



Marine Fuels 2020 & beyond

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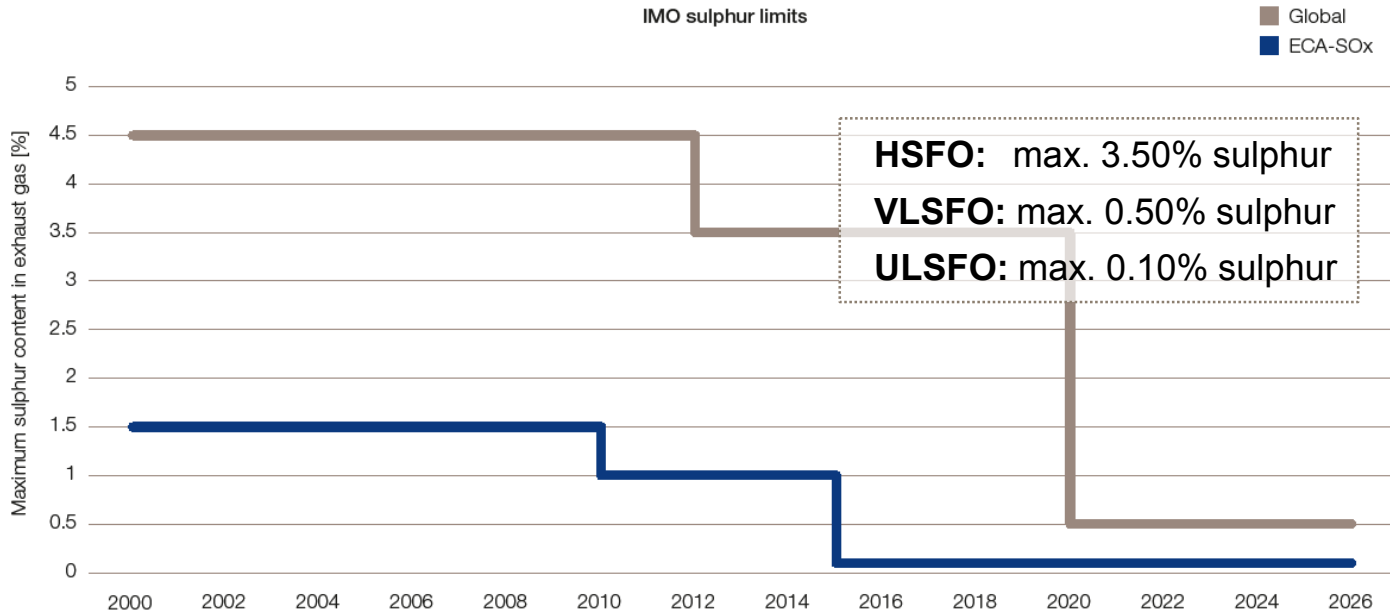
Only 8 months to 2020, and still many uncertainties!

Fuel availability
Technical solutions
Fuel quality



Oil price
Fuel compatibility
Fuel specification

Global Sulphur Cap





MARPOL Sulphur Content



86%
Reduction



3.50%
April 23, 2019

0.50%
Jan 1, 2020



MARPOL Compliance



3.50%

Buy a Scrubber



0.50%

Be prepared
to pay more



0.10%

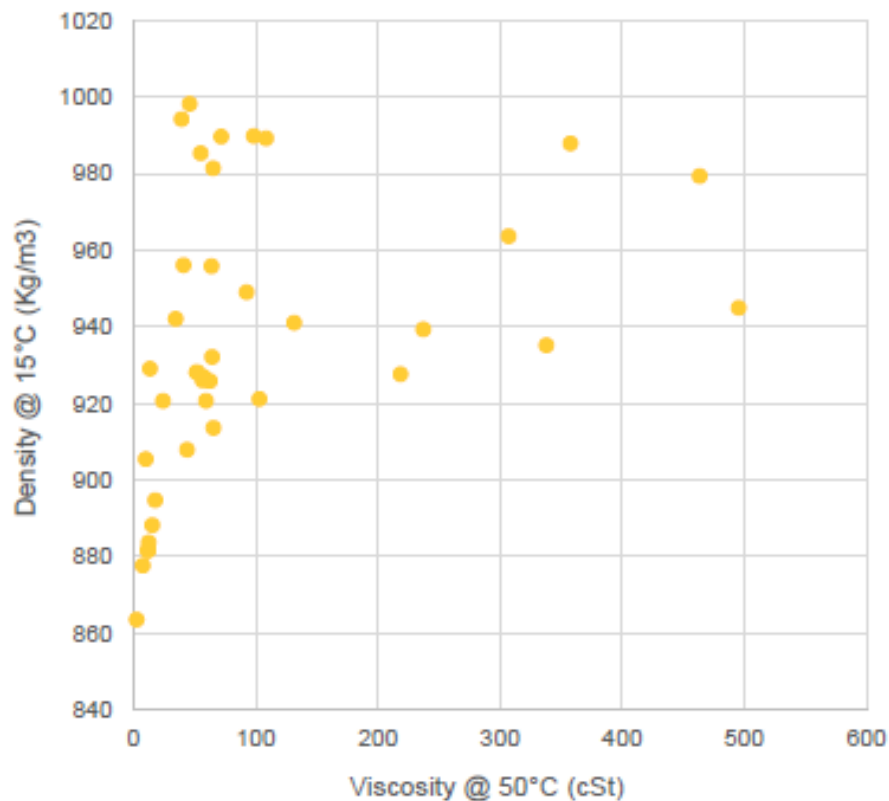
Be prepared to
pay much more



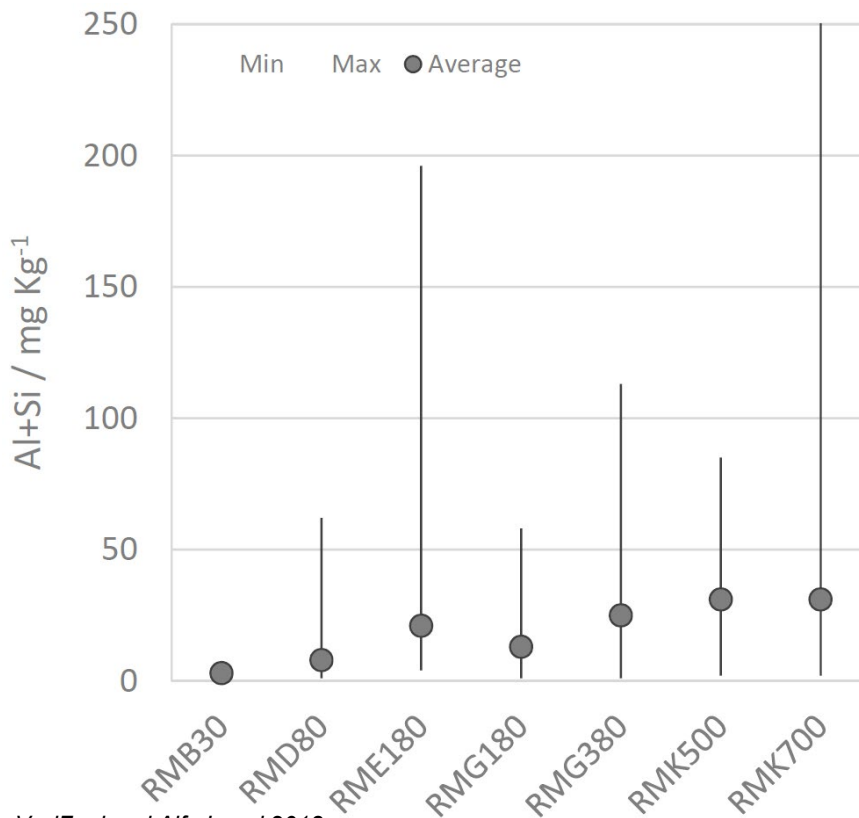
0.00%

Liquid Natural
Gas with MGO

Likely 0.5% S fuel scenario in 2020



Cat Fines in Marine Fuels



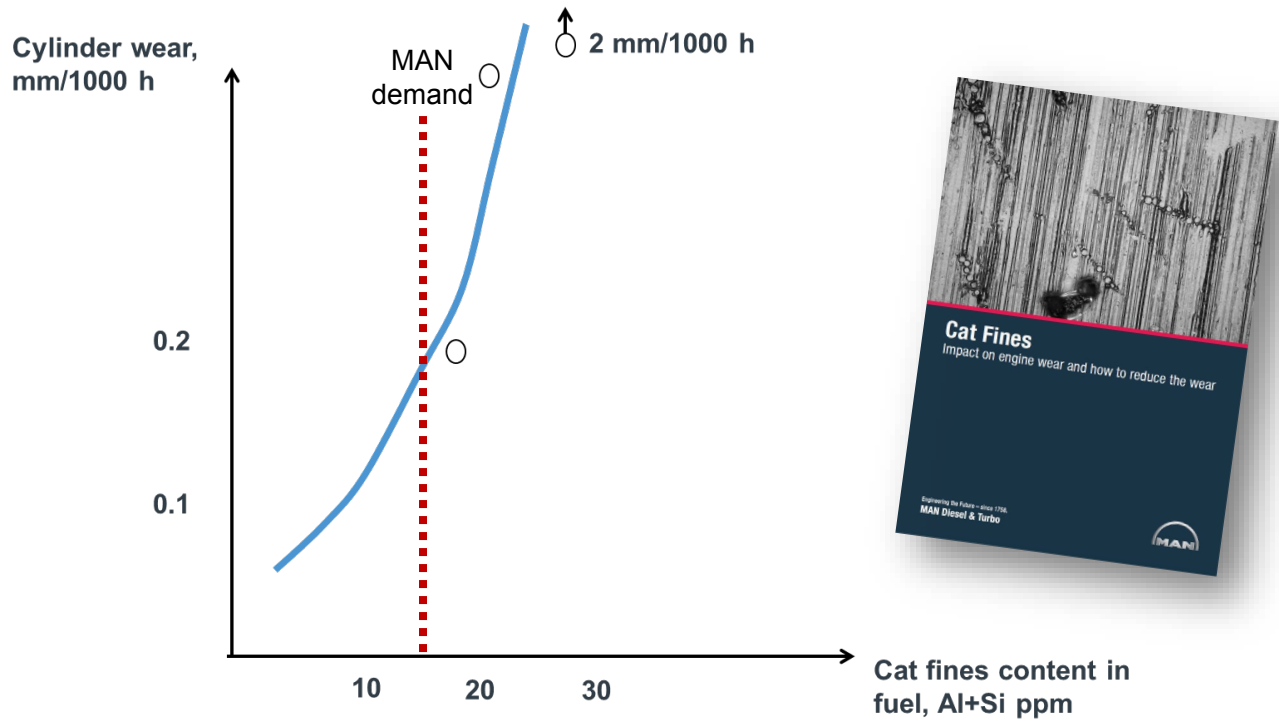
Source: VeriFuel and Alfa Laval 2018

Fuel Quality: Cat Fines

- Catalytic fines cause serious wear to the engine
- MAN investigation looked at **226 vessels** with high-wear cylinder liners:
 - **190 cases** involved cat fines
 - High levels of cat fines can wear down a cylinder liner in few hours
 - Expensive to repair!

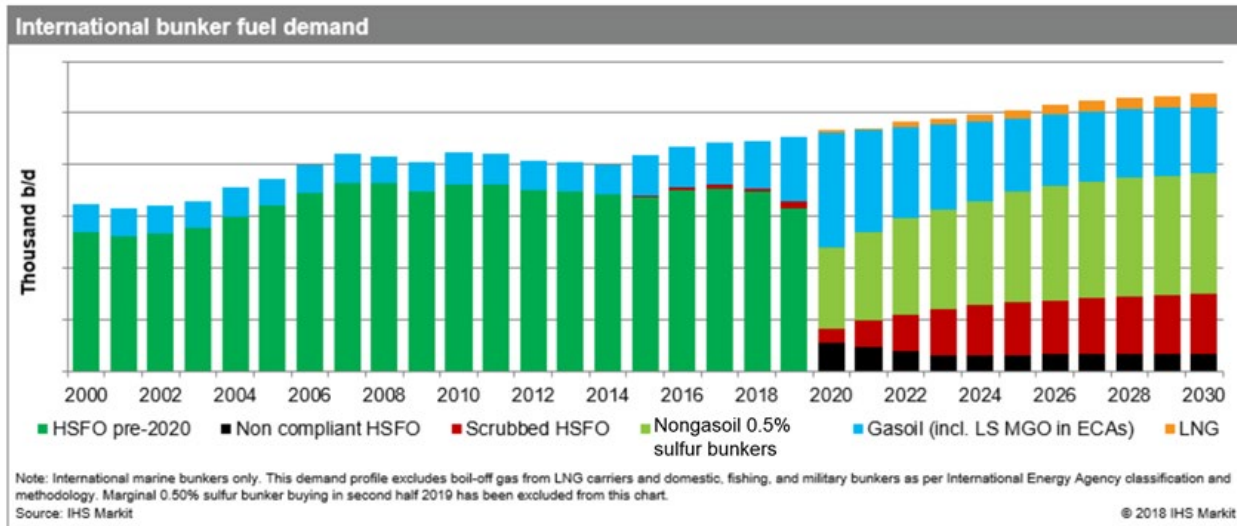


Cat fines – Impact on engine wear



Source: MAN Diesel & Turbo

Marine Fuel Demand 2020 and beyond



Source: IHS Markit (2019)

2020 Fuel Challenges...

- High variety of different fuel blends (majority will be residual).
- Average viscosity will decrease 30-500 cSt and higher variations.
- Density will decrease and higher variations.
- Catalytic fines will be there in varying amounts and more hard to predict: max. 60 ppm (ISO RMG).
- Special knowledge needed to avoid stability, compatibility and pour point issues.





Application knowledge

www.alfalaval.com/fuelline

The Alfa Laval Adaptive Fuel Line Blue Book!



- Marine Bunker Fuels
- Fuel Treatment - Engine Performance
- Legislative Impact on ship operation
- Fuel Oil Treatment - The Modern Approach

