

Abstract

Infrastructure in ports is highly susceptible to corrosion, with approximately 20% of the sector's added value being lost due to corrosion. To address this issue, the SOCORRO project has been developed, aiming to predict corrosion before it occurs rather than measuring it after the fact.

This research focused on investigating the influence of environmental factors on the corrosion rate of steel in port environments and its correlation with mass loss measurements and CCube data. Extensive research revealed that the Sas-Slijkens location adjacent to the Oostende setup had a significant impact on the environmental parameters.

The CCube with LPR sensors proved to be largely impractical, as evidenced by the average corrosion rate of approximately 0.700 mm/year measured for S355 in VL1 from late April to late May, whereas mass loss measurements on March 1st indicated a corrosion rate of approximately 0.210 mm/year for S355 in VL1. This discrepancy suggests a substantial error factor of 3.

Furthermore, the study demonstrated that S355 exhibited a higher corrosion rate compared to S235 in all setups, while 316L demonstrated the highest corrosion resistance, as expected. These findings can be integrated into the SOCORRO prevention model to recommend specific preventive measures tailored to each steel type.