Effiziente Instandhaltung und nachhaltige Wertschöpfung im technischen Management von Handelsschiffen

Planned & Condition Based Maintenance / Performance Management

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Efficient technical fleet management – The business needs for data capturing

- Technical fleet management is a concept to manage all ships of a shipping company from an asset based point of view.
- Additional benefit can arise from centrally managing voyage and technical data, which today is only acquired for specific purposes.
- It is the first step to make all data available which are captured in current form-based processes.
EIS Solutions for Technical Fleet Management

- Presentation is focused on the specific solutions for the following topics
  - **System Condition Monitoring** (Prototype)
    - Main part of Planned & Condition Based Maintenance
    - Reusable and integrated maintenance results, in particular **Crew Inspection**
    - Basis for maintenance decisions
  - **Voyage Reporting** (Navigator Insight)
    - Important prerequisite for Performance Monitoring
    - Crew Voyage activities including:
      - Nautical status
      - Environmental situation
      - Loading
      - Consumptions
      - Remainings on board
Objectives for an integration solution

- One-time data capturing but multiple use through data integration
- Real time overview of the condition of technical systems and voyage activities
- Data integration through unified storage context (Different tools but one model)
- Requirements for practical use:
  - Simple on board installation
  - Easy to use
  - Robust data transfer
  - Neutral interfaces
System condition monitoring (1/4)
Overview

Collect, aggregate and transfer data with system context
System condition monitoring (2/4)
Prototype – System status overview and Measurement results
System condition monitoring (3/4)
Prototype – Routine measurement details

Fan Vibration Measurement Cargo Fan F15

- Cargo Fan F15.1 Radial
  - Velocity [mm/s]: 8.780
  - Acceleration [g]: 0.329
  - Unbalance [mm/s]: 8.450

- Cargo Fan F15.2 Radial
  - Velocity [mm/s]: 7.402
  - Acceleration [g]: 0.150
  - Unbalance [mm/s]: 7.042
System condition monitoring (4/4)
Prototype– From inspection overview to detailed results

Crosshead Bearing OpenUp Inspection Main Engine XHB9

- Start date: 2013-05-21 02:19:21
- Completion date: 2013-05-21 02:19:21
- Person in charge: 
- Operating hours: [h]

Measured Data: Inspection Details
- Overall Rating: 
- Comment: 

- Upper Shell exh.
  - Clearance Fore: 45.000
  - Clearance Aft: 45.000

- Upper Shell man.
  - Clearance Fore: 45.000
  - Clearance Aft: 45.000

- Lower Shell exh.
  - Clearance Fore: 45.000
  - Clearance Aft: 45.000

- Lower Shell man.
  - Clearance Fore: 45.000
  - Clearance Aft: 45.000

- Bottom
  - Clearance Fore: 45.000
  - Clearance Aft: 45.000

- Shell Thickness at 180°
  - Shell Thickness: 45.000

- Top
  - Clearance Fore: 45.000
  - Clearance Aft: 45.000

Top clearance
Navigator Insight (1/4)
Overview

ECO Insight – easy fleet performance management
By making fleet performance visible, ECO Insight guides owners, managers and operators to taking the right actions for improvement.
Navigator Insight (2/4)
NI Recorder – Event reporting

Guiding the crew what to fill out

ROBs always visible
Navigator Insight (3/4)
NI Recorder – Input verification

Plausibility checks onboard

Only fuel that has been bunkered can be consumed
Navigator Insight (4/4)
NI Server – Voyage reporting including quality check

Tool tips show data quality issues
DNV GL solution: ECO Insight is more than just dashboards, it will give outside in view on your performance

Public domain industry data

- Comprehensive view on fleet performance (voyage, engine & system, hull & propeller)
- Enriched with additional industry data: weather, fuel-quality, satellite data, ...
- Benchmarks against own fleet and market averages (e.g. world container ship fleet 50-100kDWT)
- Advanced Analytics e.g. for hull degradation or normalizations using CFD models
- My dashboard function to customize user specific views and analysis trails
- Optional: Analyst workbench for creating own analysis and reports

Operations data from customers’ vessels
The first steps to “Maritim 4.0”

- Lets go the way from data heap to smart data storage

Make your work more efficient with ECO Insight
Thank you for attention

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SAFER, SMARTER, GREENER
Data integration through unified storage context
Different tools but one model

System Condition Monitoring

Voyage Reporting

Technical Information Model

Hull Condition Monitoring

IHM Maintenance