The Benefits

- Faster drying
 - Abrasion resistant
 - Single coat up to 1,000 µm (40 mils)
 - Corrosion resistance with cathodic protection
 - Better crack- and sag resistance at high thickness
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The Result

- Easy application for fabrication efficiency
 - Fast dry and cure properties
 - Protects longer under aggressive environments
-

The Customer

Zhenhua Heavy Industries, Co., Ltd. (ZPMC), China's largest port machinery manufacturer, ventured into offshore wind power projects in 2010. The Nantong branch of ZPMC is located in the Nantong Economic and Technological Development Zone in the Jiangsu Province along the Yangtze River. ZPMC manufactured foundation pipes for offshore wind turbines for the Rudong Intertidal I Development Zone (RI1DZ). Located in the East China Sea, the Rudong wind farm consists of 58 wind turbines with the capacity of 150 megawatts of power.

The Challenge

A coating system for structures such as the Rudong offshore windmill foundations requires resistance to saltwater immersion and abrasion. Ease of application for coating large structures and fast-drying capability are also essential to allow structures to be fabricated efficiently. In addition to abrasion and corrosion resistance from offshore environmental conditions, wind turbines installed offshore need coating systems that can withstand the rigorous transportation and installation process required to put them into place.





The Solution

Applicators blasted the surface of four wind turbine foundations that were 17 meters long (55.9 ft) and 4.5 meters (14.9 ft) in diameter to Sa2.0 –Sa2.5 in preparation for coating application. The blasting profile was measured at 63–95 microns (2.5 – 3.7 mils). Applicators then applied the SIGMASHIELD 880 GF coating using airless equipment at a thickness of 400 microns (16 mils). A second coat of SIGMASHIELD 880 GF coating was applied in the same manner at a thickness of 350 microns (14 mils). Finally, the SIGMADUR™ 188 (yellow) coating was applied at 50 microns (2 mils) as a topcoat.

The Benefits

The SIGMASHIELD 880 GF coating was selected because of its abrasion-, corrosion- and seawater resistance, its easy application characteristics and fast-drying capability. The SIGMASHIELD 880 GF coating’s high film-build in one coat enhances its abrasion resistance while providing fabrication suitability. Its resistance to sagging at high-film thickness was also desirable for the manufacturing process of the Rudong wind turbines.

The Result

The ease of application, fast dry and cure properties were excellent. The final inspection yielded an ideal aesthetic appearance, with no evidence of sagging or cracking even at 800–1000 microns (32–40 mils). SIGMASHIELD 880 was dry to handle in five hours at 25°C–30°C (77°F–85°F).

In general, ZPMC was satisfied with this application and the painting contractor commented, “SIGMASHIELD 880 applied very well with airless application providing good coating atomization and film formation without sagging.”



First image: Surface preparation

Second image: Topcoat with the SIGMADUR 188 coating

Third image: Inspection

Fourth image: Completed paint system

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