



# Case 1b: Digital Performance Monitoring

02.12.2020

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EUROPEAN  
REGIONAL  
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# J. Lauritzen



## **J. LAURITZEN**

- Established 1884
- Experience with Reefer- Tank-, Cruise-, Offshore-, Polar vessels. Yard owner 1937-88
- Today: 150 Employees onshore, 100% foundation-owned



## **LAURITZEN BULKERS**

- Operates Chartered vessels: Handysize and a few Supramax
- Technical Management of 3 owned vessels outsourced
- Operates 65 bulkers from Copenhagen, Singapore and Stamford USA



## **LAURITZEN KOSAN**

- Ship-owner
- Own vessels, Joint ventures, Bare Boat and Time Charter, Pool Partners
- Technical Management of 25 LPG carriers from Copenhagen
- Operates 38 LPG carriers from Copenhagen and Singapore



# Reduce Emissions – what, why and how

- Shipping needs to cut CO<sub>2</sub> emissions along with all other industries
  - 40% by 2030 relative to 2008
    - Optimistic, but (maybe) realistic, to obtain with current fleet
    - **Requires technical and operational optimization**
  - 70% by 2050...
    - Takes carbon free fuels and new, or drastically revised, engines

## ⇒ Fuel Consumption must be reduced

- Analysis of Fuel Efficiency is (mostly) based on manually reported data aka “noon reports”
  - Fuel
  - **Distance/Speed**
  - **Weather**
  - and more...



- Satellites collect accurate Position (AIS) data and Weather models covers all oceans

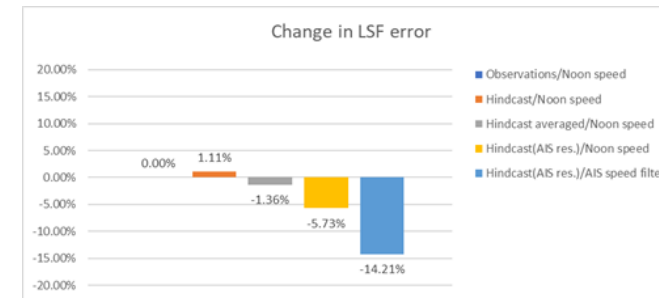
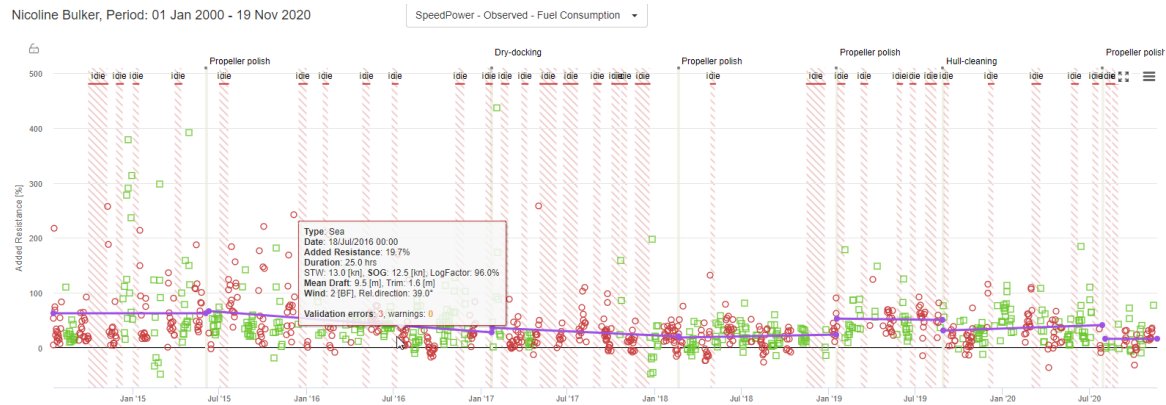
⇒ **Extent and Enhance the feed of noon data to the analytics with AIS and hindcast data**





# Reduce Emissions – the solution/findings

- The automated data feed of AIS positions and hindcast weather data has improved the accuracy / reduced the scatter of the otherwise Noon Report based analytics in the VESPER platform



- ⇒ More accurate Evaluation of Fuel Efficiency
- ⇒ More accurate Voyage Optimization

# Prevent Engine Breakdown – what, why and how

- **Engine breakdowns can be extremely costly**
    - Ethylene carriers frequently requires all engines running to maintain cargo temperature
    - Minor issues can develop to critical problems if not discovered
  - **Sensors exist, even on old/existing vessels, but**
    - Data only exist onboard and only snapshots are reported “manually” on a biweekly basis
    - Onboard Alarm System is only triggered when “simple” thresholds are broken
- ⇒ **Utilize 24/7’ish satellite connection to transmit onboard data**
- ⇒ **Utilize cloud storage to ease data sharing between project partners**
- ⇒ **Utilize cloud platform to develop analytics that can run onboard**



# Prevent Engine Breakdown - the solution/findings



ioan.asimakop@gmail.com  
to christian  
Dear Christian,

An alarm was raised in Leonora Genset 2 at 2020-09-14 13:05:00.  
Responsible sensors: NO2 G/E CYL 4 EXH GAS OUTL TMP, NO2 G/E CYL 2 EXH GAS OUTL TMP  
Please check the PowerBI report at <https://app.powerbi.com/groups/me/reports/6812e071-4d57-4923-ade9-1c98ee387c60/ReportSection>.



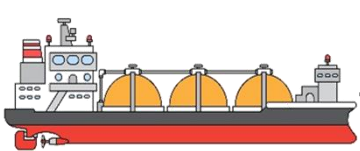
Email notification



Power Bi



IMONumber	Script_run_time	Genset	alarm_level	alarm_reason	alarm_sensor
9342396	2019-12-11T14:44:00.0000000	1	low	-, significant increase in tempera...	NO1 G/E CYL 7 EXH GAS OUTL
9342396	2019-12-11T15:44:00.0000000	1	low	-, significant increase in tempera...	NO1 G/E CYL 7 EXH GAS OUTL
9342396	2019-12-11T16:44:00.0000000	1	low	-, significant increase in tempera...	NO1 G/E CYL 7 EXH GAS OUTL
9342396	2019-12-11T17:44:00.0000000	1	low	-, significant increase in tempera...	NO1 G/E CYL 7 EXH GAS OUTL
9342396	2019-12-11T18:44:00.0000000	1	low	-, significant increase in tempera...	NO1 G/E CYL 7 EXH GAS OUTL



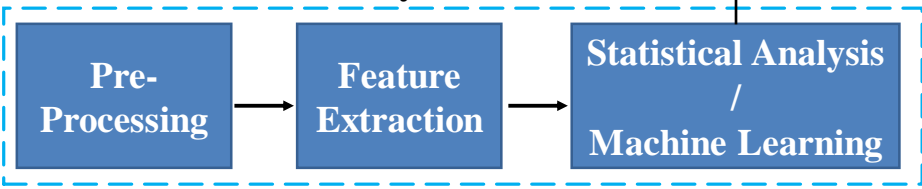
Data logger



Cloud



Database



Fault Detection



# Thank you!

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