

Green Plank® Case Study

From Rotting Wood to Long-Life NFC Decking

Reducing Maintenance in Malmö's Coastal Public Spaces



1. Project Overview

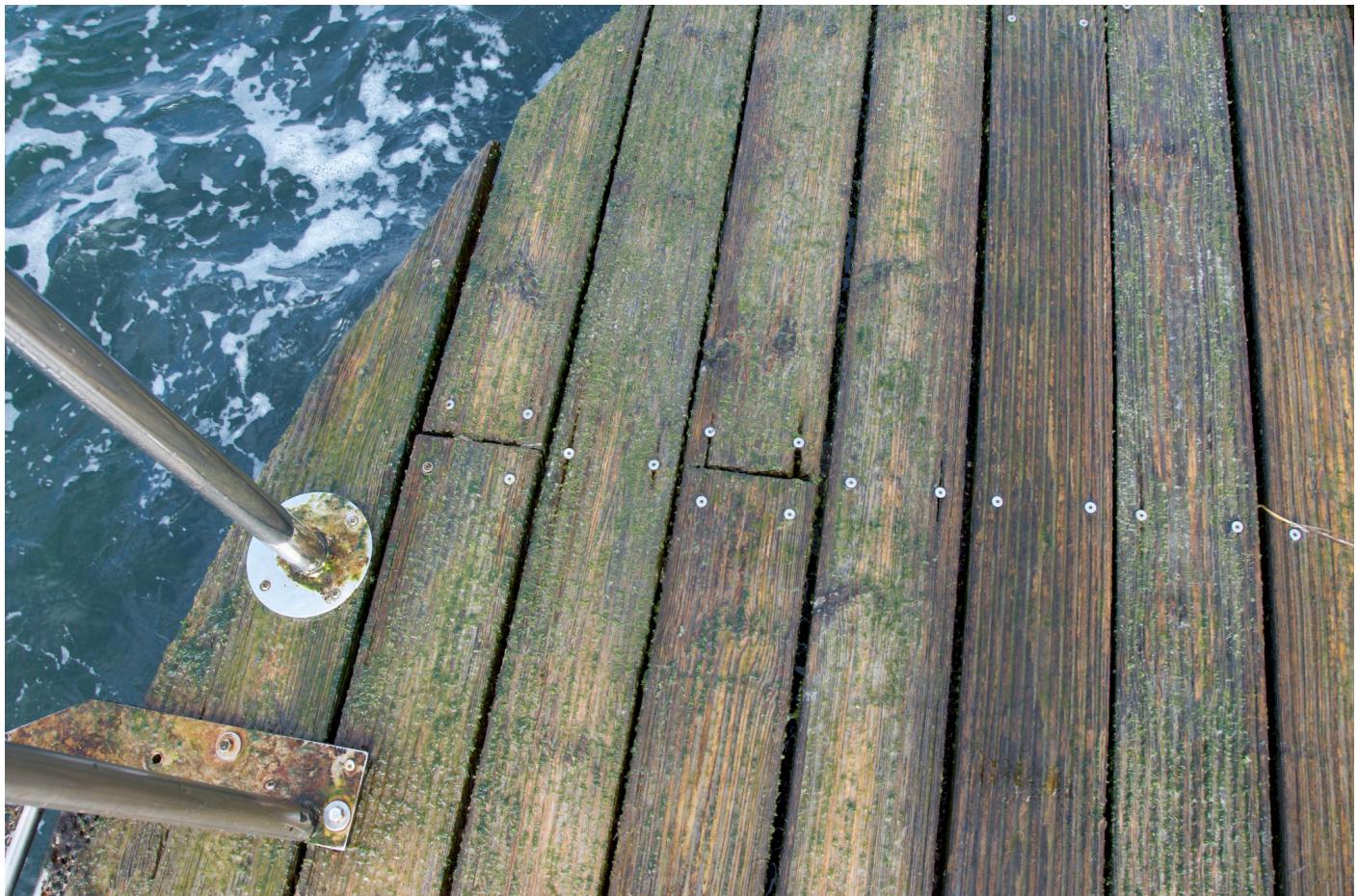
Project name: Spejaren Circular Deck Renewal

Location: Daniaparken, Sundspromenaden, Västra Hamnen, Malmö, Sweden

Year(s): 2019–present

Client / authority: Malmö City (public)

Application: Coastal public bathing deck / circular bath bridge (Ø6 m)



2. Background & Challenge

The three circular bathing decks known as *Spejaren* are located along the exposed shoreline of Västra Hamnen, directly facing the Øresund. These decks are heavily affected by **constant moisture, wave action, seaweed and algae accumulation, and repeated wet-dry cycles**.

Historically, the decks were built with wooden planks. In practice, this led to recurring failures:

- Accelerated **rot and surface degradation**
- Loss of slip resistance due to biological growth
- Rapid aesthetic deterioration
- **Often replacement of planks**

The decks are frequently flooded by seawater during high waves and storms, meaning that for large parts of the year they remain wet or mostly submerged. This created a cycle of **high labor costs, frequent material replacement**, and a growing **CO₂ footprint** driven by repeated removals, transport, and installation of new wood.

By 2019, the wooden planks at one of the Spejaren decks were fully rotten. Malmö City needed a solution that could withstand extreme coastal exposure while reducing maintenance, improving safety, and supporting the city's sustainability objectives.

3. Project Requirements

For the replacement at Spejaren, Malmö City defined clear technical and operational requirements:

- Long service life in a **marine and wave-exposed environment**
- Resistance to constant moisture, algae, and seawater contact
- Stable surface with **reliable slip resistance**
- UV and colour stability under continuous sun exposure
- Minimal maintenance limited to basic cleaning
- Reduced replacement frequency and lifecycle CO₂ impact
- Compliance with public procurement and environmental policies



4. Solution: Green Plank® System

In May 2019, Malmö City replaced the fully deteriorated wooden planks on one Spejaren circular deck with **Green Plank® natural-fiber composite (NFC) planks**.

Material composition:

- Natural fibers based on **rice-hull fibers** (instead of wood fibers)

- Recycled HDPE polymers
- No PVC

The choice of rice-hull-based NFC material was driven by its resistance to biological degradation and moisture uptake—key failure points in previous wooden installations.

The deck was rebuilt using the existing circular design, with Green Plank planks installed as direct functional replacements.

5. Key Technical Advantages

- **Moisture resistance:** Material does not rot or degrade under constant seawater exposure
- **Surface safety:** Maintains slip resistance despite algae-prone conditions
- **Dimensional stability:** Performs reliably under wave impact and wet-dry cycling
- **UV behaviour:** Retains original colour despite full sun exposure
- **Maintenance profile:** No painting, sealing, or plank replacement required

6. Environmental & Sustainability Impact

- Eliminates annual replacement of wooden planks
- Reduces material waste and transport-related emissions
- Supports circular material use through recycled polymers and agricultural by-products
- Lower lifecycle CO₂ impact compared to repeatedly replaced timber
- Sustainability driven by **longevity and reduced intervention**, not short-term material substitution

7. Economic & Operational Benefits

- Removal of yearly plank replacement programs
- Significant reduction in labor hours for maintenance crews
- Maintenance limited to **weekly cleaning with water and soap**
- Predictable long-term costs for a high-exposure public asset

For Malmö City, the change transformed Spejaren from a recurring maintenance liability into a stable, low-intervention installation.



8. Results & Outcomes

- Since installation in **May 2019**, the Green Plank deck has remained in **perfect condition**
- As of **2026**, the planks show no structural, surface, or colour degradation
- Slip resistance remains consistent despite frequent seawater coverage
- Visual appearance remains unchanged from original installation
- Demonstrates suitability for the most demanding coastal public environments

9. Conclusion: Why This Case Matters

The Spejaren deck renewal shows how **replacing wood with durable NFC planks** can fundamentally change the economics and sustainability of coastal public infrastructure.

- **For municipalities:** proven reduction in maintenance burden and lifecycle cost
- **For architects:** confidence in long-term performance under extreme exposure
- **For public buyers:** a real-world reference where longevity directly delivers sustainability

This project is not a pilot or laboratory test—it is a **seven-year, real-world reference** in one of Malmö's most demanding marine environments. It demonstrates that sustainable composite solutions, when correctly specified, can outperform traditional materials while reducing cost, CO₂ impact, and operational risk.

