



# THE VISWA GROUP



# WHAT SHIP OWNERS ARE DOING TO MEET THE LOW SULPHUR REQUIREMENTS IN 2020

## Fuel Oil Availability and The Scrubber



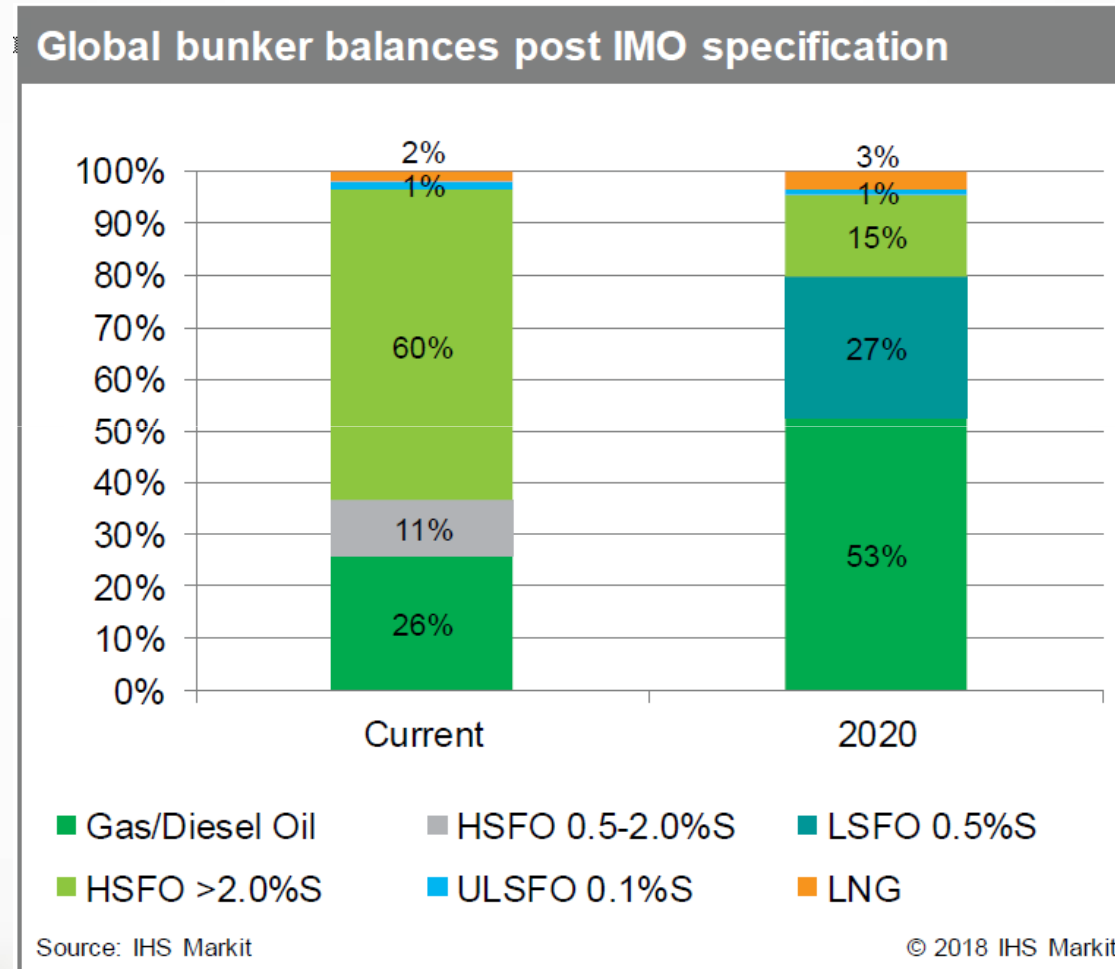
Presented By Simon Hall

# The Majority are doing this.



- Conservative industry, with a Cautious approach and Risk adverse
- Don't want to be first, wait until best proven method found
- Conflict for owner/operators - Environmental legislation v Commercial Viability
- It is not a one size fits all scenario

# FUEL OIL DEMAND – CURRENT VS 2020



# WHAT ARE THE FUEL OPTIONS IN 2020?

0.5% Sulfur fuel Globally and 0.1% Sulfur fuel in ECA's

- Use MGO
- Use Hybrid Fuels
- Use Fuel Cells
- Use LNG
- Use Methanol
- Use Biodiesel
- Continue to use Heavy Fuel with Scrubbers for Exhaust

# MGO



## PRO

- Simplest Option. No major changes
- Reduce SOx and PM
- Less maintenance on engines
- Availability - Worldwide

## CON

- Costly
- No reduction in NOx
- Minimal reduction in CO2
- Fuel Quality Issues – Cloud Point, Flash Point, Bacteria

# HYBRID FUELS



## PRO

- Less Expensive than MGO
- Designed to meet 0.1% ECA
- Good Ignition and Combustion
- Low in Catfines and other elements

## CON

- Only 15+ suppliers
- No specific grade in ISO 8217
- Compatibility an issue with HFO
- Not available worldwide

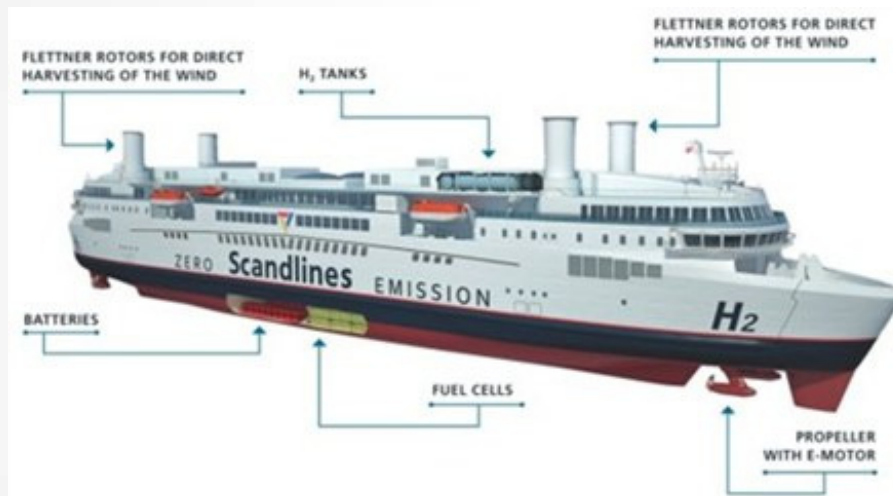
# FUEL QUALITY ISSUES – DISTILLATES

## Problem cases increasing

#	Machinery Problem	# of Cases	Common Problem Ports	Probable Causes	Tests to Identify
1	Filter Choking due to Bacteria	➤ 40	Singapore, Rotterdam, US Gulf	Bacterial Contamination	Bacteria/Algae/Fungal grown test
2	Filter Choking due to high CP/CFPP	➤ 35	European Ports	Fuels with higher wax content	Cloud Point/Cold Filter Plugging Point
3	Fuel Pump Problems	➤ 10	Some US ports (ULSMGO supply)	Low Lubricity/Viscosity	HFRR Lubricity Test
4	Acidic Wear and Filter Choking	➤ 10	Malaysia/Some US ports	FAME (Biodiesel Contamination)	FAME/GCMS



# FUEL CELL



## PRO

- Clean – No combustion
- No emissions

## CON

- Safety considerations

# LNG



## PRO

- Free of sulfur and ash
- Reduce NO<sub>x</sub>, SO<sub>x</sub>, CO<sub>2</sub> and PM emissions
- Low Cost

## CON

- High Initial costs
- Major Modification to machinery and tanks
- Storage and handling more risky
- Density is half of HFO - more storage required
- Low load operation an issue – dual fuel required
- Not available Worldwide



# METHANOL



## PRO

- Biodegradable, clean-burning
- Reduce NO<sub>x</sub>, SO<sub>x</sub> and PM emissions
- Existing facilities can be used

## CON

- Needs more space and twice the quantity to burn to get same energy as MGO
- Engine modifications required
- Has a lower flashpoint than MGO
- Only 4+ ships on trial
- Not available worldwide

# BIODIESEL



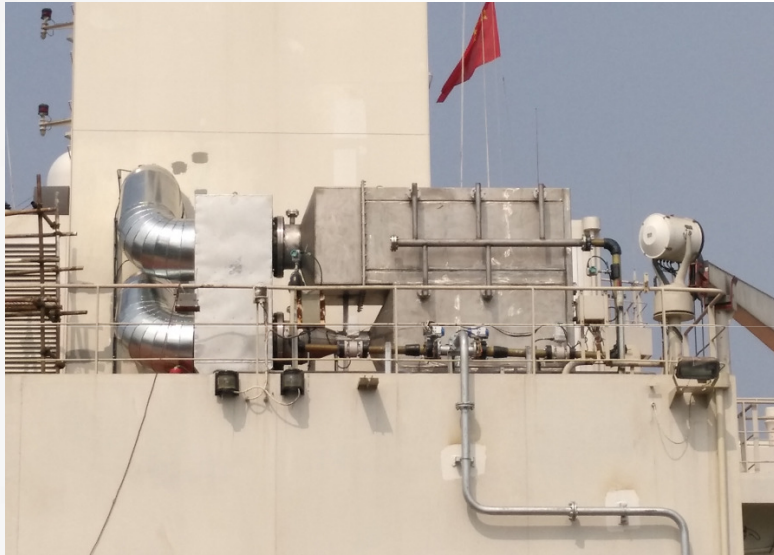
## PRO

- Reduce emissions
- Biodegradable – Not toxic to aquatic life
- Better lubricity
- Higher Flashpoint
- Existing facilities can be used

## CON

- Acidity
- Long term storage stability

# SCRUBBERS



## PRO

- High Return on investment (1 to 2 years)
- Will reduce SO<sub>x</sub> and PM emissions
- Currently no availability problems globally –
- Use any sulfur fuel

## CON

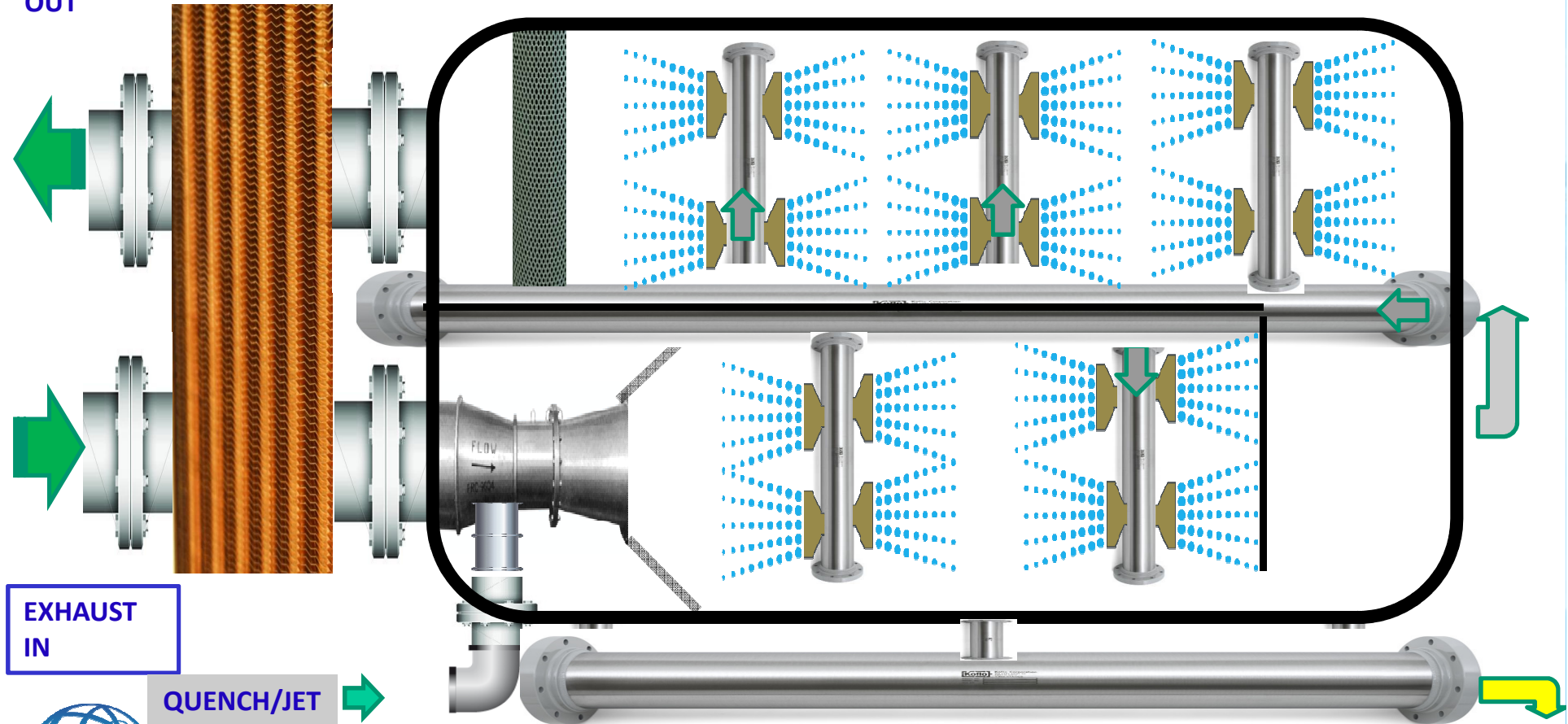
- Initial CAPEX can be high
- Retrofitting can be complicated

**NB:** All discharge water must be monitored in a holding tank and will only discharge when the PH value is within the normal range, thus having a neutral effect.

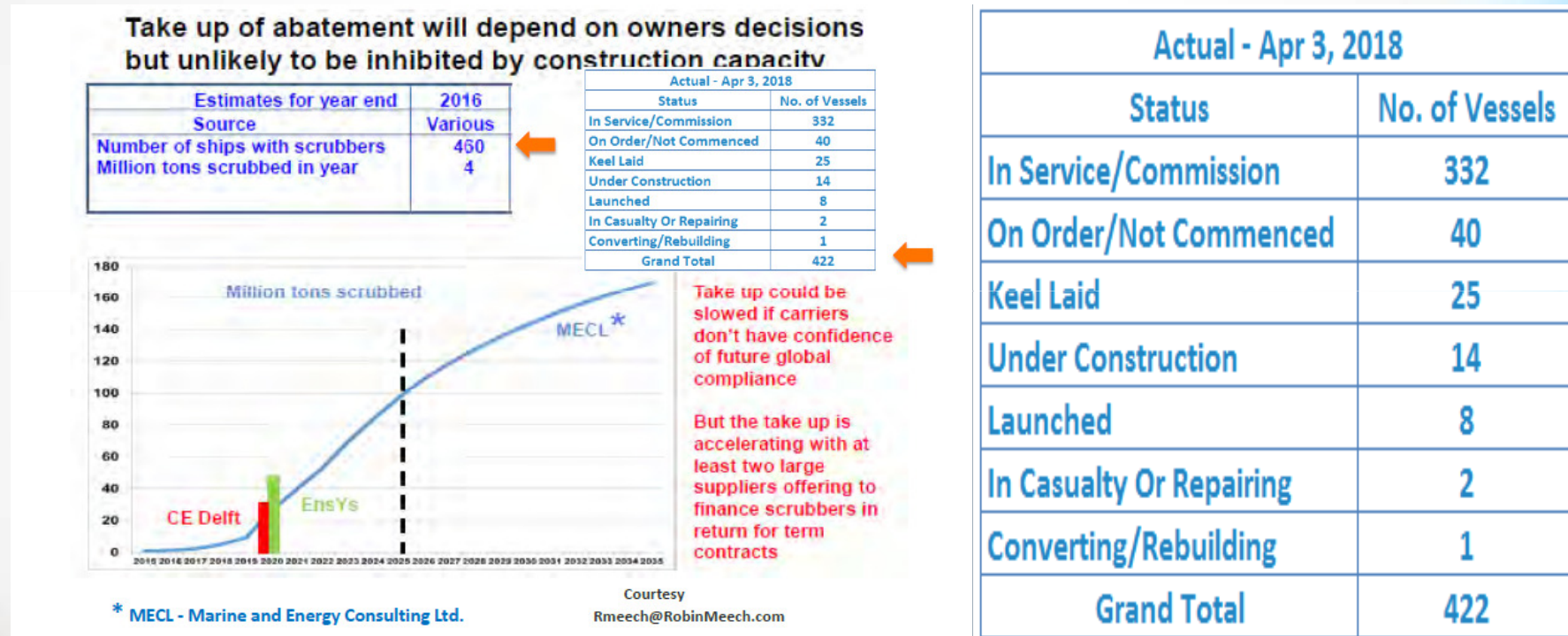
# ADVANCED DESIGN - V-HELISCRUB (SM)

## TWO LAYER DESIGN – VERTICAL STACK METHOD

EXHAUST  
OUT



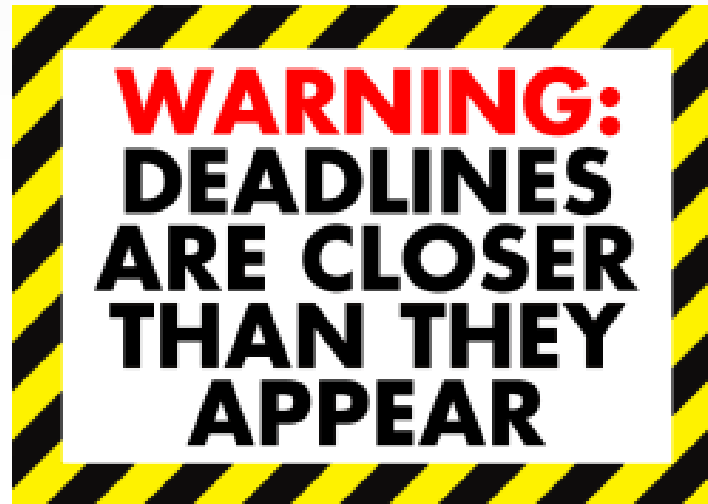
# SCRUBBER SCORE



Source : World fuel Services Corporation

# There in Reality 3 main options

- Use Low Sulphur fuel
- Switch to LNG
- Fit a Exhaust Gas Cleaning System/Scrubber



01:01:2020

You have a choice – make one before it is to late !

# Thank You!

**[WWW.VISWALAB.COM](http://WWW.VISWALAB.COM)**

**[VISWA.MFAME.GURU](http://VISWA.MFAME.GURU)**

**[Simon.hall@theviswagroup.com](mailto:Simon.hall@theviswagroup.com)**



**THE VISWA GROUP**