

Green Plank® Case Study

Reducing Maintenance Costs in Public Furniture

Using Environmentally Friendly Natural-Fiber Composite (NFC) Planks



1. Project Overview

Project name: Kockum Bench Renewal Program

Location: Malmö, Sweden (initial pilot at Kungsgatan, Värnhems torg)

Years: 2014–present

Client / authority: Malmö City (public)

Application: Public park and street furniture (bench planks)

2. Background & Challenge

Malmö's iconic **Kockum benches**—more than 1,500 units distributed across the city—are a permanent and highly visible element of the public realm. Traditionally produced with painted wooden planks, these benches were subject to a recurring cycle of material degradation and maintenance.

Despite annual upkeep, the wooden planks typically exhibited **rot, cracking, surface breakdown, and paint failure within 3–4 years**. Regular repainting, repairs, and replacement of damaged planks became standard practice, creating continuous pressure on municipal maintenance resources and public budgets.



In parallel, **graffiti** posed a significant operational challenge. Painted wood absorbed both moisture and graffiti pigments, making cleaning difficult and often ineffective. Repeated graffiti removal accelerated surface wear, further shortening the service life of the benches and increasing labor intensity.



*Graffiti removal and cleanability tests were commissioned in 2014–2015 to **Saneringscompaniet i Malmö AB**, a specialist contractor in graffiti removal and surface cleaning.*



When evaluating alternative materials, Malmö City also identified **UV resistance and long-term colour stability** as critical requirements. The Kockum benches are defined by their distinctive Malmö-green appearance, and any replacement material needed to maintain a natural and consistent colour over time when exposed to sunlight and outdoor weathering.

As part of the evaluation process, **extended natural weathering tests** were carried out using Green Plank composite profiles in **multiple green tones and shades**. The profiles were clearly marked and installed for **nearly one year of continuous outdoor exposure**, allowing Malmö City to assess:

- Colour stability under prolonged UV radiation
- Visual ageing and tonal consistency
- Suitability of different shades to match the original Malmö-green identity



This time-based testing was essential to confirm that any replacement material for the benches would meet not only **long-term durability** and **low-maintenance** requirements, but also the aesthetic and identity standards of Malmö's public spaces—while at the same time supporting a **lower-CO₂**, **environmentally responsible**, and **recyclable** solution.

Taken together, material degradation, graffiti-related maintenance, rising labor costs, and strict visual requirements made it clear that a fundamentally different and more sustainable approach was needed—one capable of delivering long-term performance without altering the character of the iconic Kockum benches.

3. Project Requirements

Malmö City defined clear technical and operational requirements for any alternative solution:

- Long service life under constant outdoor exposure
- Resistance to rot, cracking, and freeze–thaw cycles
- Stable colour and surface integrity over time
- Proven resistance to graffiti and ease of cleaning
- Minimal maintenance over the full lifecycle
- Compatibility with the existing Kockum bench design
- Alignment with municipal sustainability and public procurement objectives

4. Solution: Green Plank® System

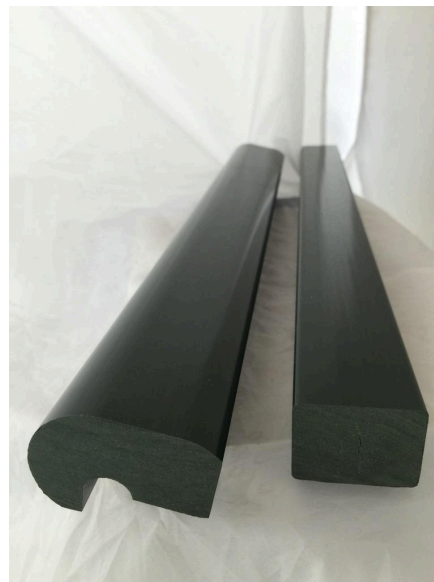
Following evaluation and testing, Malmö City selected **Green Plank® natural-fiber composite profiles** in a dark Malmö-green colour to replace the traditional wooden planks.

Pre-selection testing (2014)

Before approval, Malmö City commissioned material tests focused on **graffiti resistance and cleanability under real outdoor conditions**, including exposure to rain, sunlight, and repeated cleaning cycles. The results demonstrated that the Green Plank NFC material **did not absorb moisture or graffiti paint**, allowing effective cleaning without surface degradation.

Initial order & installation (February 2016)

- 63 × 43 × 1600 mm end profiles
- 33 × 43 × 1600 mm rectangular profiles
- 10 complete Kockum benches



The benches were installed at **Kungsgatan near Värnhems torg**, one of Malmö's busiest public locations, ensuring intensive real-world use and exposure.

5. Key Technical Advantages

- **Material durability:** Composite structure eliminates rot and cracking associated with wood
 - **Dimensional stability:** Maintains form across temperature and humidity variations
 - **Surface performance:** Non-porous surface resists paint penetration and staining
 - **Graffiti management:** Faster and more effective cleaning using standard methods
 - **UV behaviour:** Stable performance under long-term sunlight exposure
 - **Maintenance profile:** No repainting, sealing, or periodic replacement required
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6. Environmental & Sustainability Impact

- Reduced reliance on virgin timber and tropical hardwood alternatives
- Extended service life lowers material turnover and waste generation
- Reduced maintenance minimizes use of paints, chemicals, and associated transport
- Long lifespan improves overall CO₂ performance compared to frequently replaced wood
- Supports circular material use through durable, long-lasting composite design

The sustainability benefit is primarily driven by **longevity and reduced intervention**, rather than short-term material substitution.

7. Economic & Operational Benefits

- Elimination of annual repainting and frequent plank replacement
- Lower lifecycle cost compared to traditional wooden bench solutions
- Reduced labor hours for municipal maintenance teams
- Predictable long-term budgeting for public furniture assets

For Malmö City, the solution addressed both **direct maintenance costs** and **indirect operational disruption** in busy public areas.

8. Results & Outcomes

- The initial 10 benches at Kungsgatan performed successfully under heavy daily use
- Based on performance, Malmö City later ordered material for **30 additional benches**
- Continued procurement followed to replace deteriorated wooden Kockum benches across the city
- **More than 10 years later**, the first benches installed near Värnhems torg continue to perform without structural or surface failure
- Visual appearance remains intact, confirming long-term durability under real urban conditions



9. Conclusion: Why This Case Matters

This project demonstrates how **material choice at component level** can fundamentally improve the lifecycle economics and sustainability of public infrastructure.

- **For municipalities:** documented reduction in maintenance burden and long-term cost control

- **For architects and planners:** proof that durable composites can preserve design identity
- **For public buyers:** a validated, decade-long reference under real urban conditions

The Malmö Kockum bench project stands as a **long-term, real-world reference**—not a pilot, not a laboratory test—showing how durable composite solutions can replace traditional materials where performance, economy, and sustainability must align.