

# Benefits from Energy Management

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Laurin Maritime



# CHAPTER OVERVIEW

1

Introduction

2

Energy Management Solution

3

Case 1 – Proved savings

4

Case 2 – Monitoring HPD

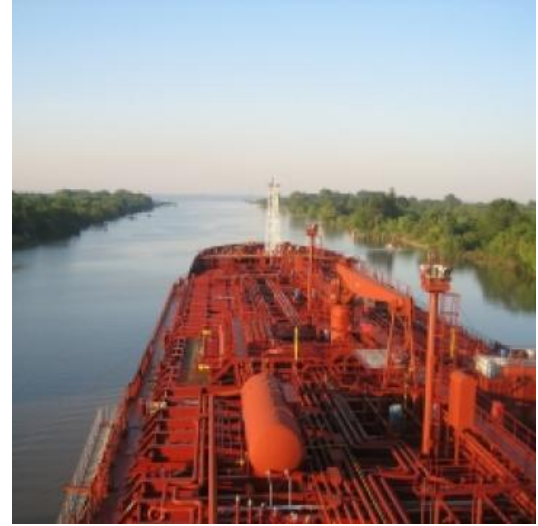
5

Summary & Conclusions



# INTRODUCTION

- Laurin Maritime operates a modern fleet of MR tankers for oil products & chemicals worldwide (presently 12 own and 5 t/c)
- Daily management of the ships is in the hand of the Shipboard management team (two Masters and two Chief Engineers).
- Laurin Maritime started with a Energy Conservation program already in 2008
- The need for a data logging system was identified and in 2012 Marorka was chosen as provider and 2 pilots were installed.



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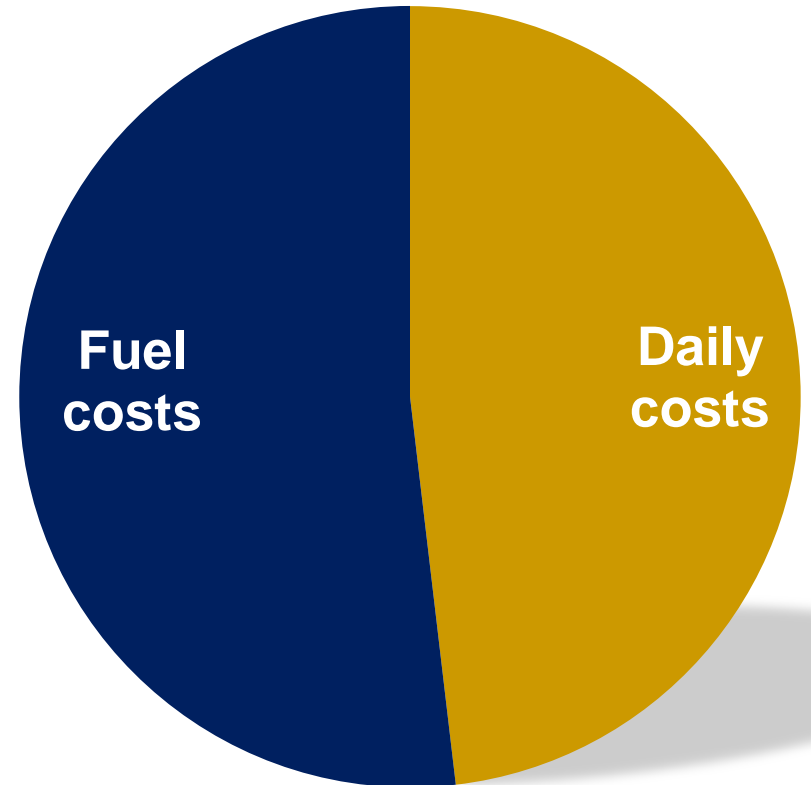
Summary & Conclusions



# CHANGED ENVIRONMENT

## Cost of operation

- Fuel costs are today higher than the daily costs
- There is a great need to increase focus on fuel costs
- We identified a need for a system to monitor fuel performance
- We decided to implement an energy management system



# THE GOALS

- To collect data to enable long term trending
- Make energy usage more transparent for crew
- Use Marorka Online to establish fleet trending and highlight “cost of lost energy“
- Establish baselines to define various KPI’s
- Establish ISO 50 001 energy management system



# MARORKA IMPLEMENTATION PROJECT

- The project started on two ships (Tosca and Tambourin in 2012)
- Both Product and Chemical tankers
  - 46,764 DWT
  - ME total power 7,680 kW
- We are currently installing on 3 further ships (2013) and we will continue installation on the remaining vessels in 2014



# Marorka onboard

- Marorka Maren Server Standard
  - Marorka Navigation
  - Marorka Reporting
  - Marorka History
  - Marorka State Manager
- Marorka SPM workstation
- Marorka Workstation
- Connection to Marorka Online





# SYSTEM OVERVIEW

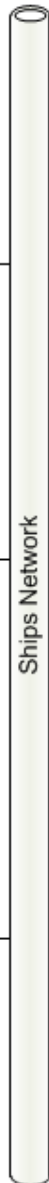
One (1) remote connections to Marorka Maren Server using existing on-board computers



Marorka SPM workstation



Marorka Maren Server



Marorka Online



DAQ for bridge



VDR  
 + GPS time, position and speed  
 + Speed through water  
 + Wind force, direction and etc..



DAQ for ER



ME fuel flow



AE fuel flow



Rudder Angle



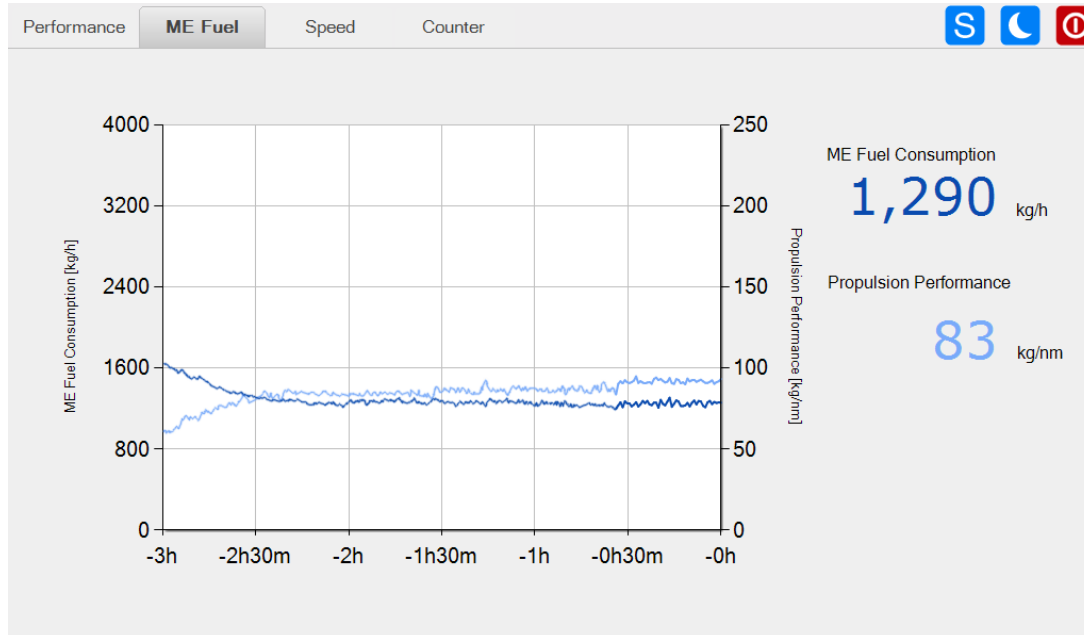
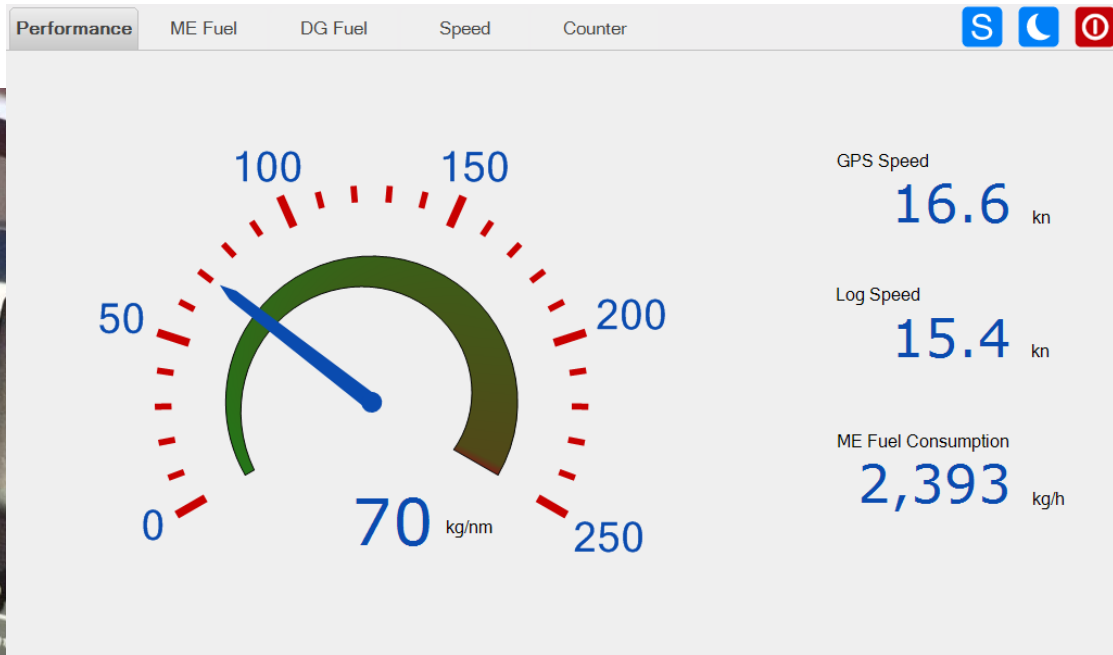
Propeller pitch



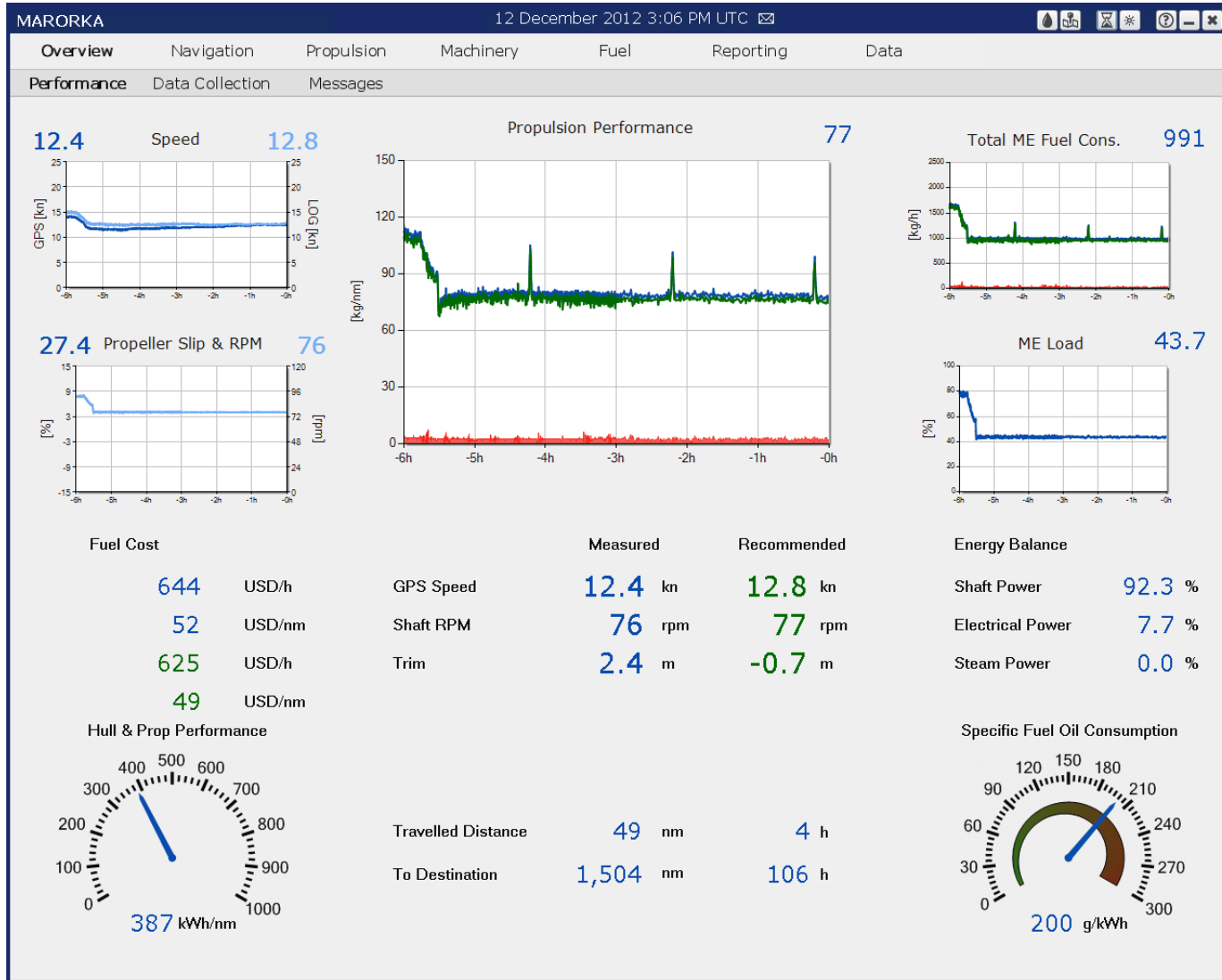
Alarm and monitoring  
 + Shaft power, torque & RPM  
 + Generator power  
 + Draft (fwd/aft)  
 + and etc..



# MARORKA SPM



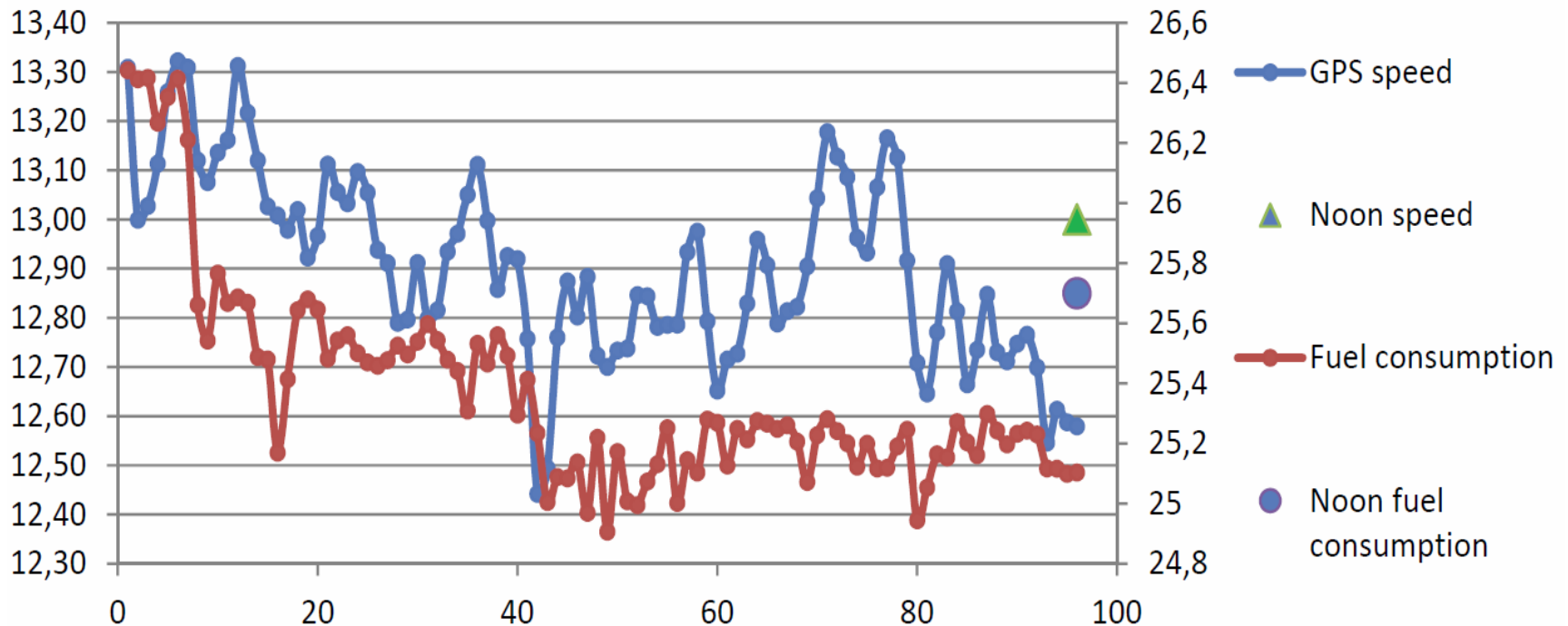
# MARORKA OVERVIEW SCREEN



# BENEFITS OF AUTOMATIC DATA LOGGING

- Traditional noon report data vs. automatically collected data

Tambourin during 24 hours



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# CASE 1 – BENEFITS OF ENERGY MANAGEMENT

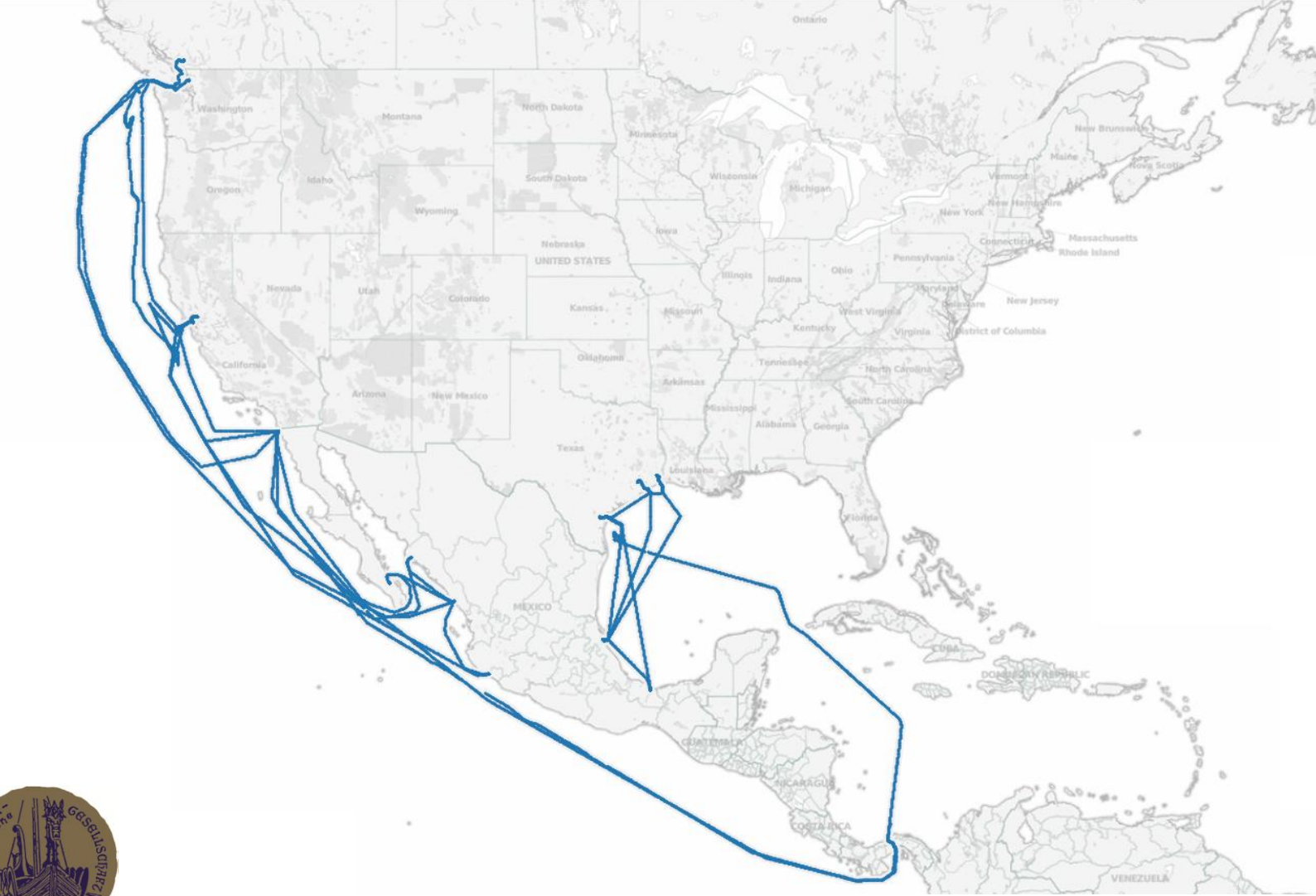
## Proved savings Marorka installation

Data log installed on TOSCA in March 2012

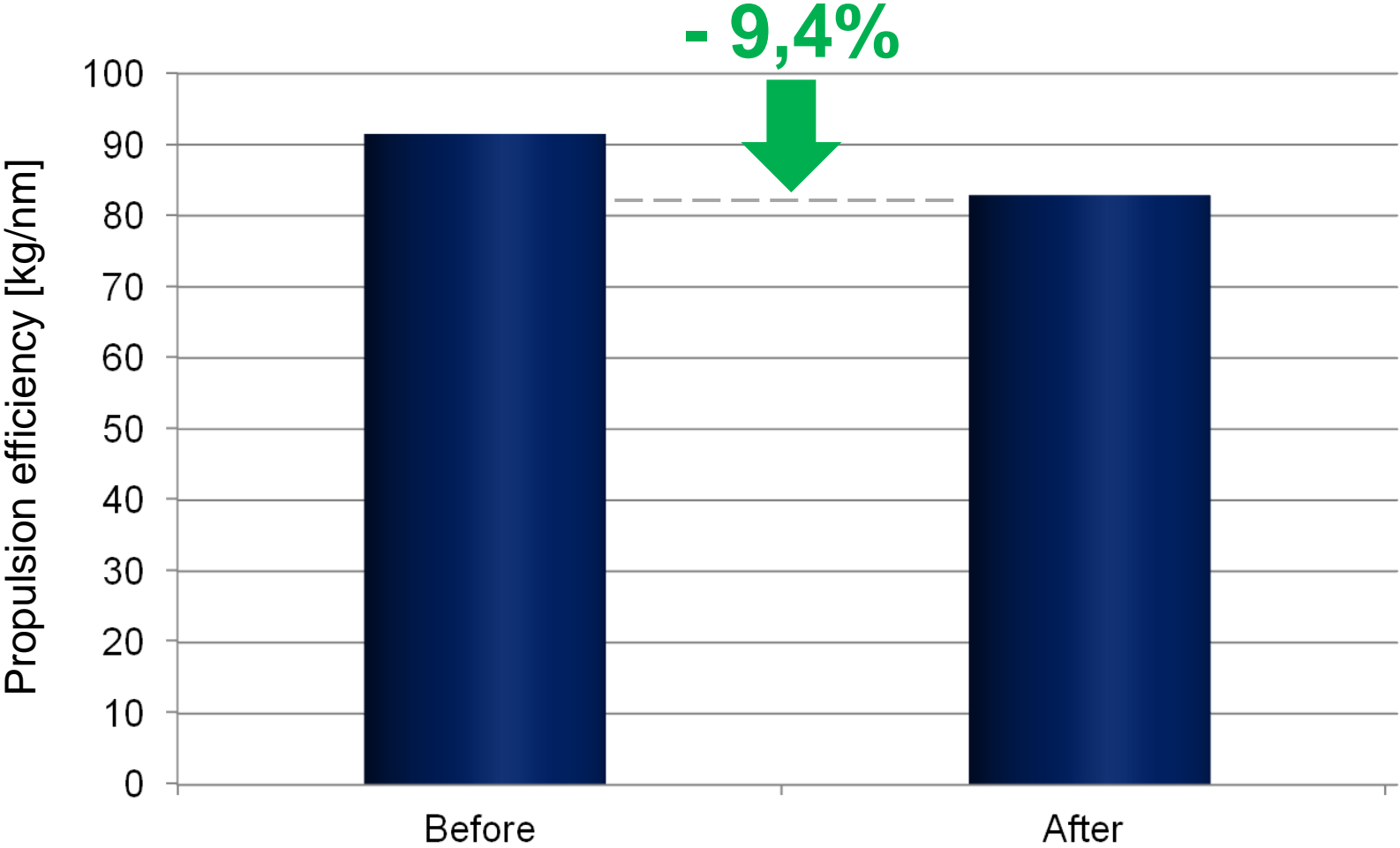
- Data logged prior training with crew was held (Mar-May):
  - Consumption 91,5 kg/nm
  - Average speed 12,7 knots
- Data logged after having training with crew (Jun-Aug):
  - Consumption 82,9 kg/nm
  - Average speed 12,6 knots



# CASE 1 – BENEFITS OF ENERGY MANAGEMENT



# CASE 1 – BENEFITS OF ENERGY MANAGEMENT



**USD 80.000**





# CASE 1 – BENEFITS OF ENERGY MANAGEMENT

## Conclusions and learning points

- The calculation shows 9,4% fuel savings, but if using only 50% of the fuel saving being better crew awareness the savings in 3 months would be around USD 40.000
- The Marorka system assists the crew in taking better decisions as how to save energy.
- It is very important to get crew involved from the start
- Proper training and familiarization needs to be part of the project
- The crew must be able to benefit from the system
- Interactive training material is useful



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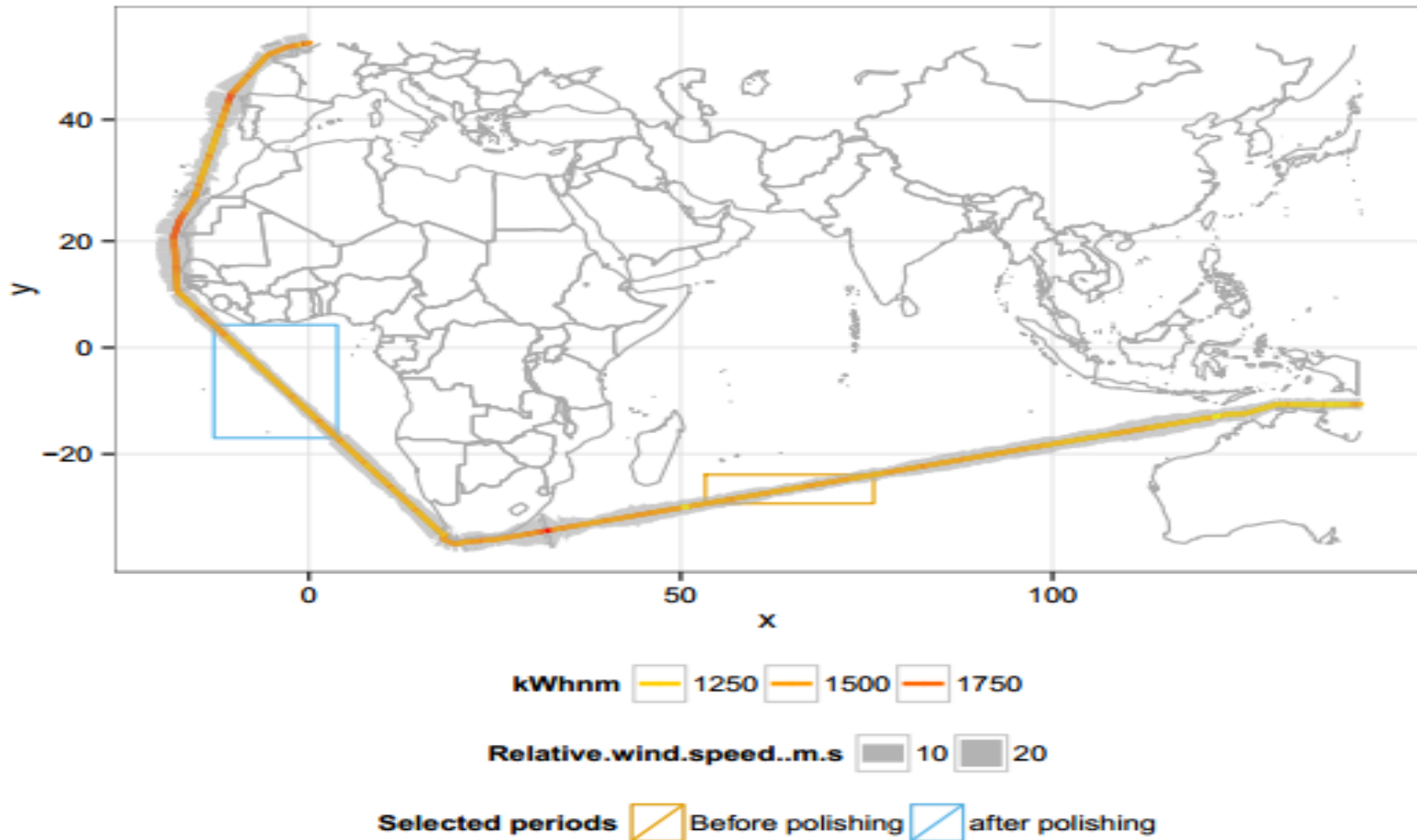
## CASE 2 – HULL PERFORMANCE DROP

- Continuous data logging on board the vessels provides basis for long term hull performance trending
- We have identified that both propeller and hull needed cleaning on both the pilot installations.
- The effect of hull and/or propeller cleaning can be examined using Marorka.
- On one ship we did a propeller cleaning/polishing in Cape Town on a long voyage.
  - Same loading and environmental conditions both prior and after the cleaning.

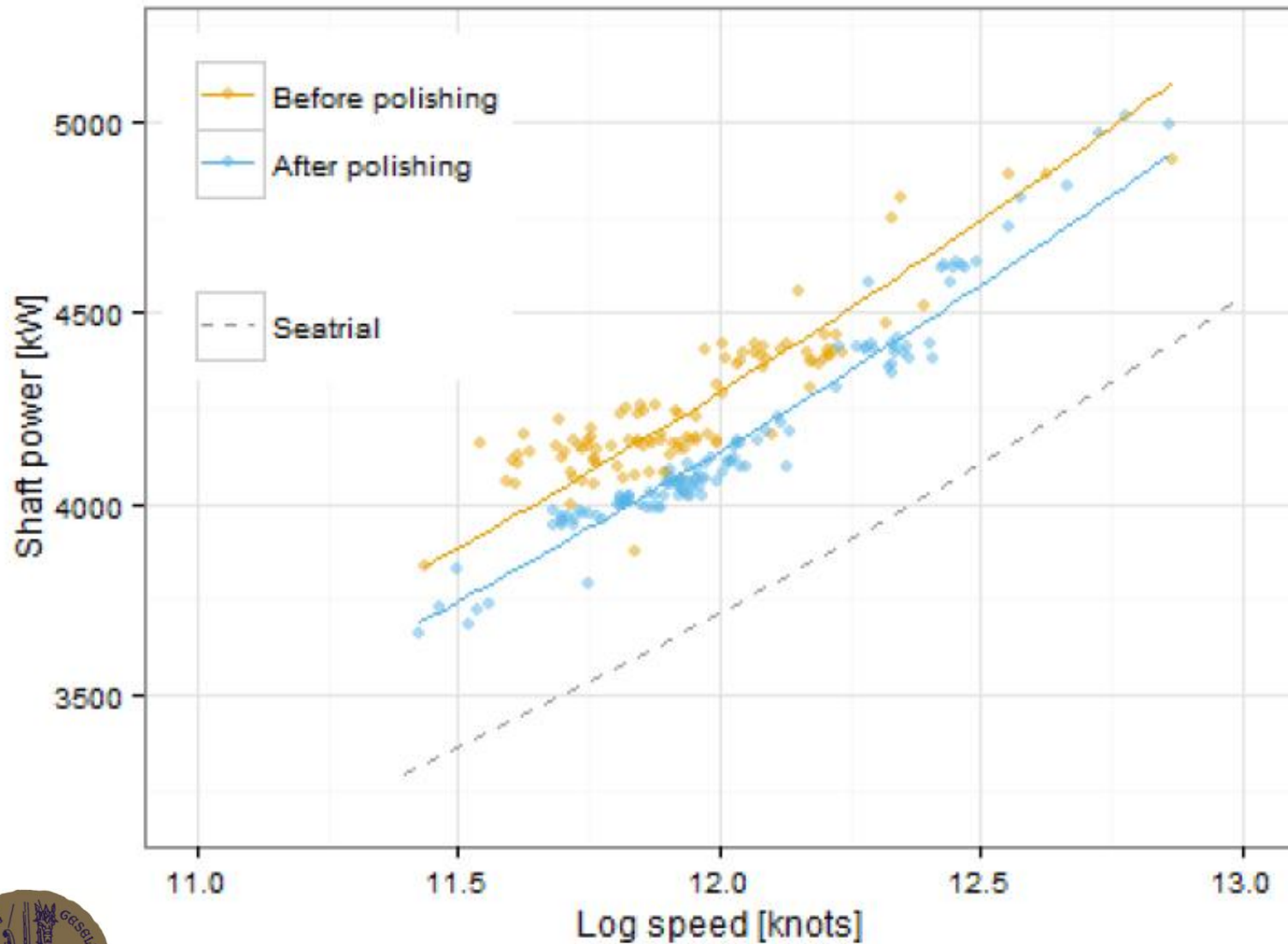


# TAMBORIN – PROPELLER POLISHING

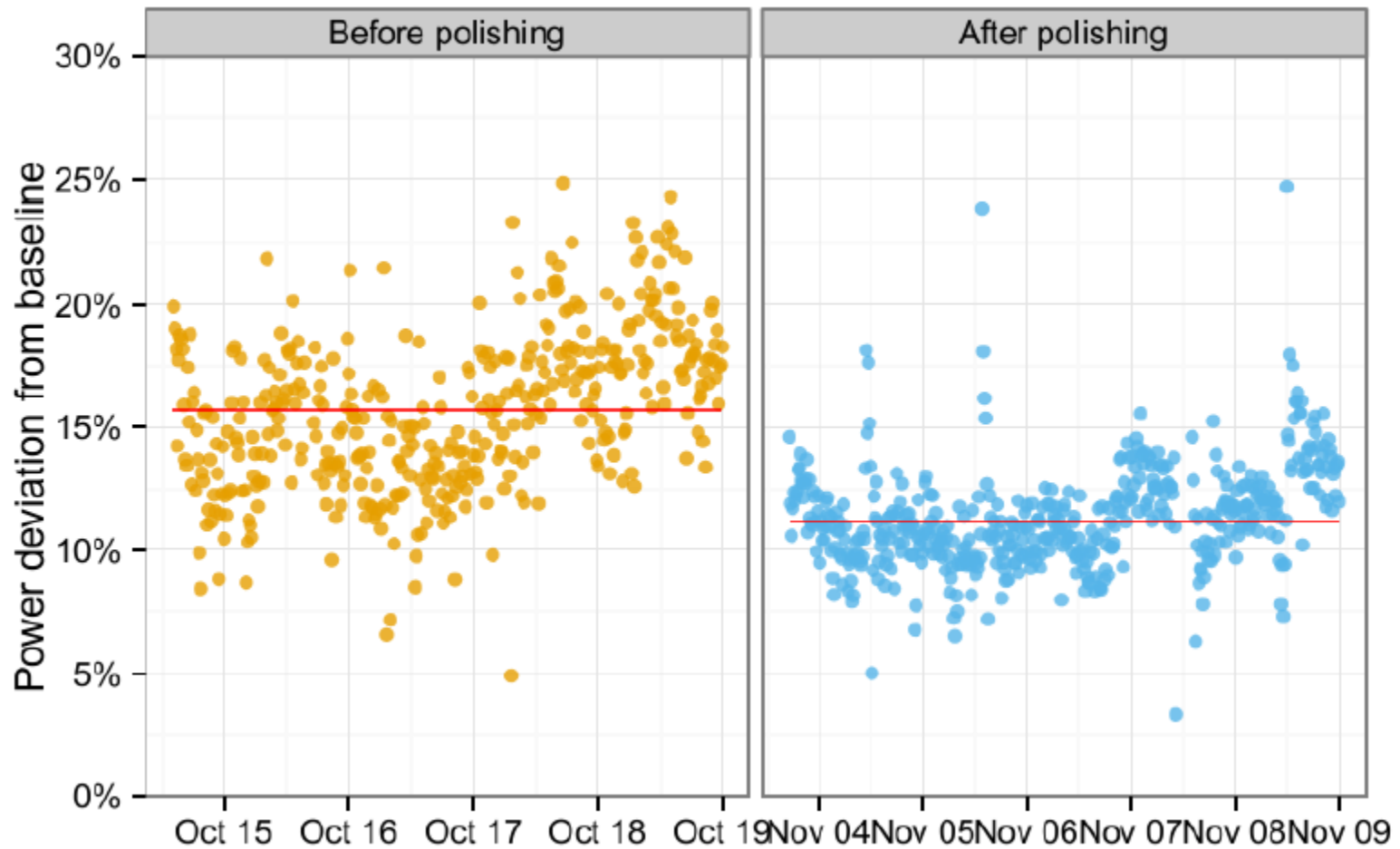
## Polishing in Cape Town



# TAMBOURIN – BEFORE AND AFTER POLISHING

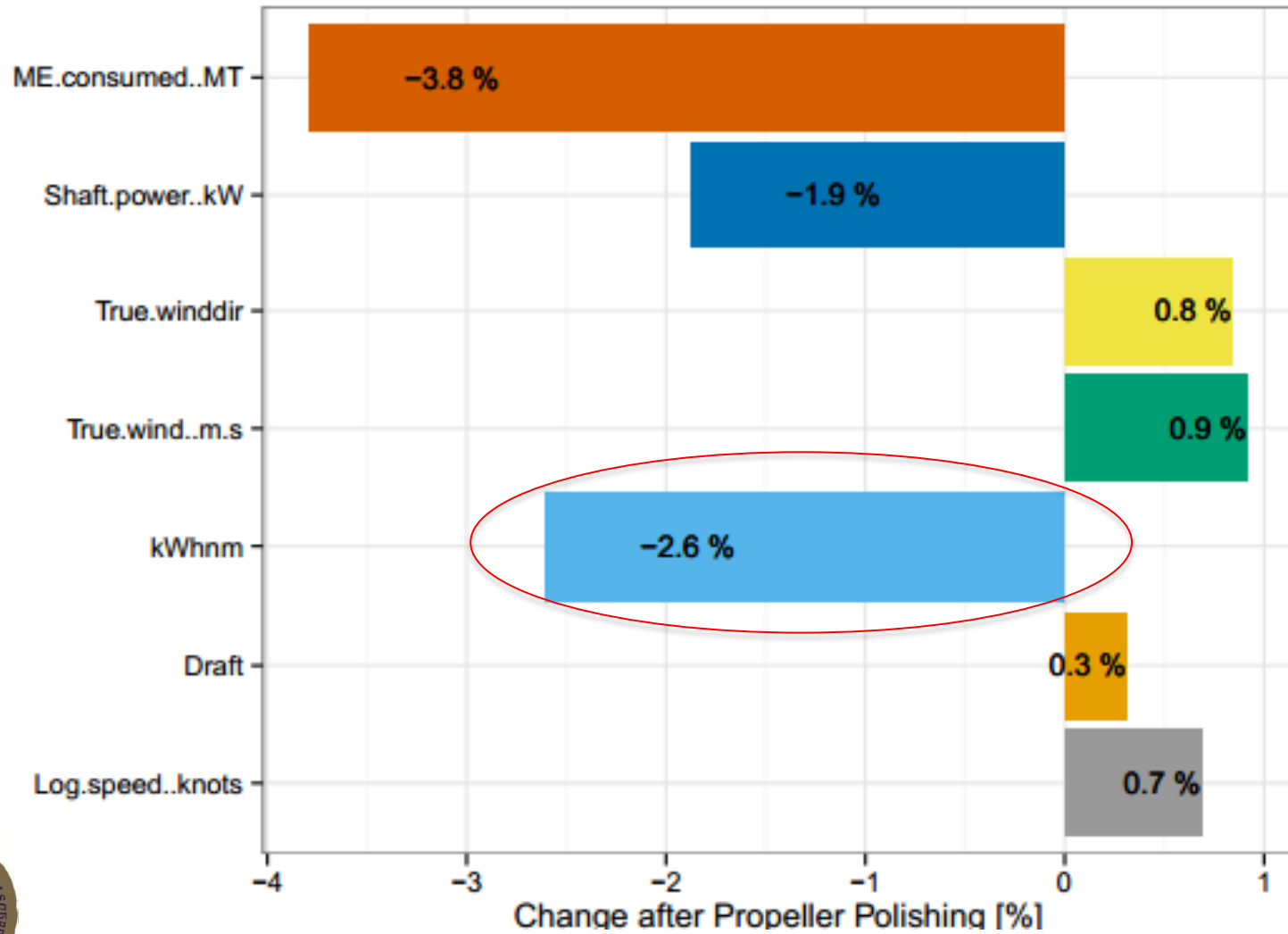


# TOSCA – BEFORE AND AFTER POLISHING



# PROPELLER POLISHING

## Statistical proof of propeller cleaning benefits



# RESULTS

- Tambourin
  - 2,6% increased propulsion efficiency (kWh/nm)
  - 1,9% saving in propeller power with increased speed (0,7%)
  - Estimated savings of 46 000 USD / year
- We can now quantify effect of propeller polishing and hull cleaning





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# SUMMARY AND CONCLUSIONS

- Laurin Maritime is now implementing Marorka solutions to the entire fleet
- We have now established measurement database of our ship performance
- We are able to track hull performance and effect of propeller polishing and hull cleaning
- We have seen 9,4% fuel savings by having the system installed together with appropriate training and awareness onboard.





**THANK YOU!**  
**Questions?**