CBM by Wärtsilä

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What is at stake?

- Our customer have their own business to take care of
- Their businesses need our energy products

- If our products fail to perform, our Customers' businesses are at stake
- Everything needs to be done so the reliability is secured
- Condition Based Maintenance (CBM) is a safety net that takes care of our Customers' installations in case something unforeseen is about to happen.

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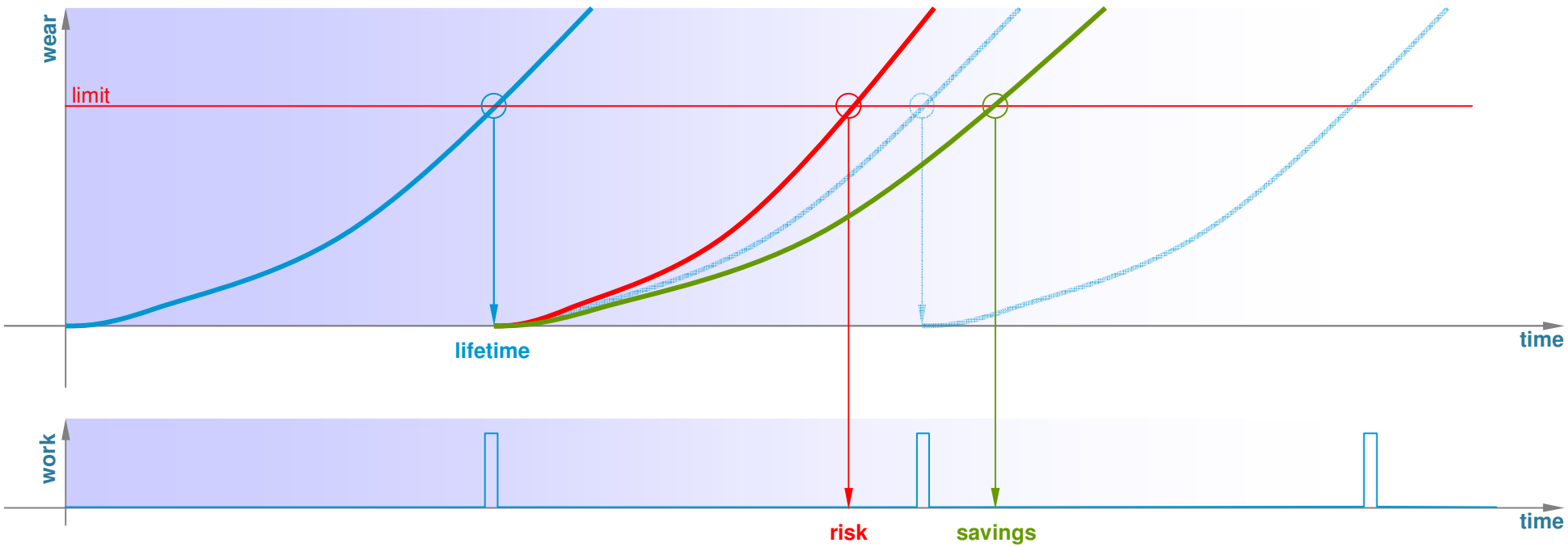
Maintenance Methods



Scheduled Maintenance is a seamless method to plan your maintenance activities

CBM alerts you when a premature failure is about to occur. It warns you at an early stage so the worse is avoided.

CBM helps you keep an eye on your planning according to actual performance records. It helps you extending your MTBO.

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Condition Based Maintenance

On-site and on-line troubleshooting capture and analyse operational data.

- **Control and monitoring systems**
- **Pressure measurements**
- **Temperature measurements**
- **Speed measurements**
- **Load measure measurement**
- **Communications**

CBM monitors the equipment conditions, continuously analyses operating data, and calculates the optimal performance parameters by diagnosing and predicting the future condition of the equipment.

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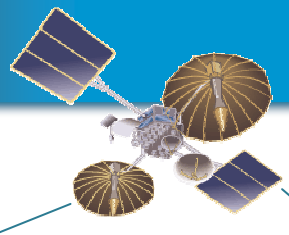
How Does It Work?



- Operational Data
- Centralized datacenter
- Expert Analysis
- Remote Access

- Frequent reporting
- Customer Information
- Customer Follow-up
- Any installation Worldwide

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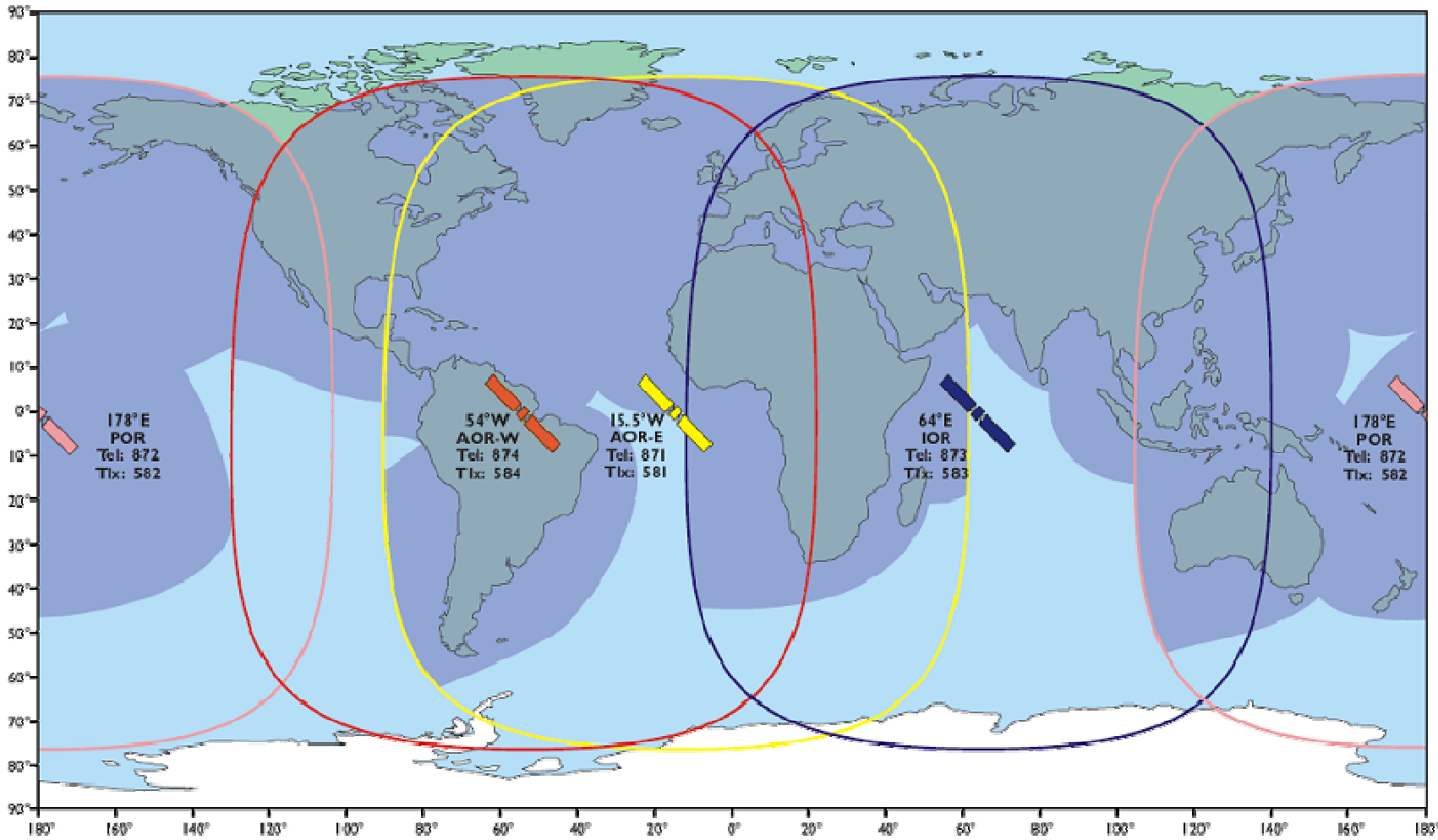
Worldwide Coverage

Fleet Service Coverage Map

Voice is available on all Fleet services inside the Global beams



Numerous References

Axel Maersk
1x12RTA96C + 3x8L32 + 1x6L32CR

253 Engines in CBM Report, 141 Marine, 112 Power Plant

500 Engines in CBM Expert, 400 Marine, 105 Power Plant

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...as of may 2005

Example of Lufussa

Lufussa

Pavana III, Honduras
Type: Oil power plant
Location: Pavana, Honduras
Engines: 16 x Wärtsilä 18V46
Total electrical output: 267.4 MW

Connection type
A continuous connection to this power plant is enable through secured remote access.
Parameters can be followed in Live.

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Lufussa Pavana III

Example of Adventure of the Seas

Adventure of the Seas

Royal Caribbean Cruise Lines
Type: Passenger Vessel
Location: Caribbean, USA
Engines: 6 x Wärtsilä 12V46
Total power: 75.6 MW

Connection type
Data are sent from the vessel to Wärtsilä on a daily basis. Parameters are stored and can be accessed remotely whenever needed.

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Adventure of the Seas

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Total power: 75.6 MW

CBM Reports are generated based on Customer's specifications

- **Different Level reports**
  - Operators
  - Middle Management
  - Top Management
- **Performance Reports**
  - Fuel Consumption
  - Operation Data Evaluation
  - Heat Recovery
  - Comments/Suggestions
- **Environmental Reports**
  - Emission Calculations
- **Technical Reports**
  - Forthcoming Maintenance
  - Trends / Alarm analyze
  - Comments / Suggestions

- **Reduce operating costs**
  - Reduced fuel consumption
  - Reduced maintenance costs
  - Increased component life time
- **Trim down number of unplanned stops**
- **Avoid equipment failures**
- **Improved maintenance planning**
- **Improved follow up of the installation conditions**

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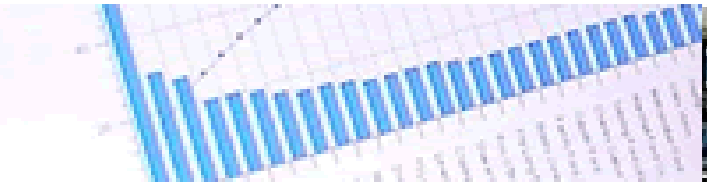
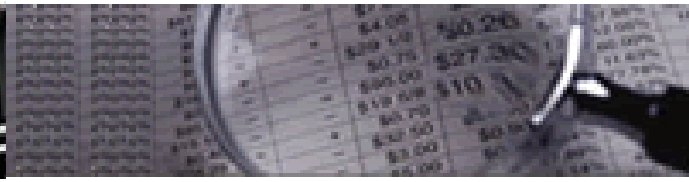
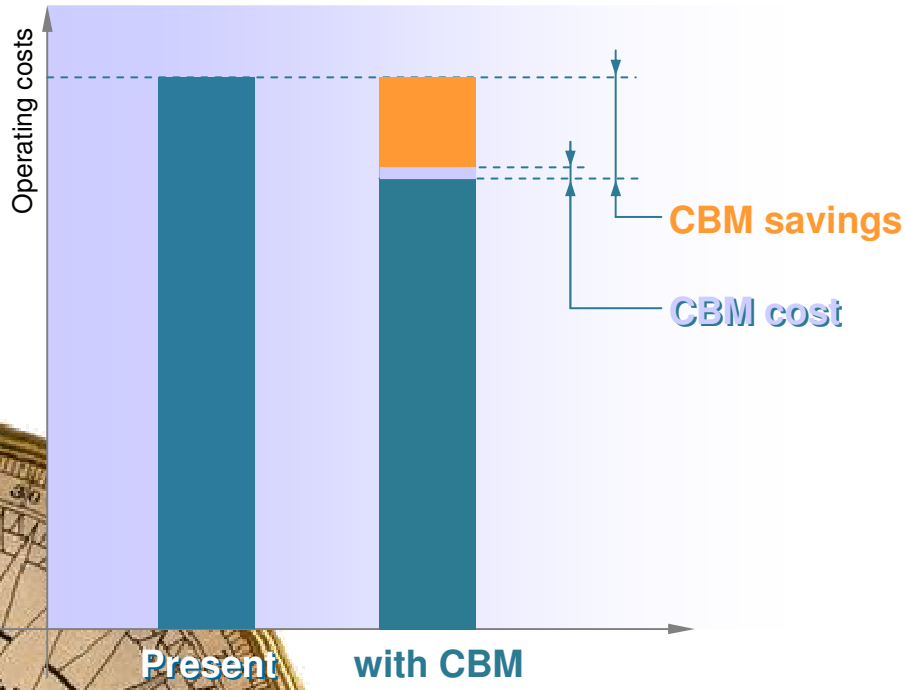
Economy







- According to several insurance companies, as much as 50% to 80% of claims originate from human factor
- The information was available but the correct actions was not taken
- Savings in a range of 10% to 20% of the total operating costs during the life time

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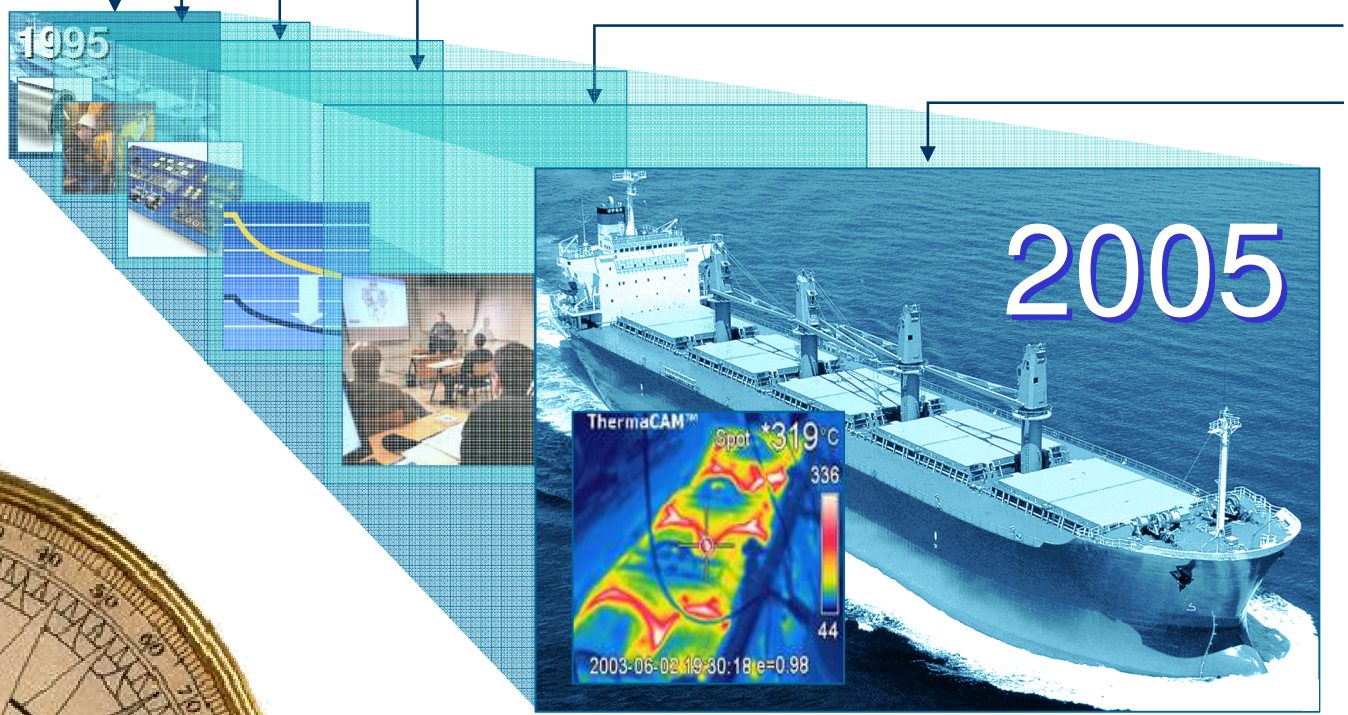
Life Cycle Efficiency Solutions

- Spare Parts & Tools
- O&M Support
- Performance optimizers
- Environmental solutions
- Training
- Safety & Reliability



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Thanks