CASE STUDY

Marine Engineering & Offshore Construction Project

STEELPRO GROUP
TRUSTEDFACTORY

OFFSHORE STRUCTURES

"HAIYOU GUANLAN" OFFSHORE WIND POWER PLATFORM

In the "Haiyou Guanlan" project, we encountered the challenges posed by a complex deep-sea environment. The client required steel plates with core performance at -40°C and Z35 through-thickness properties, with maximum dimensions of 22 meters in length, 3000 mm in width, and 70 mm in thickness—presenting significant production challenges.

Leveraging our equipment advantages, we supplied high-strength steel with outstanding toughness and superior fatigue resistance for tubular piles, fully capable of meeting these extreme specifications. By strictly controlling the purity of molten steel and optimizing our manufacturing processes, we ensured consistent performance under extreme conditions. Starting in June 2022, we managed to complete rapid deliveries within two weeks through our advanced logistics system, which fully supported the project's on-schedule progress.

OFFSHORE STRUCTURES

XIJIANG 30-2B OFFSHORE OIL AND GAS DRILLING PLATFORM

In the Xijiang 30-2B offshore oil and gas drilling platform project, we addressed the client's need for ultra-high-strength steel capable of withstanding extreme environmental conditions. Constructed at a depth of 98 meters, the platform required steel with exceptional impact toughness and corrosion resistance.

We supplied high-performance marine-grade DH36 and DH36-Z35 steels, which were chosen for their durability and adaptability, making them ideal for this project. These steels were primarily used in constructing the deep-water jacket, with a total supply volume reaching 12,000 tons. Notably, all steel plates exceeding 55 mm in thickness met rigorous core performance standards. Throughout the supply process, we provided comprehensive technical support, ensuring the project's successful completion.

OFFSHORE STRUCTURES

"HAIYANG SHIYOU 981" DEEPWATER SEMI-SUBMERSIBLE DRILLING PLATFORM

To meet the high-quality steel requirements for China's first sixth-generation deepwater semi-submersible drilling platform, "Haiyang Shiyou 981," operating in the South China Sea, we faced stringent environmental challenges. With an operating water depth of up to 1,500 meters, the platform demanded exceptional toughness, corrosion resistance, and strength from its materials.

In response, we supplied DH36 wide-thick plates, ranging from 12 to 60mm in thickness, featuring excellent corrosion resistance and mechanical performance suitable for deepwater operations. We provided a total of 21,000 tons of steel, covering more than 2/3 of the platform's total steel requirements. Through reliable supply and robust technical support, we ensured the platform's high-quality drilling capability and safe operation.

JU2000E SELF-ELEVATING DRILLING PLATFORMS "GUOSHUN" AND "GUOXIN"

The JU2000E self-elevating drilling platforms "Guoshun" and "Guoxin" required materials with high strength, toughness, fatigue resistance, anti-lamellar tearing properties, and excellent weldability.

We supplied the necessary 100mm F690 ultra-high-strength marine steel, leveraging our advanced continuous casting technology and superior product performance. This support enabled the smooth delivery of the platforms and contributed to the execution of China's oil and gas exploration missions.

SHIPBUILDING

"MSC GEMMA" 24,000 TEU ULTRA-LARGE CONTAINER SHIP

During the construction of "MSC GEMMA," the third ship in the world's largest 24,000 TEU ultra-large container vessel series, the client set rigorous requirements for material strength, durability, and weldability to withstand complex marine conditions.

We delivered 115,000 tons of shipbuilding steel, which, with its high strength, toughness, and corrosion resistance, effectively met the structural demands of the vessel's hull.

"ONE FRONTIER" 15,000 TEU LARGE CONTAINER SHIP

Against the backdrop of growing maritime demand and the trend toward larger container ships, the 15,000 TEU "ONE FRONTIER" container ship required stringent crack resistance for its hull structure.

We supplied 100mm thick EH40 BCA2 and EH47 BCA2 grade crack-arrest steels, known for their exceptional toughness and weldability, meeting the project requirements and ensuring structural stability of the hull in complex sea conditions.

Xihoumen Bridge

The Xihoumen Bridge is renowned for its large span, height, and resistance to wind and seismic forces. The bridge demanded exceptionally high-performance steel, including ultra-high tensile strength, high strength, and toughness to withstand wind, waves, and tidal loads.

We supplied 28,500 tons of Q345C steel plates, 6,300 tons of Q345C coils, 6,200 tons of steel wires and galvanized steel wires, 9,400 tons of steel strands, and 22,800 tons of rebar, all meeting the 1770 MPa strength level with outstanding corrosion resistance and weldability to ensure structural stability and durability.

Pingtan Strait Rail-Road Bridge

Located in the Pingtan Strait, known as the "forbidden zone for bridge building" due to frequent typhoons, the Pingtan Strait Rail-Road Bridge was an exceptionally challenging project. We supplied over 55,000 tons of high-grade Q370qE and Q370qEZ35 bridge steel plates, meeting strength, toughness, and weldability requirements to withstand typhoons and wave forces. The steel plates passed authoritative welding certifications, achieved Grade 1 national flaw detection standards, and maintained impact performance above 120 joules at -20°C, fully supporting the bridge's safe and stable construction.

Zhoushan Jintang Bridge

The Jintang Bridge requires high-strength and tough steel to bear heavy loads and wind forces. We provided 27,955 tons of Q345D steel box beams, Q235B and Q345D plates, along with 113,547 tons of Q345C/D steel coils and 12,000 tons of H82B steel strands. Q345D steel, with its high strength, excellent toughness, good weldability, and low-temperature toughness, ensures the bridge's safety in low-temperature and complex marine environments. The steel features anti-corrosion coatings and hot-dip galvanization to meet the bridge's corrosion resistance and precision requirements.

Donghai Bridge

The Donghai Bridge spans the challenging waters of Hangzhou Bay, with highly corrosive seawater. To meet its load-bearing and traffic safety requirements, we used cathodic protection, supplying over 600,000 tons of earthquake- and wind-resistant steel, including high-strength weathering steel, guardrail steel, steel strands, sheets, and rebar, ensuring the bridge's strength and toughness.

Hong Kong-Zhuhai-Macao Bridge

The Hong Kong-Zhuhai-Macao Bridge required steel that could withstand typhoons, earthquakes, seawater corrosion, and fatigue.

We provided a total of 400,000 tons of steel, including pipe pile steel, U-rib steel, cold-rolled enamel steel, H-shaped steel, color-coated sheets, bridge steel, duplex stainless steel rebar, and threaded steel. By improving production processes, we enhanced the purity of the steel, ensuring high strength and toughness. To resist chloride corrosion, we applied epoxy coating on the rebar and used oil-free steel wire rope packaging, ensuring quality steel for the bridge's successful completion.

"HAIJI NO. 2" – ASIA'S FIRST DEEP-WATER JACKET PLATFORM

As Asia's first deep-water jacket platform, the "Haiji No. 2" project faced significant challenges. Operating in the deep-water, high-salinity, and humid conditions of the Zhujiang Basin required materials with ultra-high strength, corrosion resistance, and lightweight properties. These materials needed to withstand extreme conditions that may only occur once in a century, ensuring the platform's long-term structural stability against severe corrosion.

SOLUTION

As a leading steel manufacturer in China, we collaborated closely with the project team to develop high-strength S420 steel plates that meet national standards. This steel offers exceptional strength and corrosion resistance, making it ideal for ultra-deep-water structures in marine environments. Its lightweight properties also reduced the platform's overall weight, optimizing costs. Through close cooperation with technical teams, we resolved challenges related to welding S420 steel and multi-machine hoisting, ensuring stable application in the "Haiji No. 2" platform.

DELIVERY

For the "Haiji No. 2" project, we supplied 26,000 tons of high-strength S420 steel. Compared to traditional materials, this steel reduced the platform's weight by 5,000 tons, significantly lowering project costs and meeting the practical requirements for transportation and hoisting. Our high-quality delivery ensured the project stayed on schedule, with construction completed in just 26 months.

OCEAN FARM 1

Ocean Farm 1 is the world's first semi-submersible intelligent offshore fish farm, requiring steel with high strength, toughness, corrosion resistance, low-temperature toughness, and good weldability to ensure stability and safety in marine environments.

We supplied high-toughness, high-strength FH36 shipbuilding structural steel, which offers excellent strength, toughness, and corrosion resistance, suitable for large marine structures and capable of withstanding extreme conditions, ensuring the farm's safety and stability in complex sea conditions.

Qingdao Jiaozhou Bay Bridge

The Jiaozhou Bay Bridge demanded highly corrosion-resistant steel, especially for the piers in the splash zone. After process improvements, we supplied HRB400M rebar with excellent corrosion resistance and high strength, capable of withstanding weakly alkaline seawater environments. This steel extends the service life over ten times that of regular rebar, meeting the bridge's 120-year design lifespan requirement.

THANK YOU!

CONTACT

Inspired by SteelPRO Group's success story?
Get in touch with us to start your journey toward outstanding results.

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