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Comparative analysis

of net lifecycle greenhouse gas emissions for Bromma STS spreader models

Hydraulic spreader - STS45 &
all-electric spreader - STS45E G2

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Introduction

This document presents a comprehensive comparison of the net lifecycle greenhouse gas emissions for two Bromma spreader models: the Hydraulic STS45 and the All-Electric STS45E G2. In response to the growing global imperative to reduce greenhouse gas emissions, Bromma embarked on a detailed analysis of two of its spreader models to determine their environmental impact throughout their lifecycle. The Hydraulic STS45 and the Electric STS45E G2 were chosen for comparison due to their prominence in port operations.

Bromma In Brief
Bromma is the industry market leader in ship-to-shore spreaders, mobile harbour crane spreaders, and yard crane spreaders. A pioneer in the container handling industry, Bromma is focused on lifting the productivity of its customers through more reliable spreaders. Bromma has delivered crane spreaders to 500 terminals in 90 nations on 6 continents, and Bromma spreaders are in service today at 99 out of the world's largest 100 container ports. Bromma's industry-leading all-electrics spreaders and recent products such as the Spreader Monitoring System are part of this continuing effort.

Product information

The Bromma **STS45** is a versatile twin-lift spreader for ship-to-shore cranes, enabling the handling of various container sizes. Its separating feature allows synchronized movement of two containers, crucial for landside transport. Crafted from European high-strength steel, it ensures a durable yet lightweight design. The user-friendly STS45 has easily accessible components for maintenance.

The **STS45E G2** is an all-electric twin-lift spreader designed to meet environmental goals without compromising productivity. It's the market's fastest all-electric spreader, offering precise telescoping and increased twin-separating speed. Opting for this spreader reduces electricity consumption, cutting operational costs and eliminating hydraulic leakage risks. The high-quality steel construction provides substantial lifting capacity with a low nominal tare weight, thanks to the box design.
All components are easily assembled, adjusted, and accessible for maintenance.

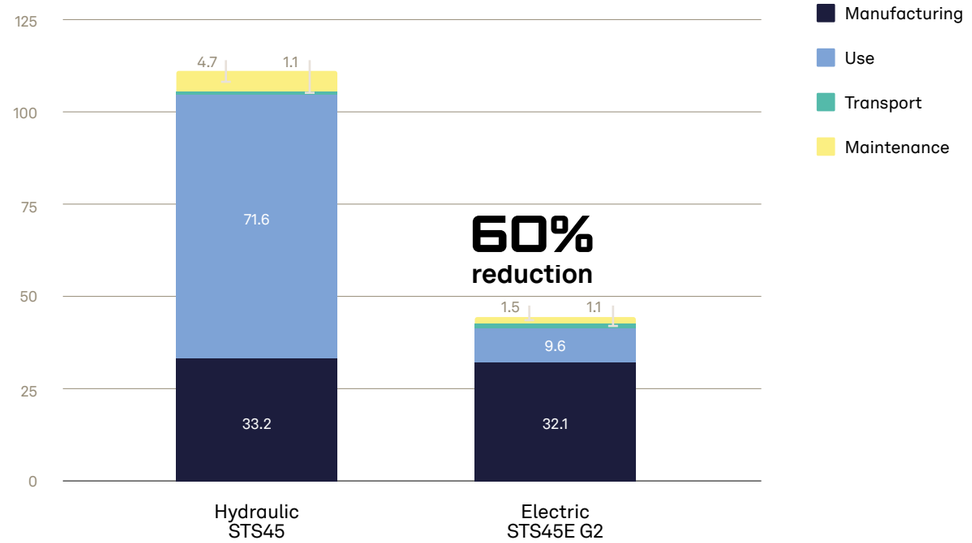
Life cycle assessment methodology

The greenhouse gas emission calculations are rooted in the Life Cycle Assessment methodology, a systematic approach outlined by the ISO 14067 standard. This methodology allows for a holistic examination of emissions associated with the production, use, transportation and maintenance of the Bromma spreaders. By employing a standardized approach, the comparison ensures consistency and reliability in assessing environmental performance.

Comparative Analysis

The comparison for Bromma STS45 and STS45E G2 spreader models, based on a rigorous Life Cycle Assessment, demonstrates that greenhouse gas emissions the all-electric STS45E G2 are significantly lower across all stages, resulting in a total reduction of **60%** over the full lifecycle when compared to the Hydraulic STS45.

Figure 1. Net lifecycle greenhouse gas emissions tons CO_2 eq.



Product Manufacturing
The manufacturing phase constitutes a crucial aspect of a product's environmental impact. The Electric STS45E G2 exhibits a 3.3% reduction in greenhouse gas emissions compared to its hydraulic counterpart. This reduction is attributed to the efficiency gains and environmental advantages associated with the lighter weight and absence of hydraulic system.

Use phase
The use phase represents a significant portion of the product lifecycle and is a critical focus area for emission reduction strategies. The all-electric STS45E G2 demonstrates a remarkable 86.6% reduction in greenhouse gas emissions during this stage compared to the Hydraulic STS45. This substantial reduction is primarily attributed to the inherent efficiency of electric systems, which minimize energy losses and reduce reliance on fossil fuels.

Transport
The emissions from the transportation required for the manufacturing and distribution of both products has a low contribution (around 1%) when compared to the other life cycle phases.

Maintenance
The Hydraulic STS45 incurs 4.7 tons CO_2e in maintenance-related emissions, whereas the Electric STS45E G2 demonstrates a 68.1% reduction, emitting only 1.5 tons CO2e. This reduction can be attributed to the inherent advantages of electric spreader technology, including simplified maintenance procedures, lower energy requirements for upkeep, and elimination of hydraulic oils.

Conclusion

The comprehensive analysis of greenhouse gas emissions throughout the product lifecycle underscores the transformative potential of electric spreaders. With a 60% reduction in total emissions compared to the Hydraulic STS45, the all-electric STS45E G2 exemplifies Bromma's commitment to decreasing the effect of climate change within the port industry. This document serves as a testament to the positive environmental impact achievable through innovation and responsible decision-making, as the Electric STS45E G2 sets a new standard for eco-conscious port equipment, supporting a cleaner, more resilient global supply chain.

References

ISO 14040:2006: Environmental Management-Life Cycle Assessment - Principles and framework.

ISO 14044:2006: Environmental Management-Life Cycle Assessment - Requirements and guidelines.

LCA report: “Bromma STS model LCA report (UPDATED) 20.10.2023” 5 Comparative

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We reserve the right to change the design and technical data without prior notice.

sales@bromma.com
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