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The case for change

Automating for a sustainable future – How ports can benefit from automation

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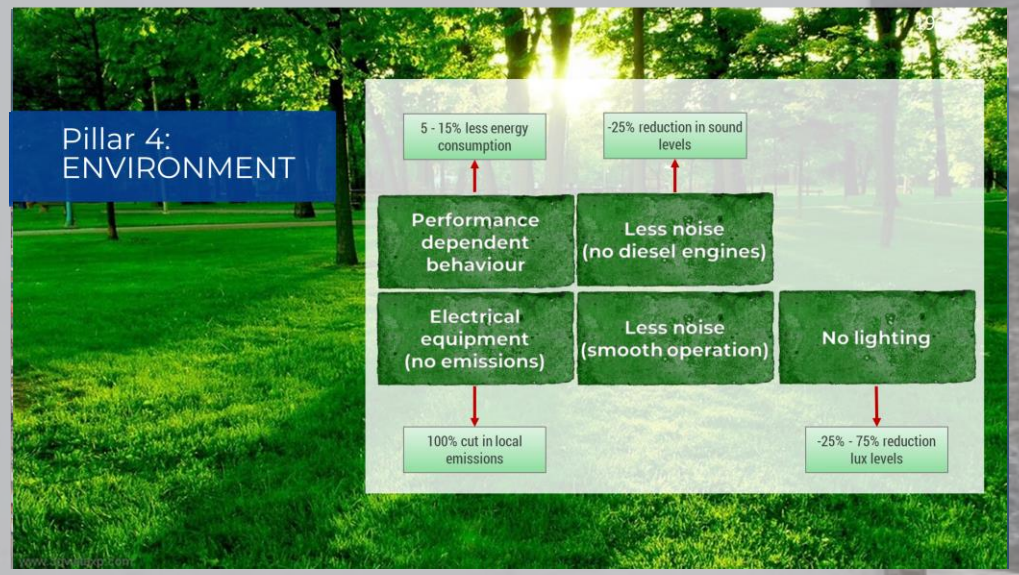
Should we automate?



ENVIRONMENT

OPERATIONS

FINANCIALS

SAFETY

The 4 pillars of the terminal automation business case

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What is the driver to consider automation?

Capacity Constraints

Cost-efficiency

Eco Performance

COMPETITION?

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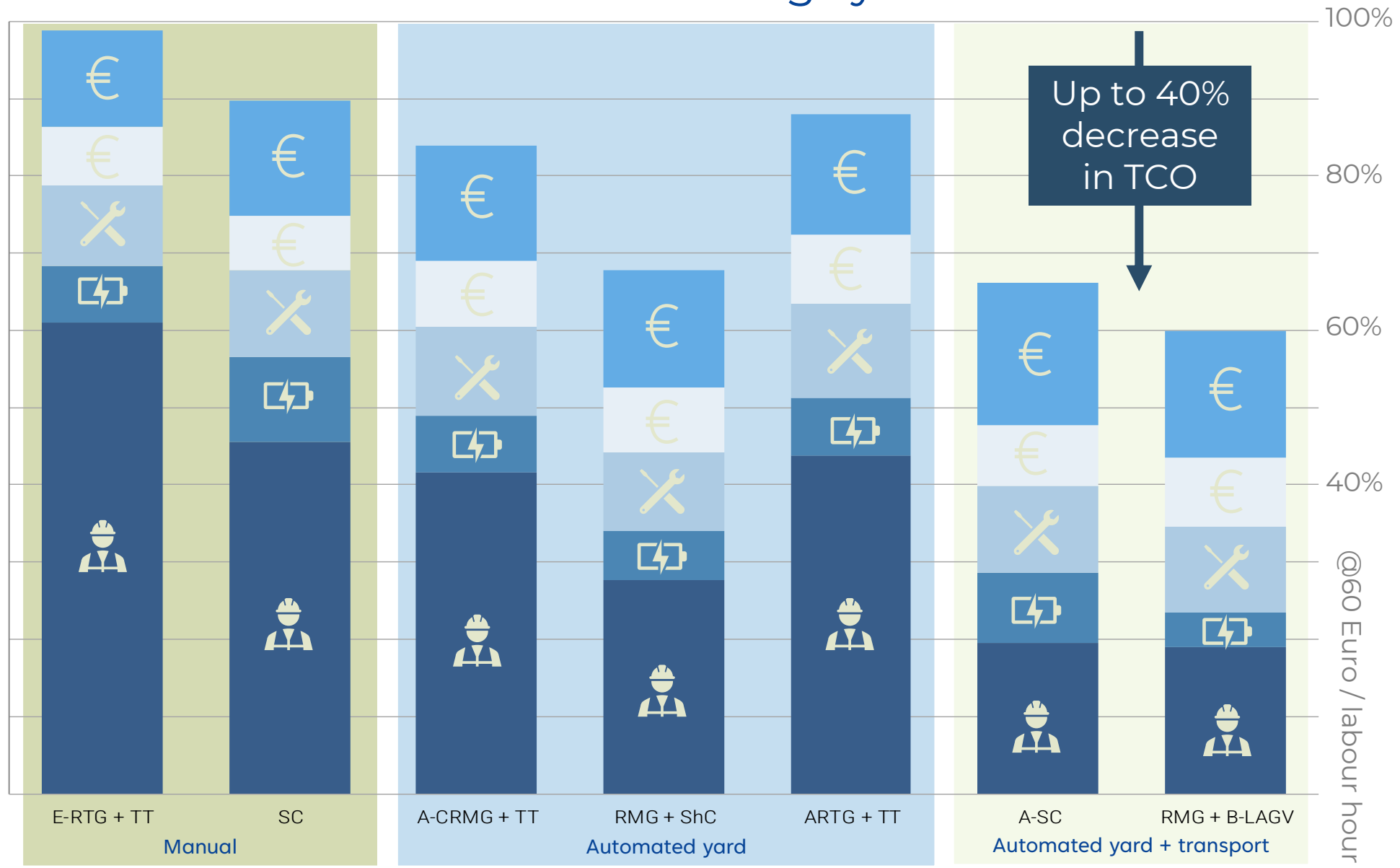
Increasing yard capacity:

Up to 180% increase

Density of stacking systems (based on net container yard)	Footprint (NCY)	Peak stack capacity (TEU / ha)	Increase compared to Straddle (1 over 2)
Wheeled operation	250 TGS/ha	238 TEU/ha	-53%
Reach Stacker, block 3-wide/3-high	258 TGS/ha	464 TEU/ha	-8%
Straddle Carrier 3-high (1over2)	265 TGS/ha	504 TEU/ha	0%
Straddle Carrier 3-high (1over3)	265 TGS/ha	716 TEU/ha	42%
RTG 7-wide (1 over 5)	311 TGS/ha	1,011 TEU/ha	101%
CRMG 12-wide (1 over 5)	291 TGS/ha	1,164 TEU/ha	131%
(A)RMG 9-wide (1 over 5)	330 TGS/ha	1,403 TEU/ha	179%

Increase in
Cost efficiency:
TCO reduction
up to 40%
Payback within
3-5 years

TCO of handling systems



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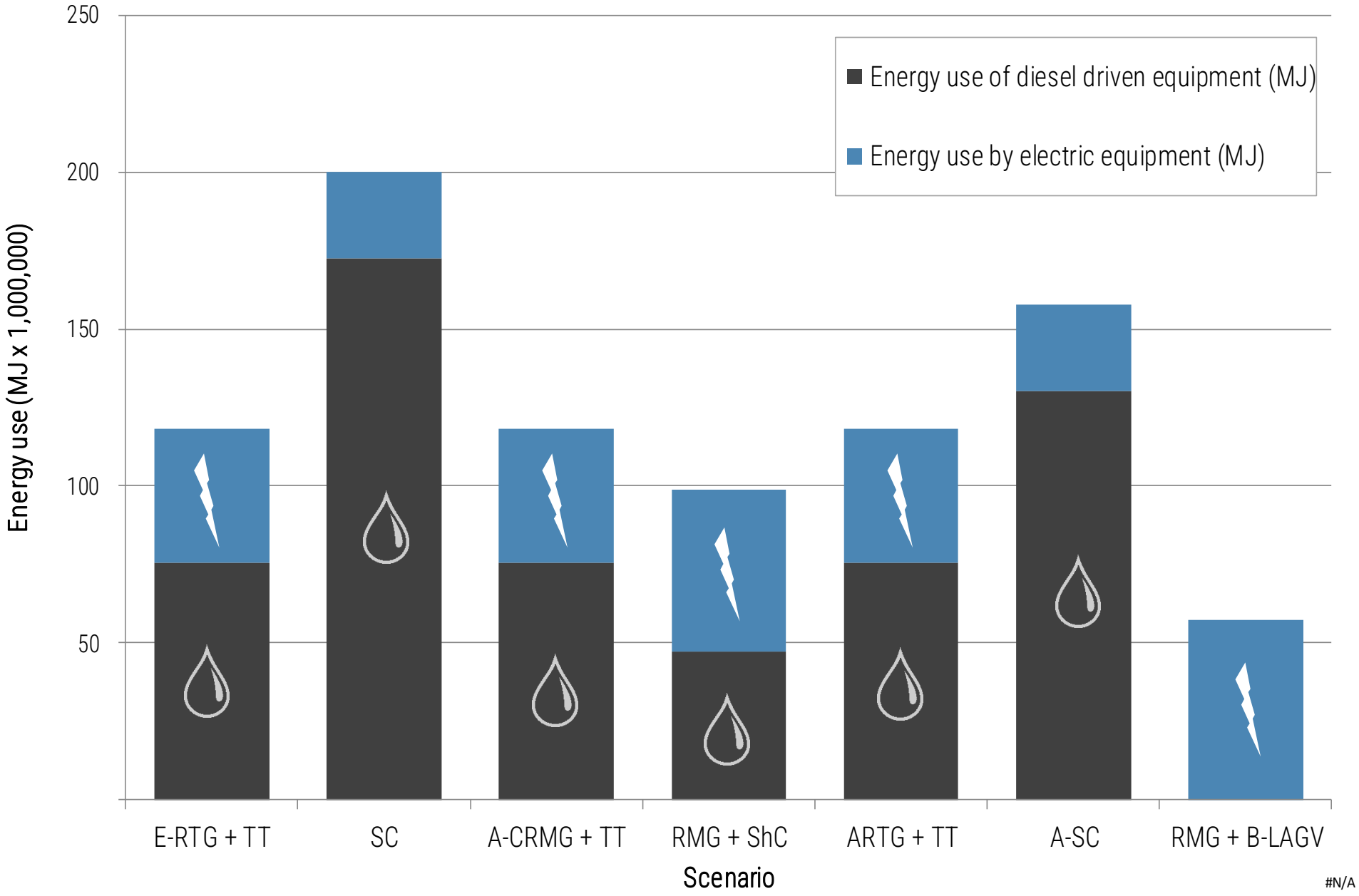
Improvement of Eco efficiency

Up to 60% reduction of energy use



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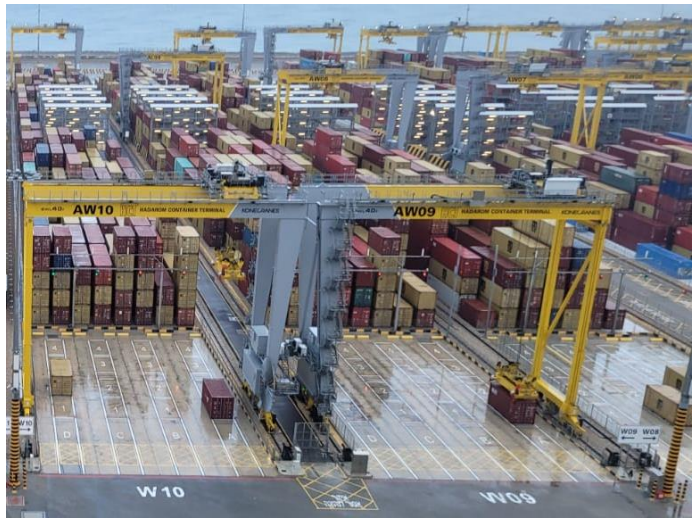
Current state of affairs

- Small percentage of container terminals (<5%) have a degree of automation
- Most automated terminals are large (>2M TEU), but there are several below 1M TEU:
  - Patrick's & DPWorld Brisbane (~500KTEU)
- Many terminals are considering automation
  - Green-field in developed areas → high likeliness
  - Brown-field → gradual introduction of more automation technology
- Although the supplier base is increasing.....
  - ..... there is little standardization
  - .....integration remains cumbersome
  - .....projects are ALL delayed



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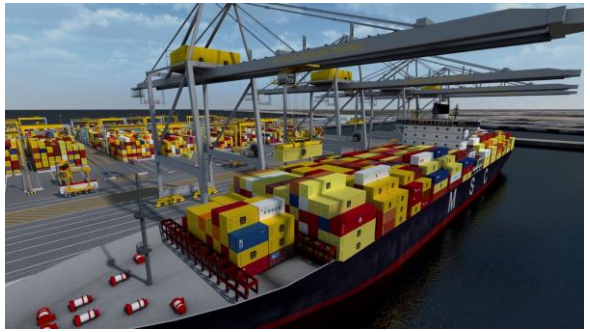
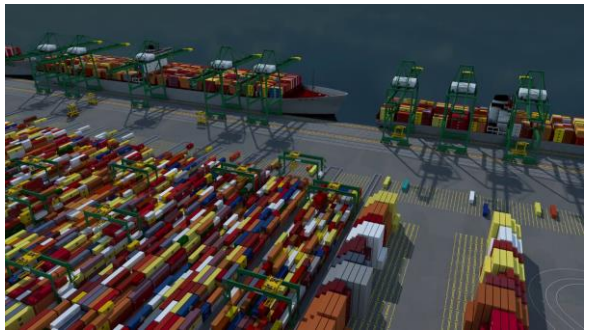
What are key lessons learnt from automation projects

- Bridge & balance the silos (civil – equipment – IT)
- Automation is still run by people: include them
- Integration remains a major challenge
- Simplicity over complexity
- Exceptions are the norm, treat them alike





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Thank you!

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