

Pacific domestic maritime technology transfer pathways

Various ship types



2019

Lomaiviti V cargo/pax ferry 130m, 5000 tonne
built 1964, in service Fiji domestic inter-island
No additional efficiency measures
Low Capex, High Opex – 12-15 tonne fuel oil p.d.



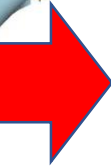
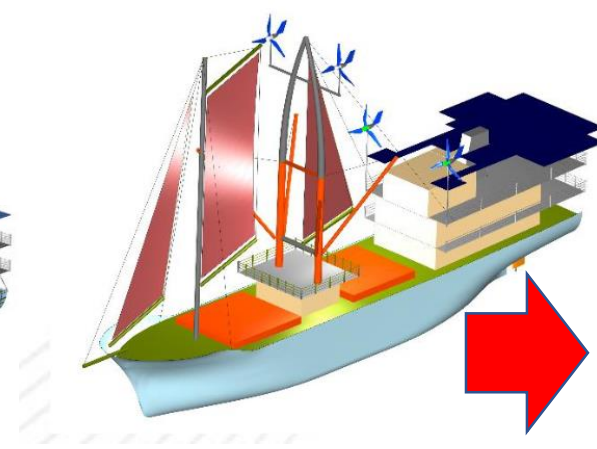
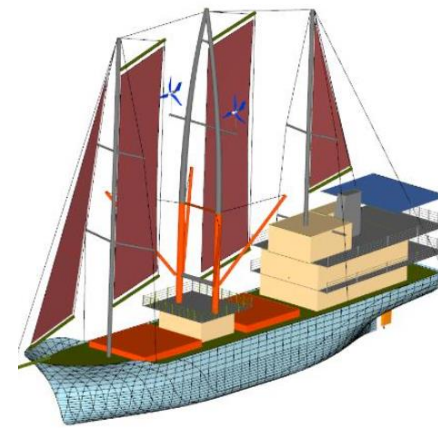
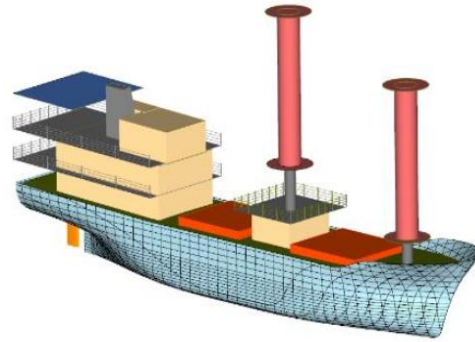
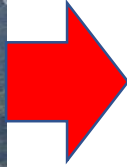
2024

Neoline 138m, 5000 tonne,
Launch 2021 in St-Nazaire
Improved hull design and energy efficiency built in
from design phase
Wind - diesel/electric hybrid for main propulsion.
High CAPEX/low OPEX - 80-90% operational
efficiency



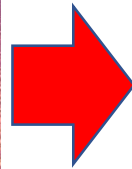
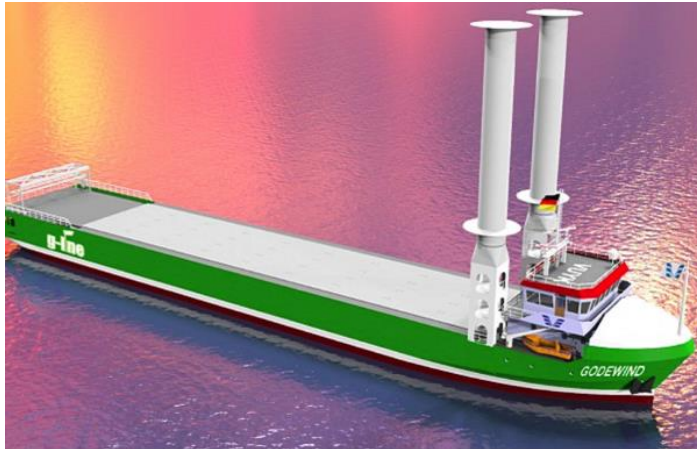
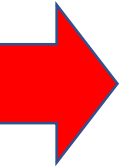
2030

With either advanced biofuels, fuel cells
or full electric drop - in replacement
motors this design could achieve zero
emissions from operations



MV Kwajalein – RMI 560GT cargo/pax ferry
Fuel = 390,000 litres/\$250,000 p.a

Retrofit/efficiency options available 2020
Fuel = \$US70,000 p.a (incl slow steaming regime)
Energy savings of 16-60% depending on option selection



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Battery/electric
Fuel cell
Bio-diesel

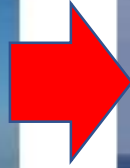
New Build – improved hull design and energy efficiency built in from design phase with diesel/electric – wind hybrid for main propulsion. High CAPEX/low OPEX. 40% +

New Build – improved hull design and energy efficiency built in from design phase with diesel/electric – wind hybrid for main propulsion. Higher CAPEX/lower OPEX. 80-90% +

100% REQUIRES FUEL SHIFT



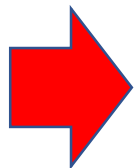
SV KWAI – 179 GT, copra boat



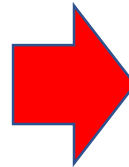
2010 retrofit – 10-30% fuel savings



2017 retrofit – 25-50% fuel savings



Cerulean– 199 GT, copra boat, new build
2020. 40-75% fuel savings



Battery/electric

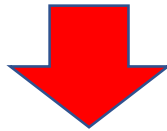
Fuel cell

Bio-diesel

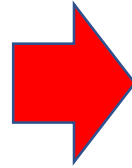
100% REQUIRES FUEL SHIFT



**Fast Ferry – Fiji = Current
–all diesel power**



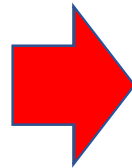
**Fast Ferry – Norway = current
– all electric**



**Fast Ferry – NZ = under construction
– all electric**



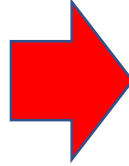
CAPEX = \$2.6m. Annual OPEX savings = \$200k



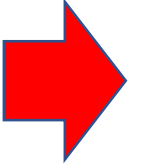
**Fast Ferry – Norway = future
– hydrogen fuel cell or electric**



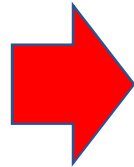
1986 – retrofit – 10-30% fuel savings



2010 – 0 % fuel savings except by
energy efficiency (1-8%)
Slow steaming (10-30%)



2018 Retrofit – 15-20 % fuel savings

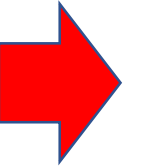
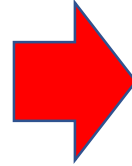


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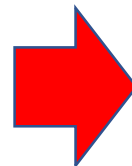
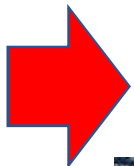
2030 new build – ? % fuel savings



Vessels under 15m, generally powered by 2-stroke petrol fuel outboards make up a significant portion of Pacific domestic emissions. Low CAPEX, high OPEX



Transition to 4-stroke provides 40% efficiency gain. High CAPEX, lower OPEX



Transition to electric outboard/inboards with onboard or shoreside RE charging. 70-90% . High CAPEX, low OPEX

Fuel cells?