

# BUILDING FOR THE FUTURE. Energy Sources and Carbon Reduction Challenges for the Cruise Sector:

## A Fuel Suppliers Perspective

Sandra Lau, Head of Hydrogen and EV's

Steve Duniam, Head of Marine



# New IMO GHG Regulations Drive Change

- International Maritime Organisation (IMO) is a specialized agency within the UN responsible for the setting of global standards for Shipping
- Covers regulation of Safety, Security, Environment etc and covers Fuel standards
- In 2020 IMO applied a reduction in the max Sulphur limits in Marine Fuels from 3.5% to 0.5%, with exception of fuels used in vessels fitted with exhaust scrubbers
- IMO now focusing on reduction of GHG
- Targets are:
  - Reduce carbon emissions by 40% by 2030 (IMO 2030) from 2008's levels
  - 50% of the shipping industry's total greenhouse gas emissions by 2050 (IMO 2050).
- Measured and monitored through application of a Carbon Intensity Indicator (CII)



# Challenges for Owners and Operators of Existing Ships:

- Cruise ships typically have an operational life of >30 years
- Expensive and technically challenging to dramatically reduce an existing ships GHG footprint
- Usually requires dramatic changes to:
  - the ships propulsion units or fuel types, or
  - operating envelope to reduce fuel consumption/GHG emissions
- Changing engines is usually not feasible economically or operationally, Changing operational parameters include slow steaming or reducing passenger load to reduce fuel consumption, and therefore emissions. Both impact cruise itineraries.
- Shore power can reduce CO2 stack emissions in port, but what is the power source?
- Limited availability and types of lower emission fuels that are operable within existing engines:
  - Bio Diesel/FAME
  - Hydrated Veg Oil (HVO)
  - Others, waste based renewable (pyrolysis) fuels
- Alternative fuels are extremely expensive versus traditional Marine fuels, 2-400%
- Carbon offsets not as yet recognized by IMO



# Current Challenges for Fuel Suppliers:

- Bio fuels (FAME and HVO) currently the only real carbon reduction option for operators of diesel powered vessels
- Numerous feedstocks available, but apart from Palm Oil, not as freely available as Crude
- Food versus Fuel considerations
- Need to be segregated from other fuels, particularly Jet fuel
- Depending on feedstock may not blend very well with Residual fuels such as VLSFO
- Limited demand, and restricted availability for feedstock mean they are High cost to manufacture compared to crude derived products
- Typically require a high level of Government subsidy or regulation to be viable versus traditional diesel fuels
- Australian manufacturers face the full gamut of challenges:
  - No effective Government policy to support Bio fuels
  - Limited feedstocks, and most exported to maximize returns
  - Limited demand which has limited investment in manufacturing capability
  - Capital investment required for new fuels, but limited demand

Industry wants fuels that are: 1/ Operable 2/ Available 3/ Sustainable 4/ Economical.

***Pick any 3!!!***

# Challenges for Operators of Future Ships:

- No clear “favourite” for new fuel/s in the short term, multiple pathways longer term
- Owners of newbuilds are forced to pick “winners” in an uncertain world
- LNG is viable in the mid term, but will not meet future GHG emission standards
- Ammonia and Methanol both have some traction but both have serious issues:
  - Ammonia extremely toxic, poor combustor, needs to be stored at reduced temperature and high pressure
  - Methanol has low flash point, low energy density = increased consumption
- Long term Hydrogen will likely be the preferred fuel, either in fuel cells or in ICE, but difficult to manufacturer in a “Green” way currently. Evolution of low cost renewables will likely address this
- New vessels/fuels will almost certainly involve changes to operating patterns, eg shorter voyages, more frequent refueling
- Need for more specialized seagoing staff to manage new fuels
- Small back to base/ sort haul operations may move to electricity power via battery and recharge (tugs/ferries/expedition cruise?) Unlikely to be applicable for long haul voyages

# Summary:

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- New IMO regulations pose serious challenges for all players in the Cruise sector: Ship Owners and Operators, Port managers, Infrastructure providers and Fuel Suppliers
- Challenges will continue to grow as the industry tries to achieve ambitious reduction targets set by IMO
- Owners and operators of existing vessels will struggle to make them compliant, and resultant costs to the entire economy will increase – perhaps dramatically
- No clear pathway to deliver the target reductions either now, nor in the future, although H2 likely to be the long term future
- However shipping remains the most carbon efficient method of moving large volumes of freight and passengers, and the recent successful implementation of the 2020 Sulphur cap has demonstrated the essential resilience of the industry and its ability to adapt to dramatic change

# Thank you