

# Kone Oyj, Aleksi Näreikkö



Product Owner, UltraRope Solutions,  
KONE Technology and Innovation

Päädyin Koneelle tehtyäni diplomityöni  
komposiittimateriaalien testauksesta.

Ydiosaaminen: Komponenttien elinikätestaus ja  
tuotekehitysprojektien vetäminen

Nautin työssäni eniten siitä, kun pääsemme viemään  
suunnitellut ratkaisut ääri rajoille ja näemme kuinka  
laskelmat ja totuus oikeasti kohtaavat.





KONE



# Komposiitit kilpailuetuna hissiäikeistöinnassa

Lujite muoviseinäari

ALEKSI NAREIKKO PRODUCT OWNER FINNAROC SOLUTIONS  
ALEKSI.NAREIKKO@KONE.COM

18 OCTOBER 2023

Dedicated to  
People Flow™

# 62 000 kgCO<sub>2</sub>e

=

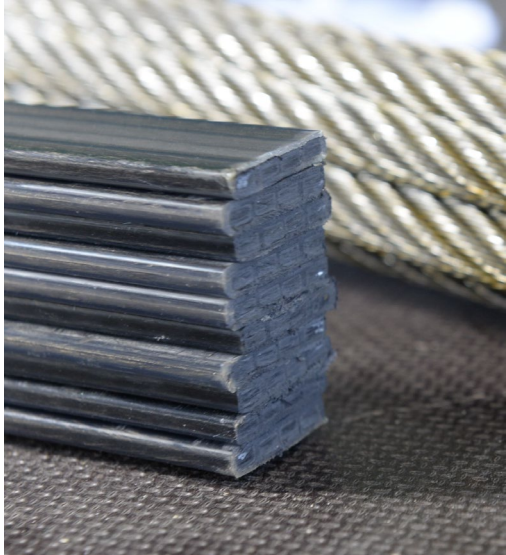
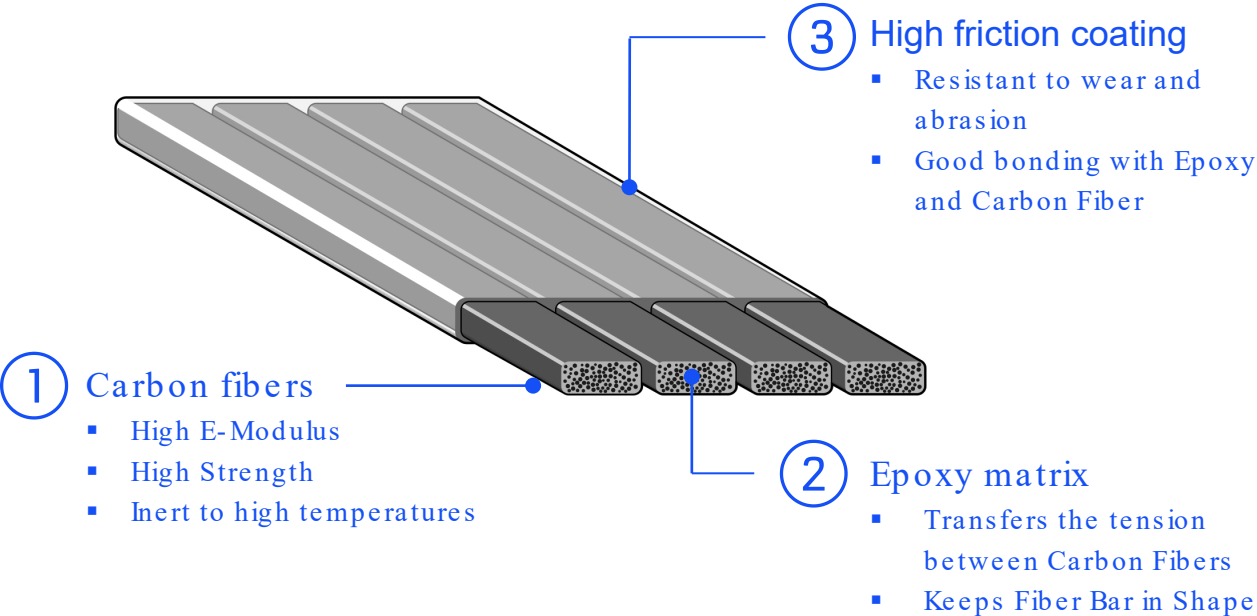
Yearly emission of 32 cars <sup>(1)</sup>

Yearly heating of 24 houses <sup>(2)</sup>

(1) [HTTPS://WWW.EEA.EUROPA.EU/EN/NEWSROOM/MISSIOONEERONEEW CARS ANDVANS](https://www.eea.europa.eu/en/newsroom/missiooneeroneewcarsandvans)  
CITED:4.10.2023

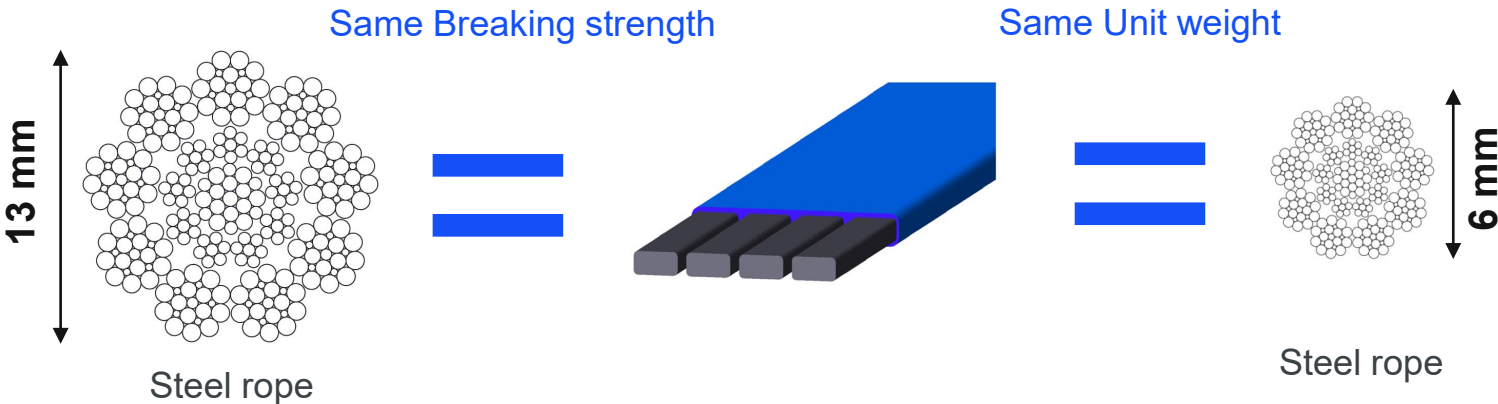
(2) [HTTPS://TULEVAISUUDENRAKENTAMINEN.SAMK.FI/2019/05/21/RAAMATTIEN- LIJALANJALKI/](https://tulevaisuudenrakentaminen.samk.fi/2019/05/21/raamattien-lijalanjalki/)  
CITED:4.10.2023

# KONE UltraRope® - What is it?



# Carbon-Fiber Hoisting Technology

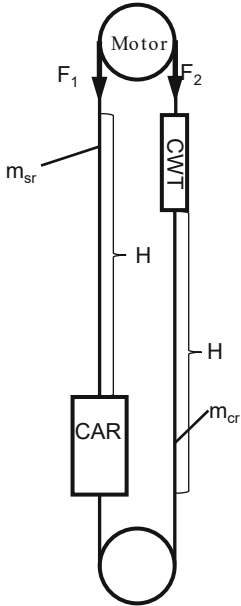
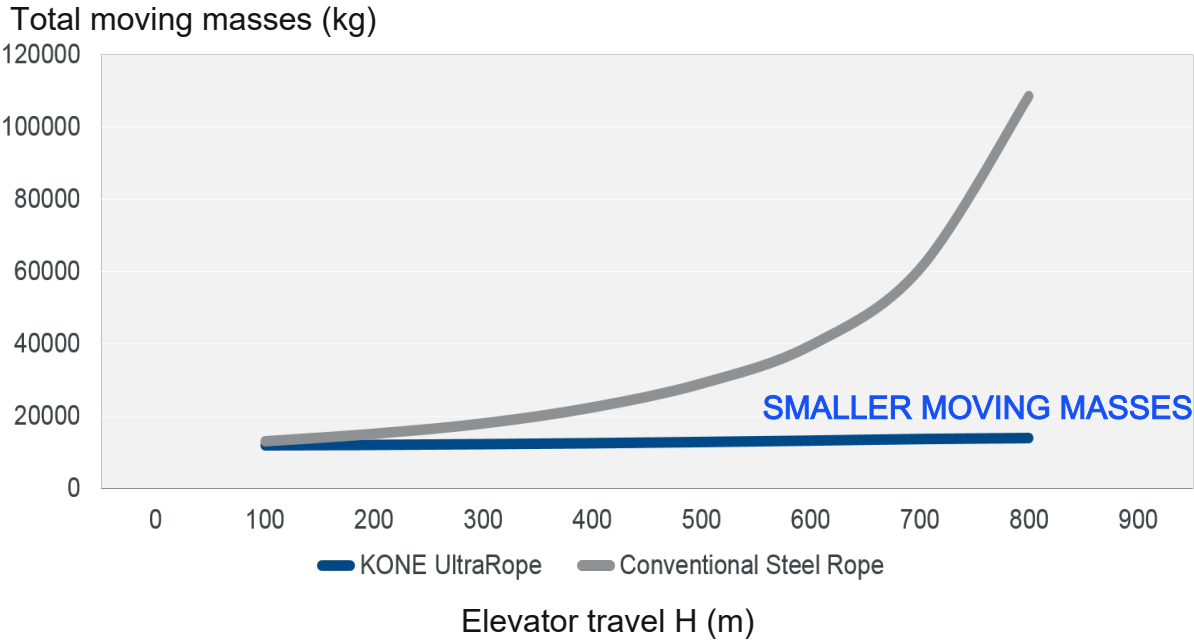
KONE ULTRAROPE® VS STEEL ROPE



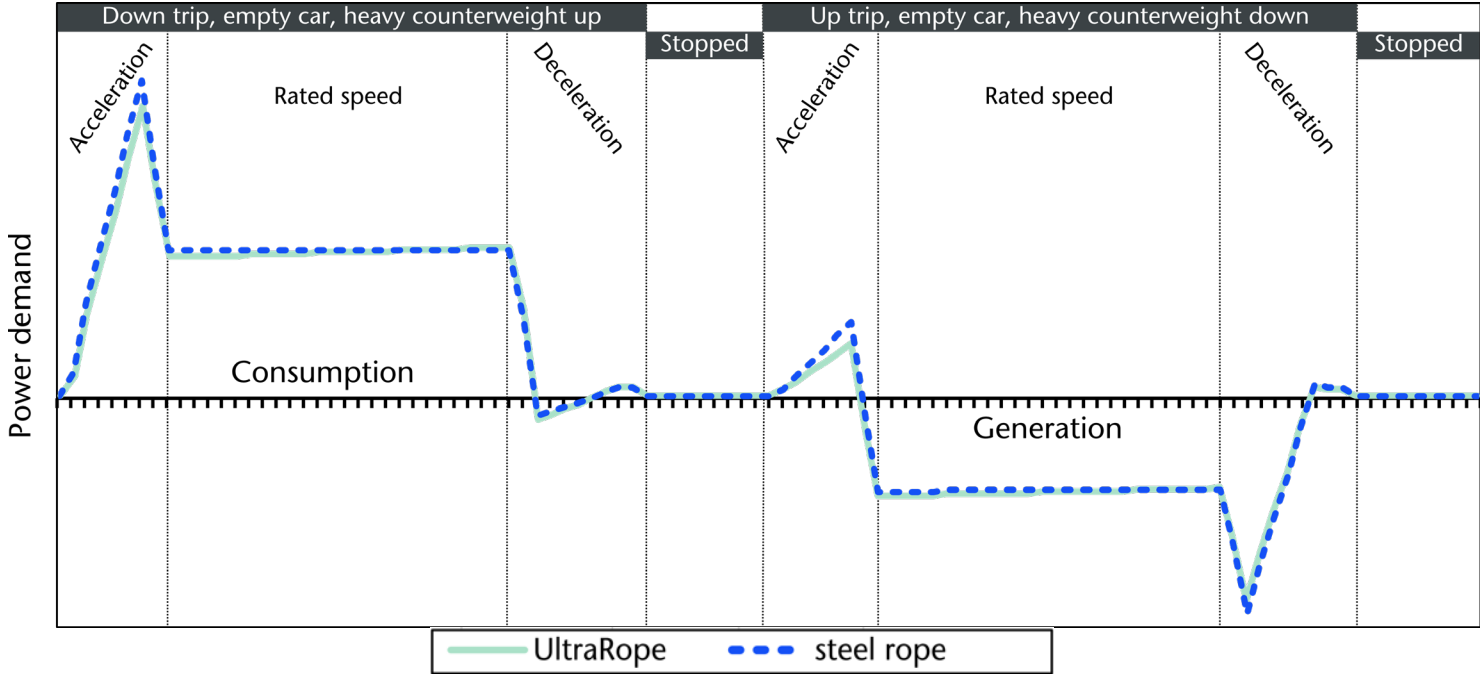
With the same strength  
KONE UltraRope® weight is ONLY 20% of steel rope

# KONE UltraRope®

## KONE ULTRAROPES® VS STEEL ROPE



# Rope impact on the elevator power consumption





# Environmental Product Declaration EPD

Index	MiniSpace High-rise Steel Rope EPD	MiniSpace High-rise Ultra Rope EPD
Rated load	1600 kg	1600 kg
Rated speed	6 m/s	6 m/s
Number of stops	20	20
Travelled height	200 m	200 m
Usage category according to ISO 25745-2	4	4
Installation region	Shanghai, China	Shanghai, China
Energy use emission factor (China)	1.08 kg CO <sub>2</sub> /kWh	1.08 kg CO <sub>2</sub> /kWh
Service lifetime	25 years	25 years
Rope type	Steel Rope	UltraRope
Supply chain regions	China	Europe and China

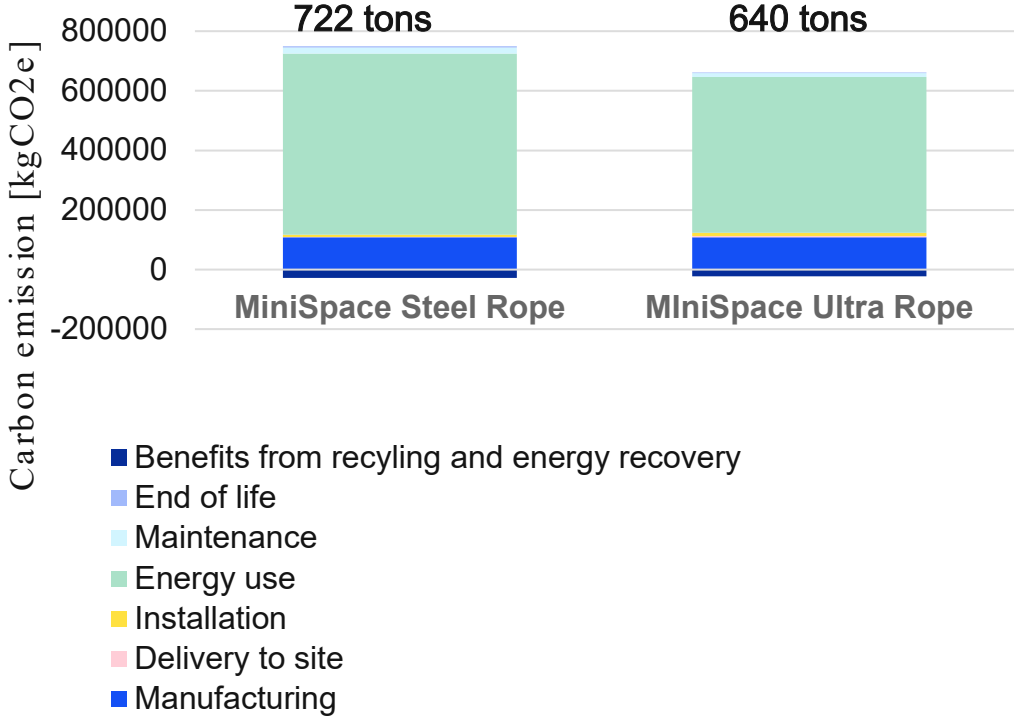
[https://www.kone.com/en/Images/kone-minispace-dx-highrise-steel-rope-epd\\_tcm17-121466.pdf](https://www.kone.com/en/Images/kone-minispace-dx-highrise-steel-rope-epd_tcm17-121466.pdf)

[https://www.kone.com/en/Images/kone\\_minispace\\_highrise\\_ultra rope\\_epd\\_revised\\_tcm17-123170.pdf](https://www.kone.com/en/Images/kone_minispace_highrise_ultra rope_epd_revised_tcm17-123170.pdf)



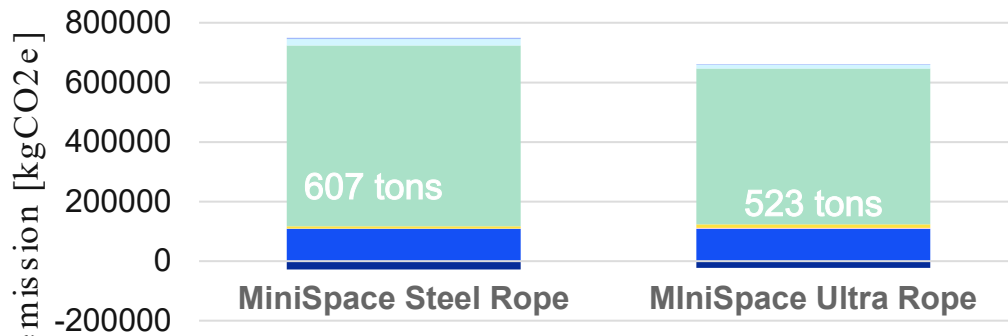
# Life-Cycle carbon emission comparison

ULTRA ROPE LESS LIFE CYCLE EMISSIONS



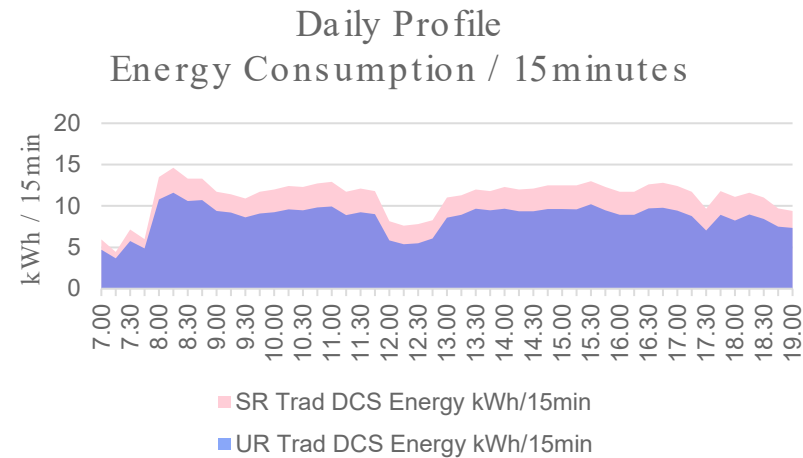
# Carbon emission comparison – Energy use

ULTRA ROPE LESS ENERGY



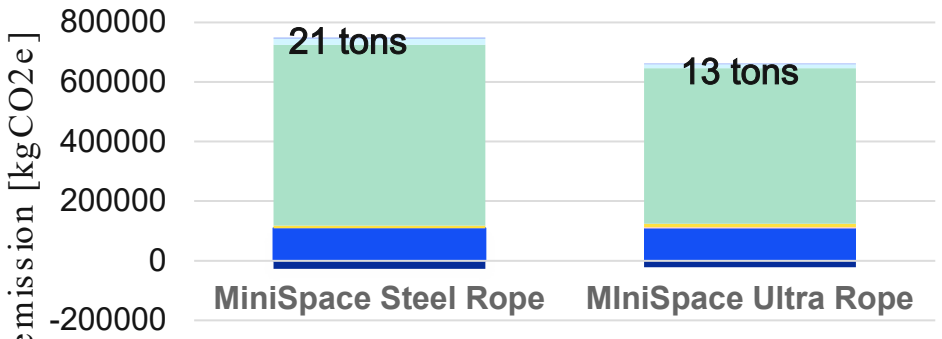
- Benefits from recycling and energy recovery
- End of life
- Maintenance
- Energy use
- Installation
- Delivery to site
- Manufacturing

UC	MiniSpace High-rise Steel Rope	MiniSpace High-rise Ultra Rope
UC4 Annual Energy consumption [kWh]	22400	19300 (14% less)
UC5 Annual Energy consumption [kWh]	34900	29700 (15% less)
Energy use emission factor (China)	1.08 kg CO2/kg/kWh	



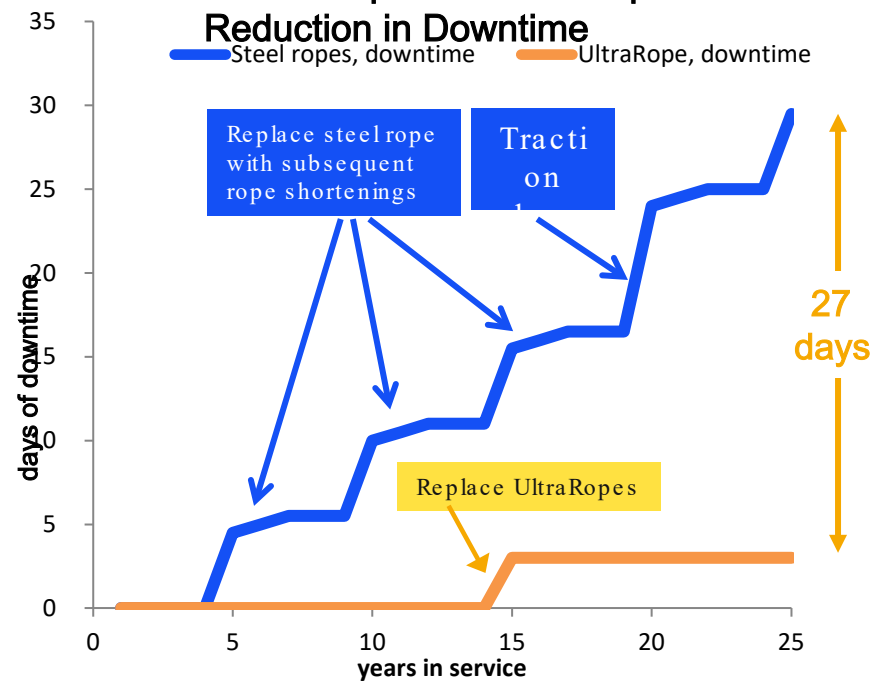
# Carbon emission comparison – Maintenance

ULTRA ROPE LESS MAINTANANCE MATERIALS AND LESS LUBRICANTS NEED



- Benefits from recycling and energy recovery
- End of life
- Maintenance
- Energy use
- Installation
- Delivery to site
- Manufacturing

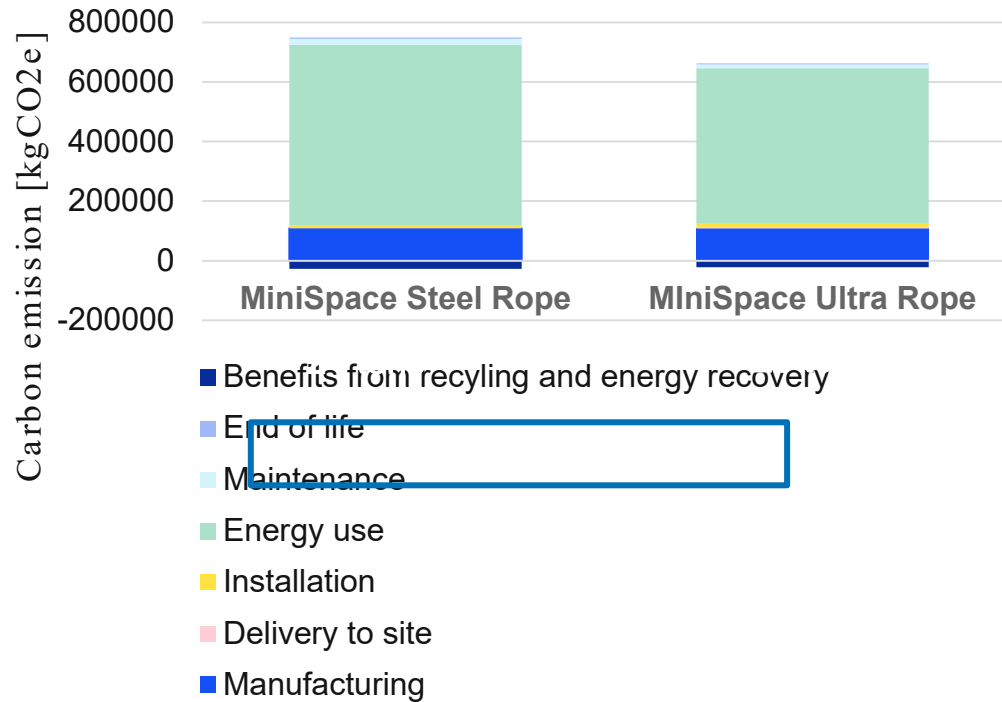
## KONE UltraRope vs. Steel rope: Reduction in Downtime



27 days/elevator more uptime during 25 year building lifecycle with UltraRope® by minimizing rope maintenance







# Carbon emission comparison – End of life and benefits

ULTRA ROPE LESS EMISSION FOR BENEFITS (NEGATIVE CARBON)



# Summary

## Ultra rope benefits shown in EPD

 <b>Lower</b> energy consumption	 <b>Less</b> material	 <b>No</b> lubrication
 <b>Longer</b> lifetime of ropes	 <b>Better</b> performance in high wind	 <b>Easier</b> maintenance and replacement



# The business?

# KONE UltraRope®

CAN HELP TO CONTRIBUTE FOR GREEN BUILDING CERTIFICATES



LEED BD+C: New Construction . v4 - LEED v4

### Innovation

Innovation  
Possible 5 Points



LEED BD+C: New Construction . v4 - LEED v4

### Optimize energy performance

Energy and Atmosphere  
Possible 18 Points



## Ene 06 Energy efficient transportation systems

Number of credits available	Minimum standards
3	No



# KONE to deliver its solutions for iconic Waterfront Brisbane project

ASHLEY GROGAN  
September 25, 2023, 10:42 am



David Lehmann, Executive General Manager – Building & Development at John Holland, says: “Waterfront Brisbane will have a transformative impact on Australia’s Olympic city – and we’re proud to be building on our successful partnership with Dexus to bring its vision to life.”

“This is a project that will set new standards in sustainable construction, and we’re thrilled to welcome KONE to the Waterfront Brisbane team.”

The KONE UltraRope will provide the tower with a completely new take on elevator hoisting with eco-efficiency, reliability and durability through a super-light carbon fibre technology developed specifically for high-rise buildings. This will be the first office tower in the southern hemisphere to include UltraRope in all rises of the passenger lifts, enabling an estimated 1.25 per cent reduction in NABERS energy usage, assisting the client in achieving its sustainability targets and reducing its overall carbon footprint, whilst also delivering around an additional 27 days uptime per lift in the first 20 years.

Global elevator and escalator company KONE has announced a partnership with Dexus and its delivery partner John Holland to exclusively deliver its premium vertical transportation solution for the North Tower of the iconic Waterfront Brisbane project.

6.10.2023  
Inside Construction  
<https://www.insideconstruction.com.au/news/kone> -to-deliver-its-solutions-for-iconic-waterfront-brisbane-project/#mobile-site-navigation





Kiitos!