

PORT DEVELOPMENT SUSTAINABILITY AND EMBRACING GREEN TECHNOLOGY

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Westports Malaysia

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Our GOAL is to be an ECOLOGICALLY balanced port



LED Lighting

- **Progress replacement of less efficient light**
- **Smart Sensors added at certain areas to manage the energy**
- **Embrace Technology with lower power (Watt) with higher intensity (Lumen)**

Energy Efficient RTG

3 Type of RTG Engine Technology

1. **Conventional RTG-Fixed Speed – 100% fuel**
2. **Variable Speed RTG (VS) – 70% fuel**
3. **Hybrid RTG – 40% fuel**



Minimise the use
of raw materials

Energy Efficient RTG

- The trend for new RTGs on VS Technology
- The Hybrid RTGs still on the life cycle studies especially on battery reliability and replacement cost

Rail Mounted Gantry Cranes

Studies in progress to electrify new yard cranes to reduce overall fuel usage and facilitate automation

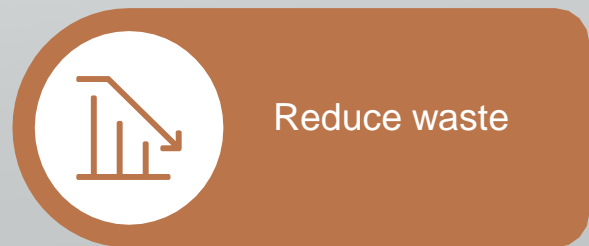


Minimise the use
of raw materials

Recycle Hydraulic Oil

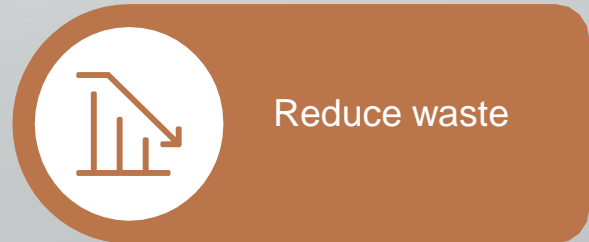
ElectroStatic Liquid Cleaner -Project initiated in 2010

- 1. High volume of hydraulic oil used for spreaders**
- 2. These oil could be recycle with minimum 10% new oil added during the process**
- 3. Reduce schedule waste disposal**



Extended Engine Oil Change -RTGs

- Started Engine Oil with CF4 Grade
- Explored Engine Oil with CI4S Grade
- With constant Oil Analysis we could extend the replacement cycle from 670 hours to 800 Hours
- A separate studies in progress in different types of filter for extending Oil Change to 1000 Hours
- Reduce schedule waste disposal



Maintenance – Calender Based To Move Based

- **Studies and stages of testing in progress for changing the criteria due for maintenance**
- **Most of the OEM manual with time based and it is waste of resources if maintenance done on lower utilization**
- **A joint review with OEM to develop Moves Based maintenance schedule could reduce potential waste**



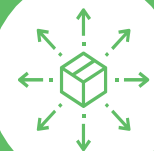
Improve equipment
efficiency



Optimisation
of assets

Terminal Tractor – Global Pulling

- Part of analytic tools from TOS to optimize the deployment of nearest terminal Tractor to assignment cranes
- This would reduce TT idle and maximize utilization
- Reduction of overall litre/moves and optimize TT booking for each shift



Minimise the use
of raw materials

Tablet - Wharf Operation

- **Stowage plan in graphical format**
- **Dynamic data upload on changes**
- **Reduction of errors**
- **Reduce massive paper printing**



Optimisation
of assets



Minimise the use
of raw materials



Thanks