

# Optimized Spreader Performance

## Total Cost of Ownership in a Macro Perspective

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APM TERMINALE

# Spreader Impact

- Critical Part
- Big Influence on Crane Productivity
- Cost vs. Rol



# Wide-reaching spreader installations



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● Clients/Terminals

# References (15 years)

## STS Spreaders

- 3700 (all models)
- 2900 STS45

## Yard Spreaders

- 5800 (all models)
- 4200 YSX40/45E

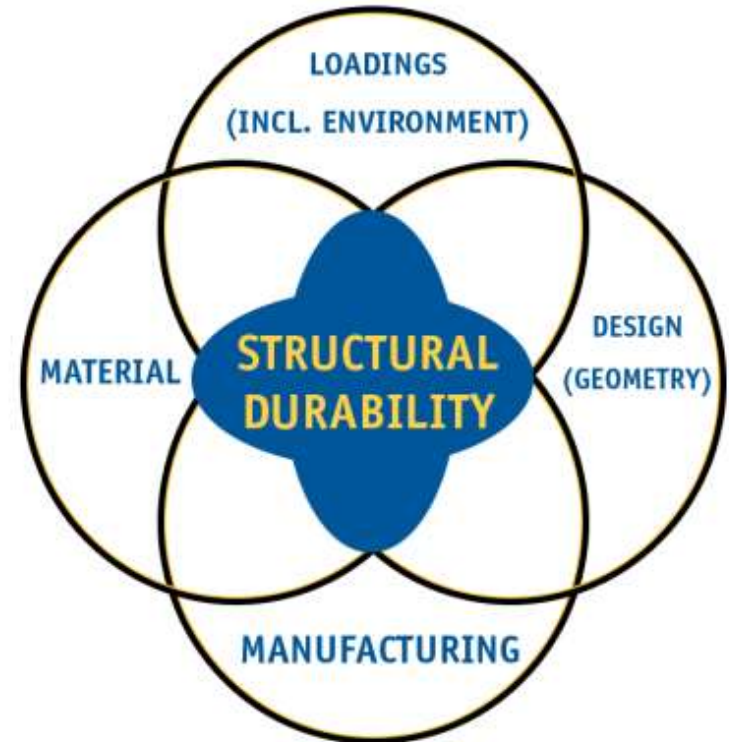


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# Structural Durability

- The structural durability of a spreader and its sub-component depends on a few factors:
  - Design (Geometry)
  - Material
  - Manufacturing
  - Loadings (including environment)



# Bromma Spreaders are Lighter

	Compared to other brands
STS45	1-2 tons lighter
YSX40E YSX45E	>0,8 tons lighter



Conforming to EN 13001; DIN 15018 H2B4,  
FEM 1.001; British Standard BS 2573

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# Collaboration with KTH

- Royal Institute of Technology
- Research areas
  - Optimized lightweight steel structures
  - Simulation of welding distortions in manufacturing



## Bromma Partners with World-Leading University

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**Spreader manufacturer Bromma has positioned one of its experts at the KTH Royal Institute of Technology technical university in Stockholm, Sweden.**

Bromma's Structural Calculation Specialist, Mansoor Khurshid, Ph.D. (pictured below) is now the Affiliated Faculty in lightweight structures at KTH's Department of Aeronautical and Vehicle Engineering.

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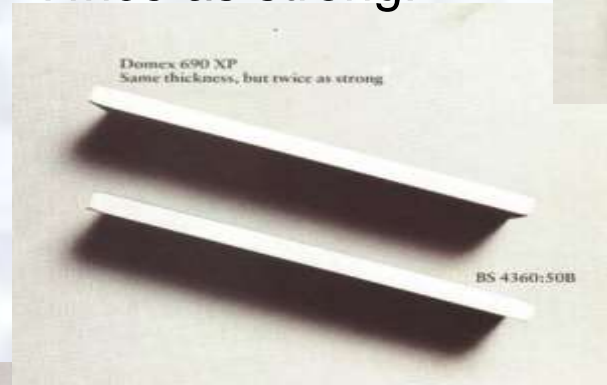


# World class engineering

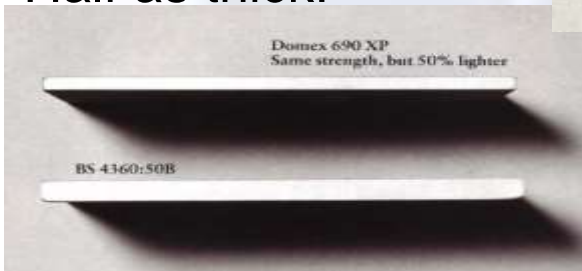
Smaller bending radius!



Twice as strong!



Half as thick!



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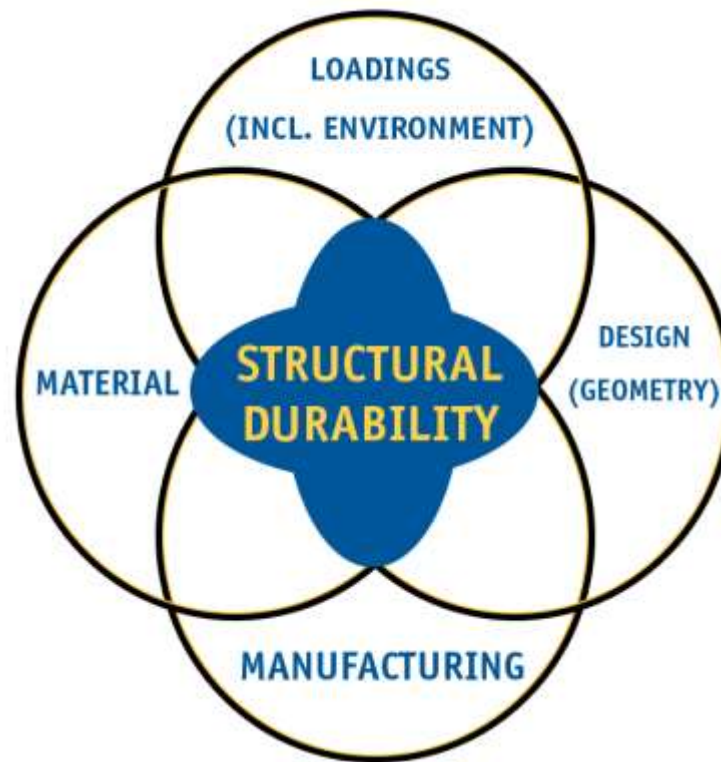
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# Effects

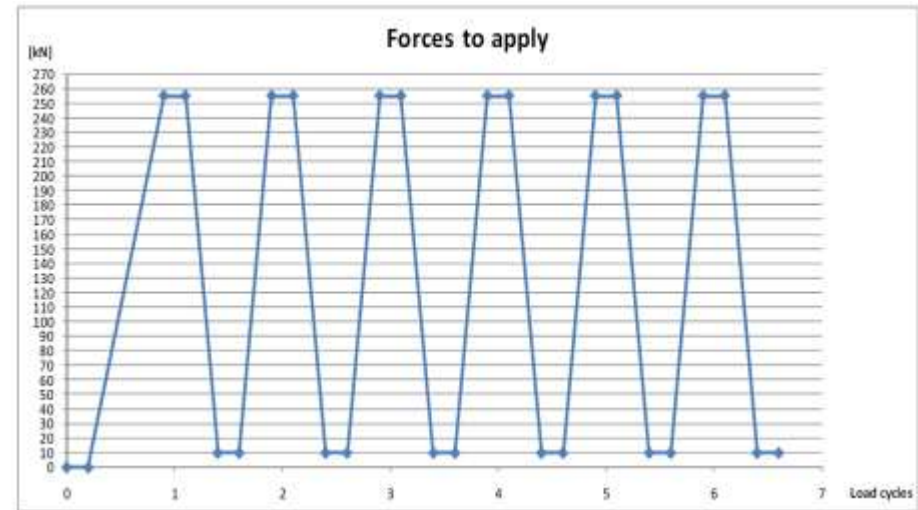
(per ton weight difference & 60 000 moves)

<b>STS</b>	
Energy consumption	1 500 USD / year
Crane life length	+ 8% (or 1,6 years on a 20y crane life)
<b>Yard</b>	
Energy consumption (electric)	400 USD / year
Energy consumption (diesel driven RTG)	1 000 USD / year
Crane life length	+ 12%

# More Durable Twistlock Pin example



# Evaluation of twistlocks



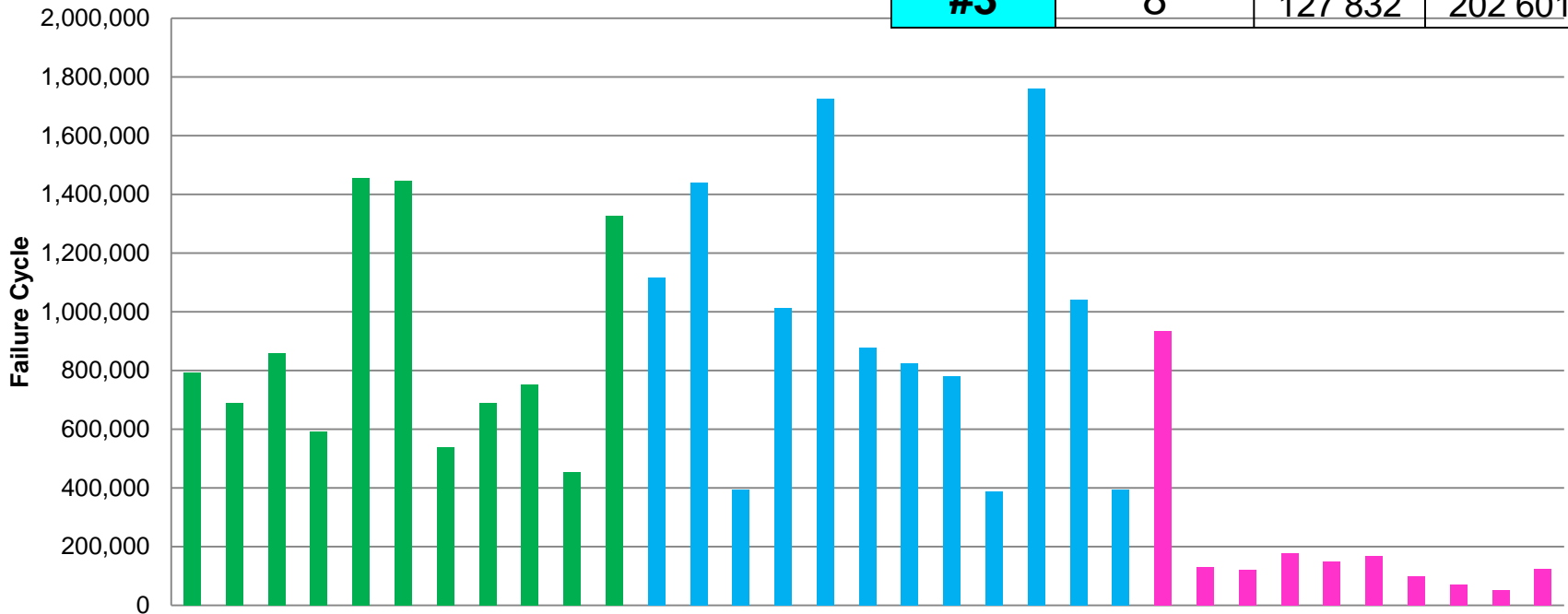
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# Results from twistlock tests

Source 1 – Bromma Supplier 1
Source 2 - Bromma Supplier 2
Source 3 - Non Bromma

Source	Number of Samples	Median Failure	Mean Failure
#1	9	753 469	872 176
#2	12	945 185	979 762
#3	8	127 832	202 601



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**More Durable**

**> 4x**



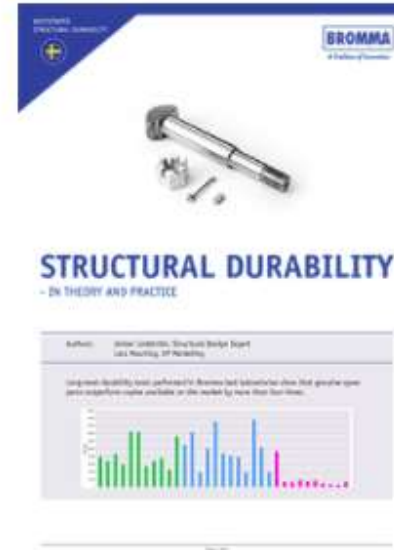
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# White Paper Published

[www.bromma.com](http://www.bromma.com)

## New whitepaper: Structural durability



Long-term durability tests performed in Bromma test laboratories show that the market by more than four times...

Click the **Download / Print** icon at the right on this page to get the new Bro and practice.



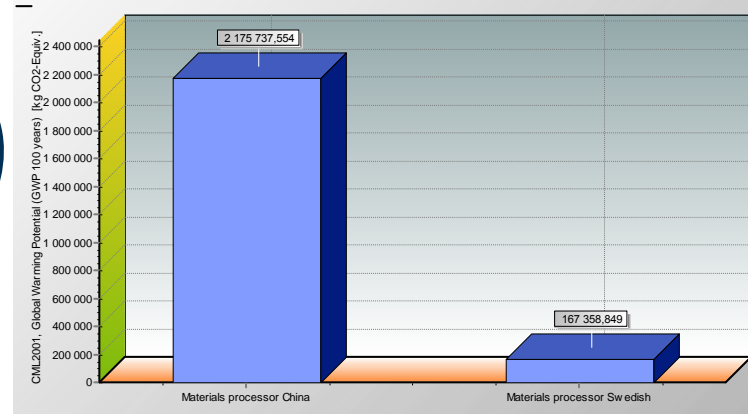
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# Green Leadership



**GREEN ZONE™**  
*Stay up, stay productive*

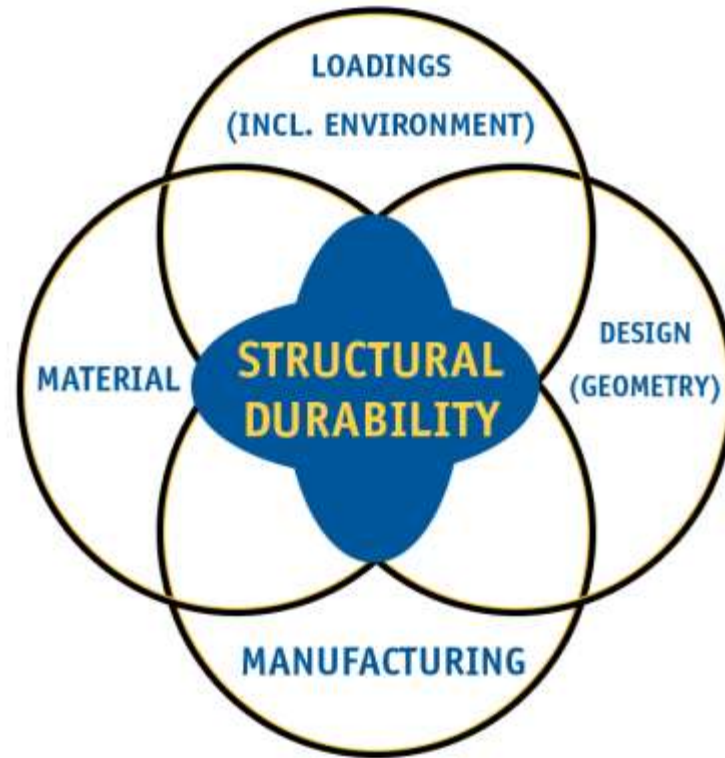


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# Conclusions



The image features the word "BRAND" in a large, bold, blue, sans-serif font. The letters are set against a bright yellow background. A white rectangular box is positioned in the center, overlapping the letters 'R' and 'A'. Inside this box, the text "SWEDISH HERITAGE" and "QUALITY ASSURED" is written in a smaller, blue, sans-serif font, stacked in two lines.

**BRAND**

**SWEDISH HERITAGE**  
**QUALITY ASSURED**