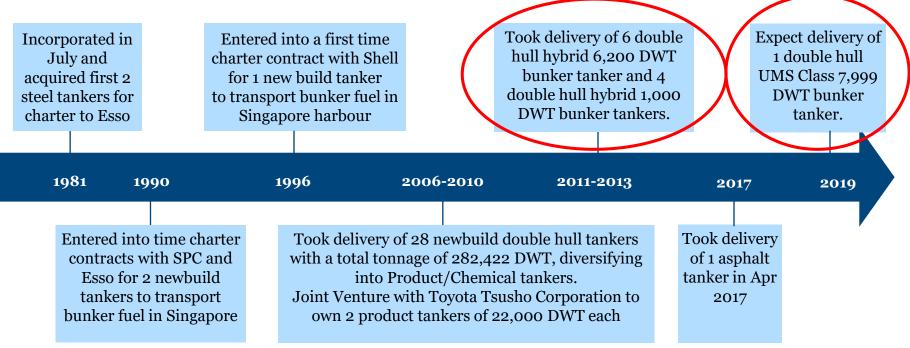


HONG LAM MARINE MPA – SMI Forum Harbour Bunker Craft Diesel Electric Drive Hong Lam Marine

# Hong Lam Marine has grown rapidly since inception to become one of the larger marine transportation operators (bunker/jet fuel) in Singapore



#### **Evolution of Tanker Fleet**



Fleet Vessels (https://www.honglam.com.sg/fleet/)

#### **Private & Confidential**

# Hong Lam Marine is often seen as the innovation leader in the bunkering sector, setting the benchmark for others

- One of Hong Lam Marine's critical success factors is its ability to anticipate and respond quickly to customer transportation needs and regulatory changes
- Mr Lim Teck Cheng, Executive Chairman of Hong Lam Marine, has always been at the leading edge of the industry. He is widely recognised by The Maritime and Port Authority of Singapore ("MPA") and clients as an innovator particularly in vessel design, having been featured in various publications

#### Long history of innovation and certification Notes 2002 Ordered double hull tankers in 2002 1) Double-hulled tankers (1) (delivered in 2003), preceding regulation implemented in 2004 2005 Largest bunker tanker in SEA<sup>(2)</sup> 9,000 DWT double hull bunker 2) tanker "exceptionally large" bunker tankers 22,000 DWT purpose built bunker tankers <sup>(3)</sup> 3) 2009 according to Purvin & Gertz Worked with MPA & Spring to study 4) Modern mass flow meter technology <sup>(4)</sup> 2010 the feasibility of modern mass flow meter technology World's 1<sup>st</sup> Hybrid Bunker Tanker: Diesel/ Electric Propulsion Special license category created with 2011 Hong Lam Marine the first to be awarded First 2 approved vessels for mass flow meter technology (5) 2012 LNG Vessels Future





## **Diesel Electric Bunker Tankers (HFO)**

#### **Private & Confidential**

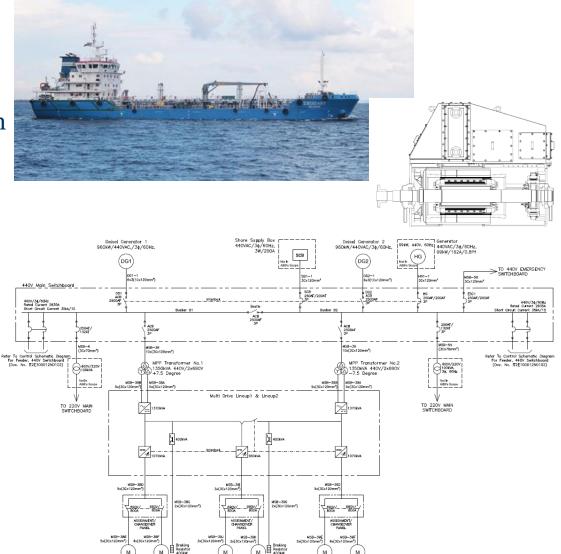
### Hantong Shipyard, China Emissary (2011) Total of 6 Vessels Daihatsu

- 2 x 6 DKM20, 1040 kW @ 900 rpm
- 2 x 6 DE23, 1200 kW @ 900 rpm

# ABB

**Electric Propulsion System** 

- 2 x 960 kW Main Generator
- 2 x 1140 kW Main Generator
- 2 x 800 kW Main PM Motors
- Main Switchboard
- Assignments Panels
- Power management system
- E/R Automation System
- ACS 800 Drive System
- Step Up Transformer 440/690V



Source: ABB / HLM 4



#### **Private & Confidential**

## Hantong Shipyard, China Enchant (2012) Total of 4 Vessels

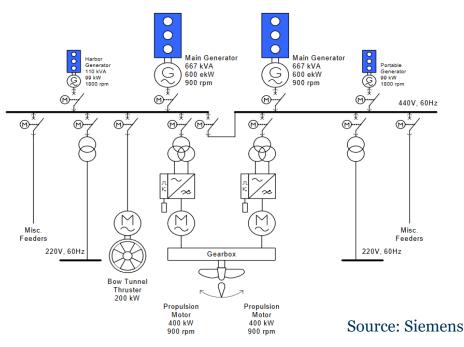
# Daihatsu

2 x 6 De-18, 625 kW @ 900 rpm

## Siemens

- **Electric Propulsion System**
- LV SINAMICS Drive
- 2 x 600 kW Main Generator
- 2 x 400 kW Main thruster system
- 440V Main Switchboard
- Frequency Converter
- Power management system
- Automation System







# **Pros vs Cons**

### Pros

- Smaller Total Power Output.
- Generator load balance can be achieved.
- Arrangement of equipment can be designed freely allowing for a wide cargo space.
- Ship manoeuvrability is improved
- High torque at low speed navigation.
- Low vibration and low noise
- Comfort Improved
- Reduced Emissions (Green Ship)

### Cons

- Higher Initial CAPEX
- Special Training for Crew
- Specialist Workshops Repairs
- Specialist Workshops Fault Finding



### **Diesel Electric Bunker Tankers**

#### **Private & Confidential**

# **Operational Experience**

# **Operational Experience**

- Easy Manoeuvrability.
- Easy Control COP Discharge.
- Prompt Readiness
- Lower Lube Oil Consumption
- Less Maintenance
- Dry Dock / Off hire reduced
- Use of HG during Idle Periods
- E/R Layout More Spacious



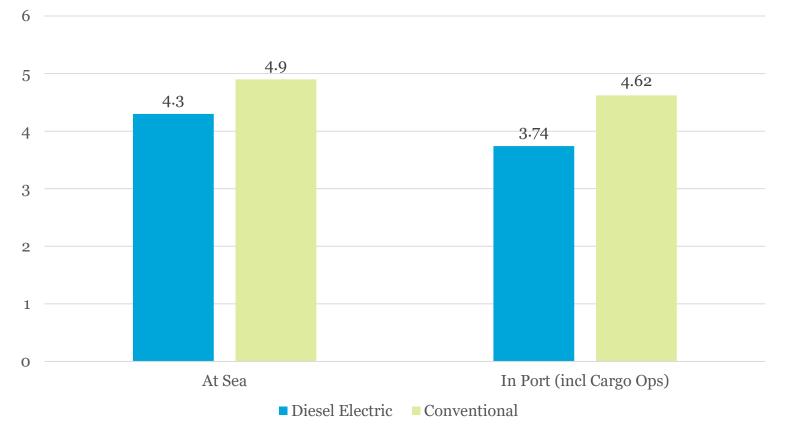






# **Fuel Consumptions**

### Consumptions/Day





# Drivers / Challenges – Electric Harbour Craft

# Drivers

- Regulatory Requirements
- Reduced GHG / Emissions
- Health Benefits
- Reduced Fuel Cost
- Reduced Annual Tonnage Tax

# Challenges

- High CAPEX
- Low Freight Rates
- Crew operations



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# Thank You