

GE Marine Propulsion Systems



imagination at work

GE Naval Power - 2013



F/A-18A+-D



F/A-18E/F



EA-18G



F-5E/F/N



T-38



CH-46E



VH-3D



CH-53E



MH-53E



CH-53K



AH-1W



AH-1Z



UH-1Y



VH-60N



SH-60B



SH-60F



HH-60H



MH-60R



MH-60S



C-40A



E-6B



P-8A



FFG



DDG



CG



LCS 2



T-AOE



LHD 8



LHA 6



GE Marine

Unequaled 40-year heritage of marine propulsion reliability & performance

- US Navy – 99% of Gas Turbine Combatants
- 33 international navies
- Cruise ships, Fast Ferries and Yachts

Power density & reliability

- Power spanning 4-42 MW
- Mechanical propulsion and electrical generation
- New technology development

Auxiliary Product and Services

- Gas Turbine Auxiliary Equipment
- Propulsion system integration
- Field and Depot maintenance support
- On-demand technical support



Unequaled heritage of marine propulsion systems
for superior ship readiness

GE Marine Products

Military



Commercial



Aero/Industrial gas turbines



GE Aviation

- Engineering
- R&D
- Production
- Marine Engines
- Propulsion design
- Engine Services
- Repair Technology



GE Marine Aero-derivatives

GE Energy

- Power generation applications
- GT's gain experience quickly operating full load in continuous operation
- ***Provides Volume!***

Engines proven in flight, then industrial service before entering marine service

Marine & Industrial Gas Turbines

LMS100



Basin Electric



Pampa, Argentina



EIF, California



Texas

LM6000



Southern Electric



Asgard FPSO



TransAlta Southdown



Fort Lupton

LM2500+/G4



Queen Mary 2



USN LHD 8 Maikin Island



FREMMS



Sleipner A Platform

LM2500



Aghada Site TM2500s



USN DDG 51



Oseberg 2 Platform



USN Littoral Combat Ship

LM1600



Mols Linien



Dusty Lake Station



Stena



Foret LaZaida

LM500



Danish Navy Stanflex



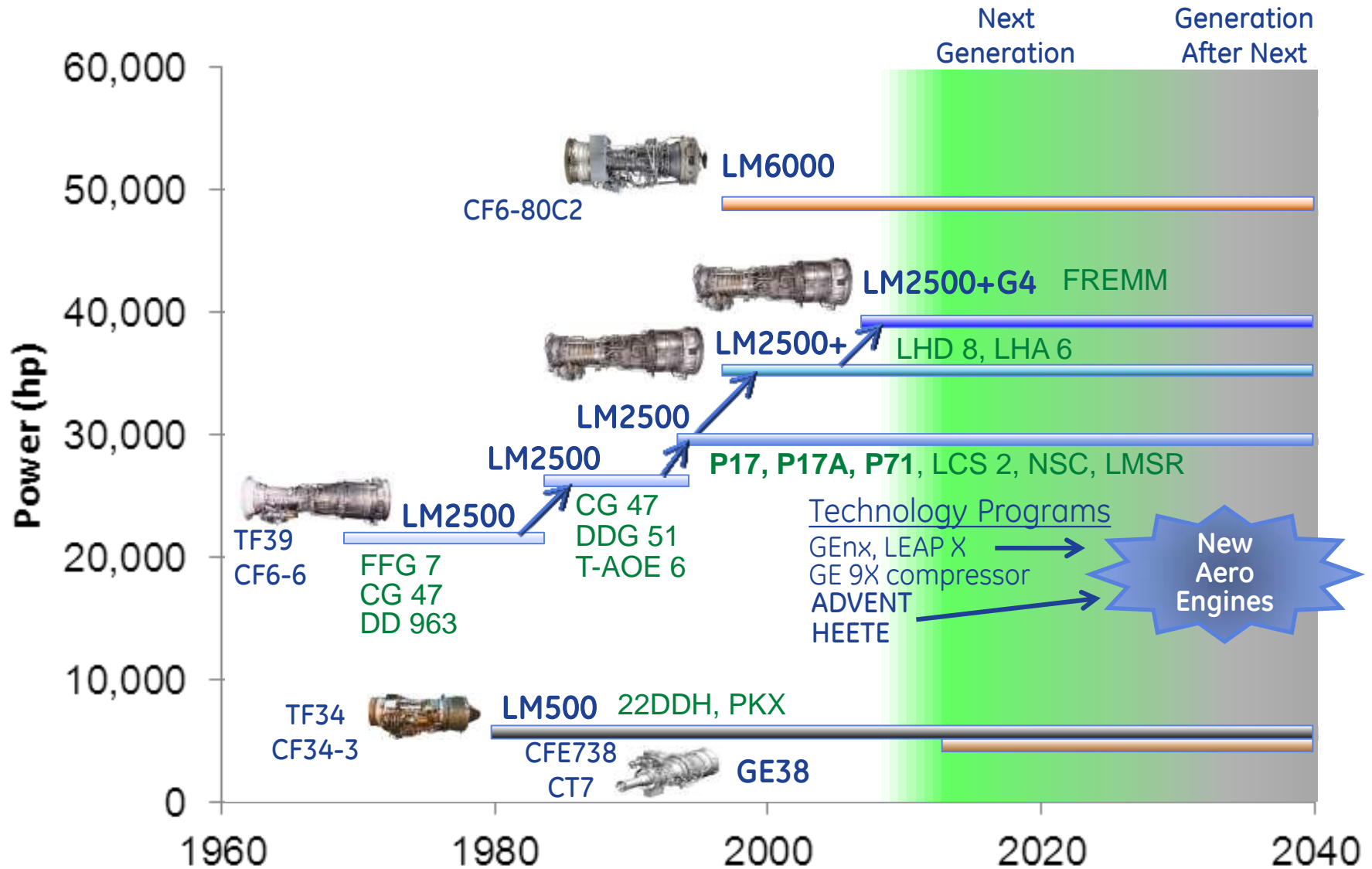
Foilcat



Korea PKX



GE Marine Gas Turbine Family



International Navy Applications

GE Marine engines power 33 navies

- 380 LM2500 engines in 49 applications... patrol boats, corvettes, frigates, destroyers, cruisers, and carriers
- 99 LM500 engines delivered or ordered, powering applications such as Japan Hydrofoils and Patrol Boats and Korean PKX
- In a variety of configurations... CODOG, CODAG, COGAG and Hybrid Electric



Canada Halifax Class



South Africa MEKO A200



Turkish Navy Barbaros FFGHM



German Frigate



Spanish and Australian Carriers

The choice for most of today's international navies

New Naval Applications

Advancing fleets worldwide

International Navies

India: P71 CV, P17 & P17A FF

LM2500 – Mechanical Drive

Turkey: MILGEM Corvette

LM2500 – Mechanical Drive

Korea: PKX, PKX(B) and FFX

LM500 & LM2500 – Mech. Drive

France/Italy/Morocco: FREMM

LM2500+G4 – Hybrid Drive

Australia: AWD and LHD

LM2500 – Mech. Drive & Elec. Drive

Japan: 22 & 24 DDH

LM2500 & LM500 – Mech. Drive

Germany: F125

LM2500 – Hybrid Drive

Spain: F100 and LHD

LM2500 – Mech. Drive & Elec. Drive

Algeria: MEKO

LM2500 – Mech. Drive



US Navy

LCS-2

LM2500 – Mech. Drive

DDG51 Restart

LM2500 – Mech. Drive

LHA-6, 7

LM2500+ – Hybrid Drive

LHD-8

LM2500+ – Hybrid Drive

US Coast Guard

National Security Cutter

LM2500 – Mech. Drive CODAG

Commercial



- First gas turbine fast ferry entered service in 1992
- 19 ferries have selected GE Marine engine propulsion systems
- Dual Fuel LM2500 Powered Francisco speed record – 58 Knots
- Large range of sizes from the Stena HSS powered by 2xLM2500s and 2xLM1600s to the Far East Hydrofoil's Foilcats powered by 2xLM500's

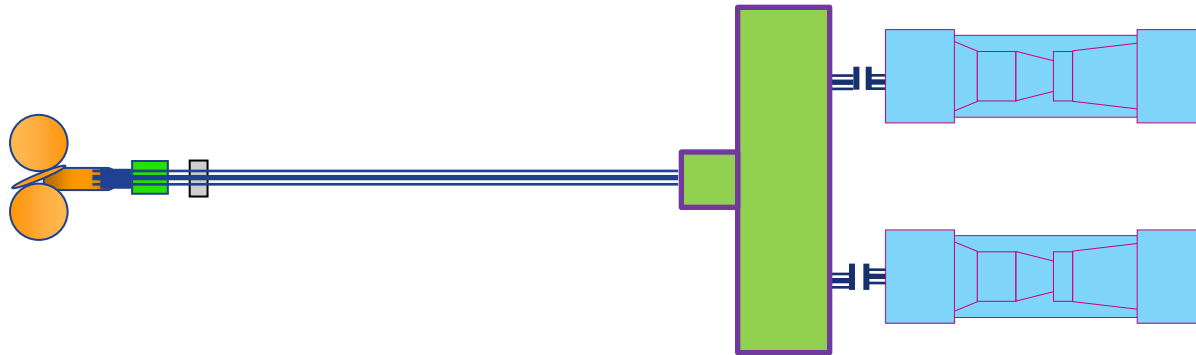


- Eight ships with combined gas turbine electric propulsion and ship service power system (Royal Caribbean and Celebrity)
- 10 ships with CODAG propulsion systems (Princess Cruise Lines, Holland America Lines and Cunard Lines (Queen Mary 2))

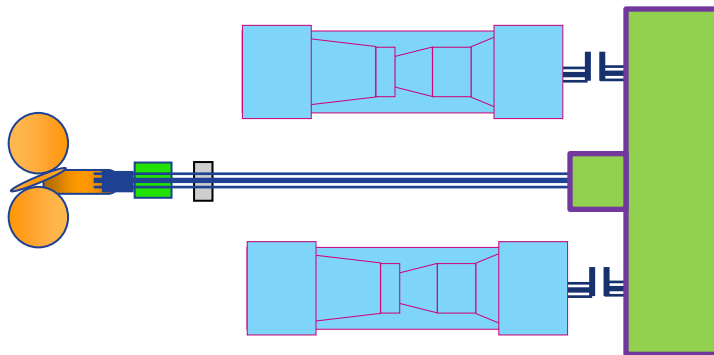


- Heavy cargo currently dominated by diesel engines
- Tightening environmental regulations and a shift toward LNG as a fuel provides a market opportunity
- Making a push to into the LNG tanker market
 - Engines run well on LNG – true dual-fuel capable, double the hot section life, environmentally friendly
 - Introducing a combined cycle system, gas turbine and steam (COGES) - excellent efficiency and power dense, smaller engine room, more cargo

COGAG Combined Gas turbine and Gas turbine mechanical drive

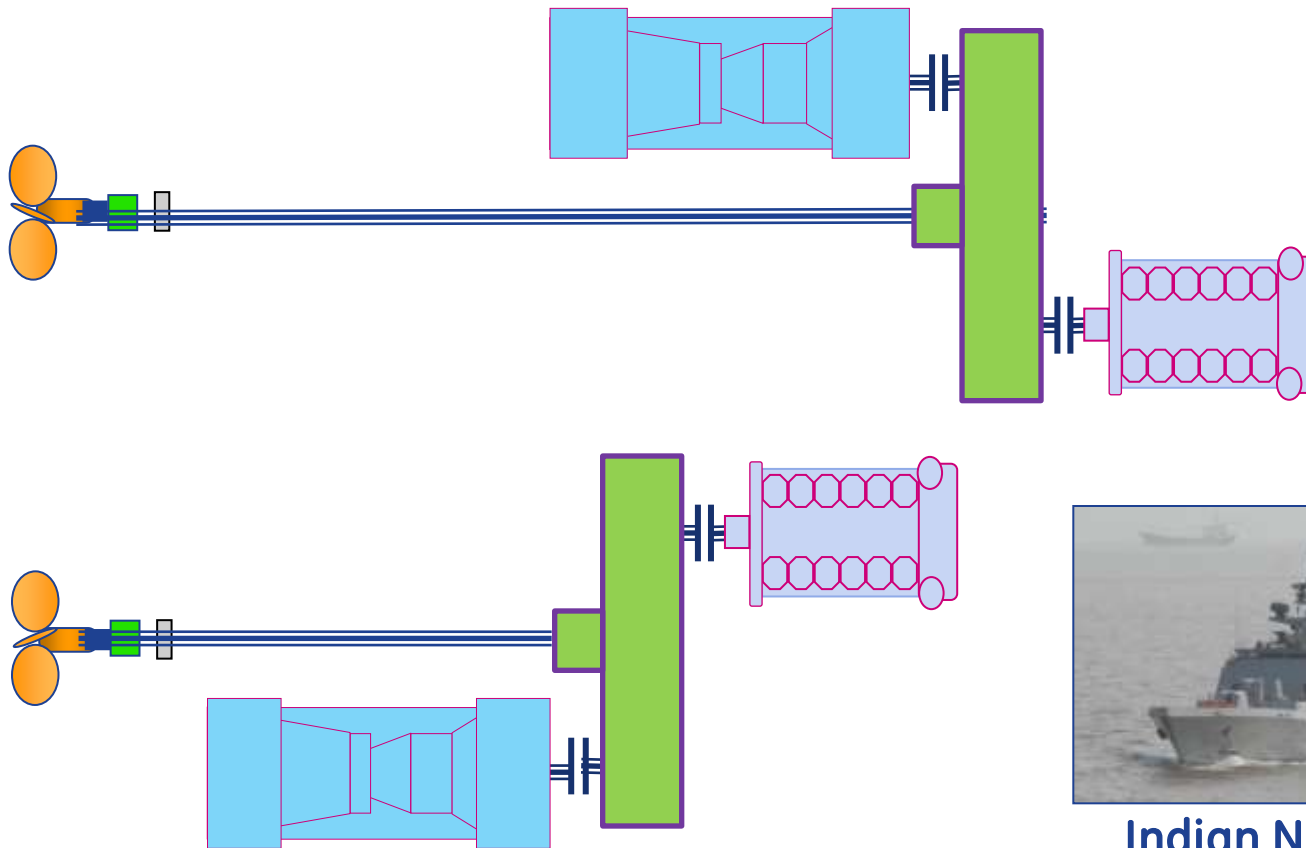


USN FFG



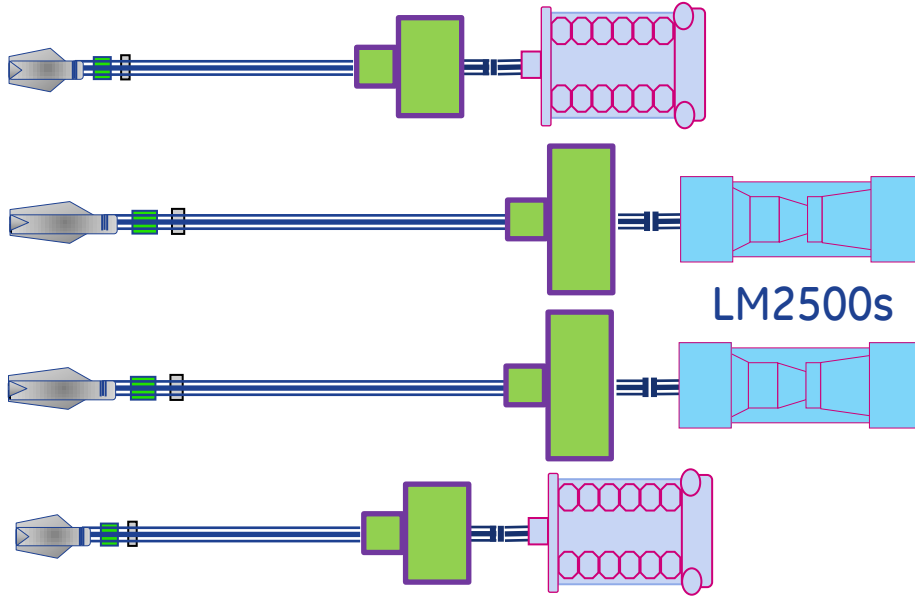
USN Arleigh Burke DDG

CODOG C**O**mbined Diesel *or* Gas turbine mechanical drive



**Indian Navy Shivalik
Stealth Frigate**

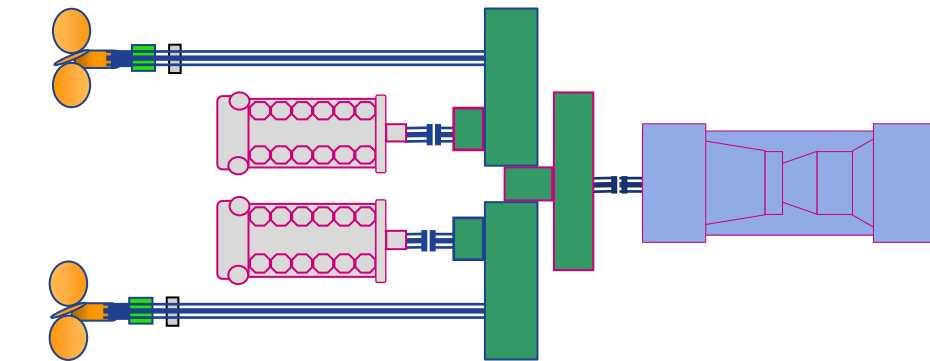
CODAG Combined Diesel and Gas turbine mechanical drive



Independence Class LCS



TN MILGEM

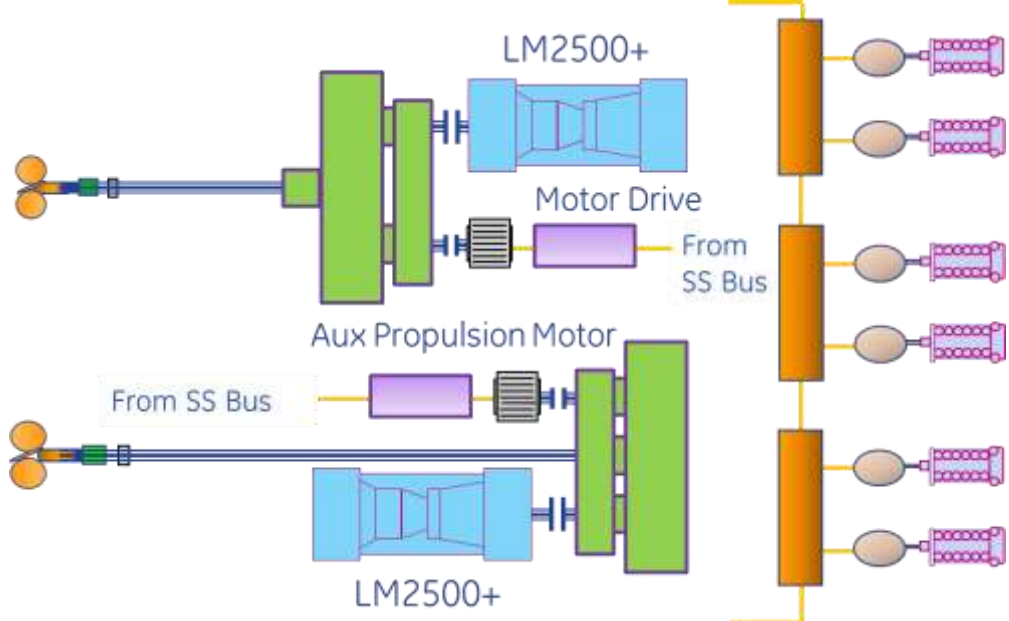


Hybrid Drive Options

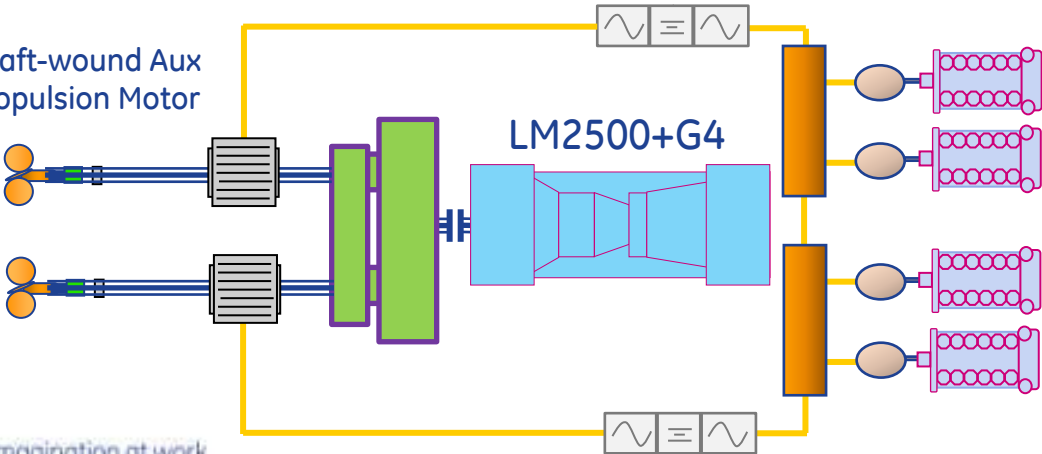
Combined Diesel Electric or Gas Turbine



USN LHD-8



Shaft-wound Aux Propulsion Motor



FREMM

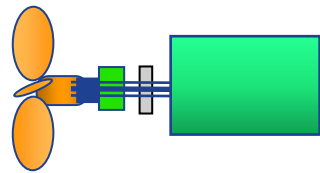


Integrated Electric Propulsion

Navantia LHD combined GT and diesel electric



Australian Canberra LHD



Podded Propulsor Motors

