

## The Oxagon project: developing port infrastructure



### Project details

## Port of NEOM

**Location**  
Saudi Arabia

**Client**  
NEOM

**External partners**  
Modern Building Leaders (MBL), Boskalis

**Construction period**  
2023 - ongoing

**Contract type**  
Design & Build

**Total value**  
€741 million



**This monumental endeavour in modernising and expanding port infrastructure is poised to set new industry standards and leave behind a transformative legacy.**

Bruno Mendiaux, Project Director

In the heart of remote yet strategically vital maritime routes around the Suez Canal, the Red Sea, and the Persian Gulf, lies the Oxagon project - an ambitious endeavour that exemplifies BESIX-Six Construct's unwavering commitment to excellence in marine construction. Focused on modernising and expanding port infrastructure, the Oxagon project is set to play a pivotal role in facilitating the transportation of goods by large and medium-sized container ships, feeder ships, and bulk carriers in the region. The completion target for this monumental project is set for March 2025.

### Defining the project scope, confronting challenges, and assembling the right team

The Oxagon project is a comprehensive transformation of the port that involves several key goals. These include deepening the access channel for larger vessels, expanding the harbour basin, constructing various quay walls for different purposes, demolishing, and upgrading existing facilities, installing port equipment and infrastructure, and setting up rails for gantry cranes.

However, building quay walls in this project comes with significant challenges. The varying soil conditions, ranging from extremely hard ground to soft soil, require specialised approaches in different areas. The project's scale and equipment requirements demand careful planning and execution. Employing an adequate number of skilled professionals is crucial for effective project management. Additionally, operating in a remote location presents logistical complexities in sourcing materials, although BESIX-Six Construct anticipates improvements in this area soon.

Collaboration stands as the linchpin for Oxagon project's success. BESIX's primary focus lies in carefully selecting and deploying the right individuals to ensure seamless teamwork. With approximately one thousand professionals engaged in the joint venture during peak periods, its paramount objective continues to be cultivating a unified team spirit.

### Innovative construction methods

Central to the success of the Oxagon project is the construction method employed by BESIX-Six Construct: the use of sheet piles combined with H-beams (known as King Piles) to form a robust combi wall. Sheet piles are sections of sheet materials with interlocking edges, driven into the ground to provide earth retention and excavation support, and King Piles are rolled H-beams with embedded interlocking clutches and form the structural core of the combi wall. In the case of the Oxagon project, King Piles measuring approximately 1.44 metres by 35 metres play a pivotal role in creating stable quay walls.

However, the unique challenge faced by BESIX-Six Construct is the diverse soil composition across the project site. While some areas feature extremely hard ground, others consist of soft soil requiring advanced geotechnical engineering by our in-house design office. To tackle this, BESIX-Six Construct's approach involves replacing the existing soil with sturdier material in specific locations. This flexible method allows for the successful installation of between 75 to 100 metres of combi wall per month.

### Pioneering sustainable practices

The Oxagon project underscores BESIX-Six Construct's commitment to sustainability. The company employs sheet piles manufactured using green energy, significantly reducing CO<sub>2</sub> emissions. This environmentally friendly approach aligns with the client's priority of executing the project in the most sustainable way possible.

A noteworthy detail is that a total of 41,000 tons of 'green' steel, produced by a Luxembourg-based company, will be utilised in the project. This choice reflects a conscious decision by the client to prioritise environmental friendliness, even at a higher cost.

Moreover, BESIX-Six Construct shall process, and incorporate in the works, approximately half a million rocks that are a by-product of NEOM's blasting works, to reduce the carbon footprint of the project by re-using normally leftover material.

### Committed to diversity, inclusion, and worker welfare

"At BESIX-Six Construct, we prioritise diversity, inclusion, and worker welfare. This commitment is evident in projects like Oxagon, where our diverse team hails from various countries - Egypt, South Africa, Romania, India, Pakistan, Sudan, the Philippines, and more.

Our focus on worker welfare includes ensuring a safe working environment, fair compensation, and strict adherence to labour laws and regulations, reflecting our dedication to the well-being and dignity of every individual on our team", explains Geert Aelbrecht, Chief People Officer at BESIX Group.