

Machinery claims - Lessons learned?



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Ralf Bussing

VHT
Verein Hanseatischer
Transportversicherer e.V.

➤ Agenda

- VHT at a glance
- Machinery onboard past vs present
- Lessons learnt: water in lube oil
- Example for insufficient failure analysis and prevention
- Conclusion

› VHT at a glance

History

- › 1797: Verein Hamburger Assecuradeure (VHA) is founded in Hamburg
- › 1818: Verein Bremer Seeversicherer (VBS) is founded in Bremen
- › 2000: VHA and VBS merge into VHT
- › 2012: VHT establishes the new office in Rotterdam



› HAMBURG

› BREMEN

› ROTTERDAM



Verein Hanseatischer
Transportversicherer e.V.

➤ VHT at a glance

Core competencies

- Claims Management
- Damage Surveys
- Emergency Response
- Consultancy
- Warranty Surveys



➤ Machinery onboard past vs present

Past

- 15,000 hp

- Semi automatized

- Partly suited for HFO

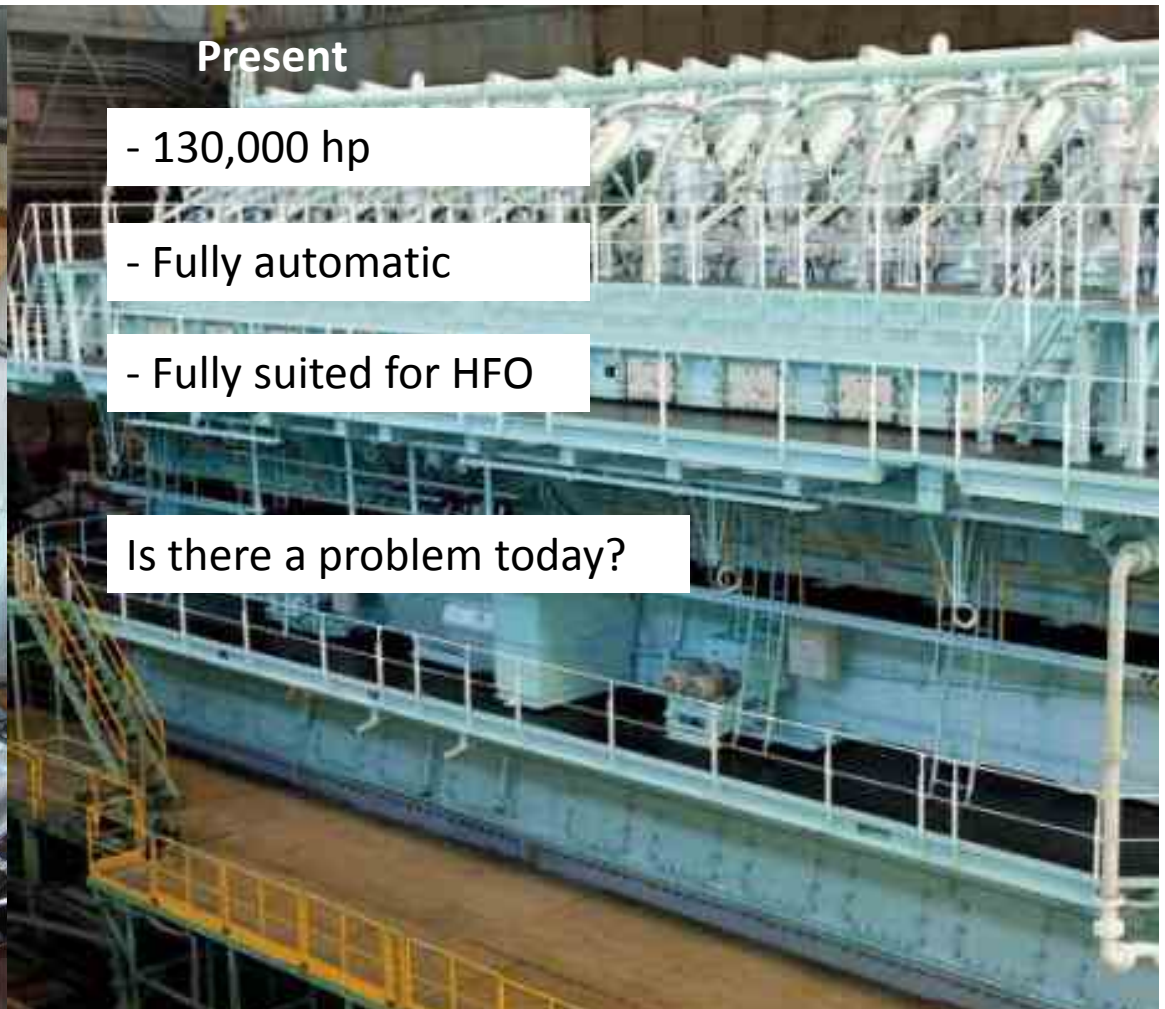
Present

- 130,000 hp

- Fully automatic

- Fully suited for HFO

Is there a problem today?



➤ Machinery onboard past vs present

- VHT statistics suggest an increase in severity of machinery claims over past years



➤ Machinery onboard past vs present

Past

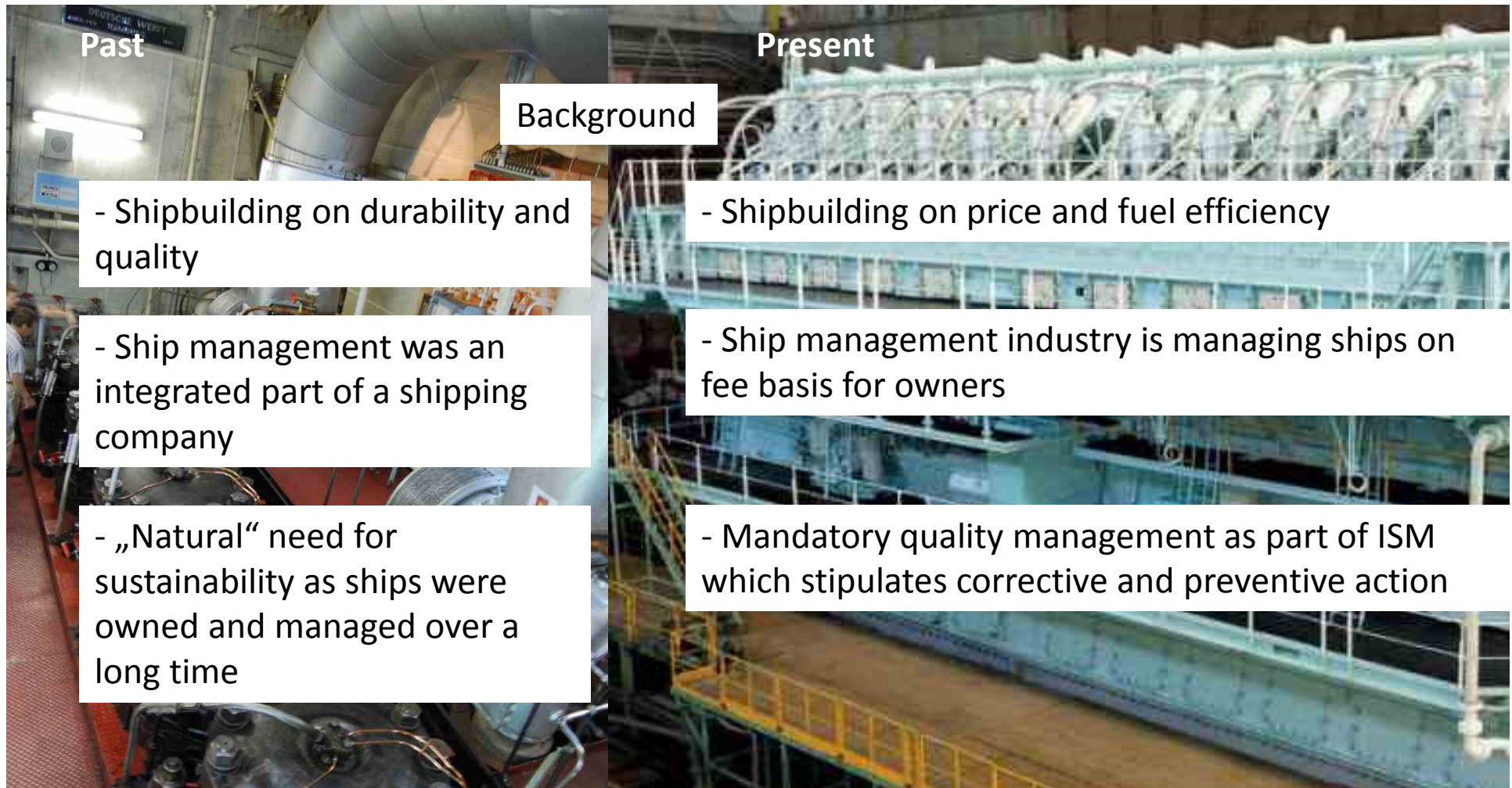
- More „foregiving“
- „Some“ cooling water was required
- More technical failure

Present

- Less „foregiving“
- Cooling water needs to be kept in a tight temperature range
- More sensitive to human failure



➤ Machinery onboard past vs present



Past

Background

- Shipbuilding on durability and quality
- Ship management was an integrated part of a shipping company
- „Natural“ need for sustainability as ships were owned and managed over a long time

Present

- Shipbuilding on price and fuel efficiency
- Ship management industry is managing ships on fee basis for owners
- Mandatory quality management as part of ISM which stipulates corrective and preventive action



Do we learn sufficient from machinery claims today?

➤ Example for lessons learned

- Damage to crankpin bearings and main bearings on account of 17.5% water in lube oil



➤ Example for lessons learned

- Lesson learned: Water-in oil sensors were installed by owners
 - effective and early detection of water in lube oil
 - alarm enables the crew to prevent damage



Source: Kongsberg

➤ Example for insufficient failure analysis and prevention

Fuel related machinery claims

➤ Our experience concerning the cause of damage:

- | | |
|---|--------------|
| ➤ Delivery of poor fuel: | SELDOM |
| ➤ Incompatible engine operating conditions: | OCCASIONALLY |
| ➤ Improper fuel preparation on board: | OFTEN |

➤ Example for insufficient failure analysis and prevention

Fuel related machinery claims

- Improper fuel preparation on board: possible deficiencies in
 - Drainage
 - Purification & Clarification
 - Pre-heating / viscosity
 - Filtering

➤ Example for insufficient failure analysis and prevention

Fuel related machinery claims

➤ Example: lack of proper purification and filtering



➤ Example for insufficient failure analysis and prevention

Fuel related machinery claims

➤ Example: lack of purification and filtering



➤ Example for insufficient failure analysis and prevention

Fuel related machinery claims

- Example: lack of purification and filtering
 - Result: severe damage to the fuel oil pumps and injection valves



➤ Example for insufficient failure analysis and prevention

Fuel related machinery claims

- Example: Unsuitable fuel with CATFINES
 - New fuel was not bunkered in separate tanks, but mixed with stock
 - Thus new fuel was used immediately upon departure from the bunker port
 - Result: The engine did not run for a long time...



- Analysis of bunker samples arrived one day later...

AL + SI CALCULATIO	ISO 10478	mg / kg	*392*	80	MAX
TOTAL SED, POTENTI	ISO 10307-2	% (m/m)	*0.29*	0.10	MAX
NET CAL VAL	ISO 8217:A	MJ/KG	37.55		-
CCAI	ISO 8217:B	INDEX#	859		-
OPERATIONAL ADVICE			-		
INJECTION TEMPERAT	@ 10 CST	°C	129		-
INJECTION TEMPERAT	@ 15 CST	°C	112		-
MINIMUM PUMPING TE	@ 10		19		-
ADDITIONAL METALS			-		
IRON	ISO 10478MOD	mg / kg	119		-
NICKEL	ISO 10478MOD	mg / kg	19		-
CALCIUM	ISO 10478MOD	mg / kg	311		-
MAGNESIUM	ISO 10478MOD	mg / kg	33		-
LEAD	ISO 10478MOD	mg / kg	<1		-
ZINC	ISO 10478MOD	mg / kg	1		-
TOTAL ACID NUMBER	ASTM 664	mg/g	-	3.0	MAX
OPERATIONAL ADVICE			-		-
CHEMICAL CONTAMINA	LINMS	-	-	-	Not Tested
PHOSPHOROUS	ISO 10478MOD	mg / kg	2		-

Bunker Analysis

ENGINEERING NOTES:

Based upon the analytical results measured in this sample these indicate that your listed specification parameters requirements are NOT met on this occasion.

The following engineering notes are given in good faith for guidance only, always **Bunker Analysis** Company Instructions and machinery manufacturer's instructions before taking any actions.

* PLEASE NOTE THAT THE RESULTS GAINED SHOW HIGH CATFINES / SEDIMENT / WATER / ASH, **THIS FUEL SHOULD NOT BE USED.** WE WOULD RECOMMEND A SECONDARY TANK SAMPLE BE SENT TO CONFIRM THE VALIDITY OF THESE RESULTS *

The sample retained on board the vessel should be secured and the suppliers should be put on notice immediately pending any future claims or losses. In the meantime, we would recommend that the vessel segregate this fuel from all other fuel on board and also take samples from the bunker tanks and send to



Bunkering of bad fuel does not inevitably
have to lead to engine damage

Conclusion

More emphasis should be placed on root cause analysis of machinery claims and in turn corrective and preventive action.

The ISM Code hereby provides the framework, but a quality culture must be “lived” ashore as well as on board.

➤ We are looking forward to see you all in Berlin 2015...



...where IUMI was founded in 1874

Thank you for your attention

