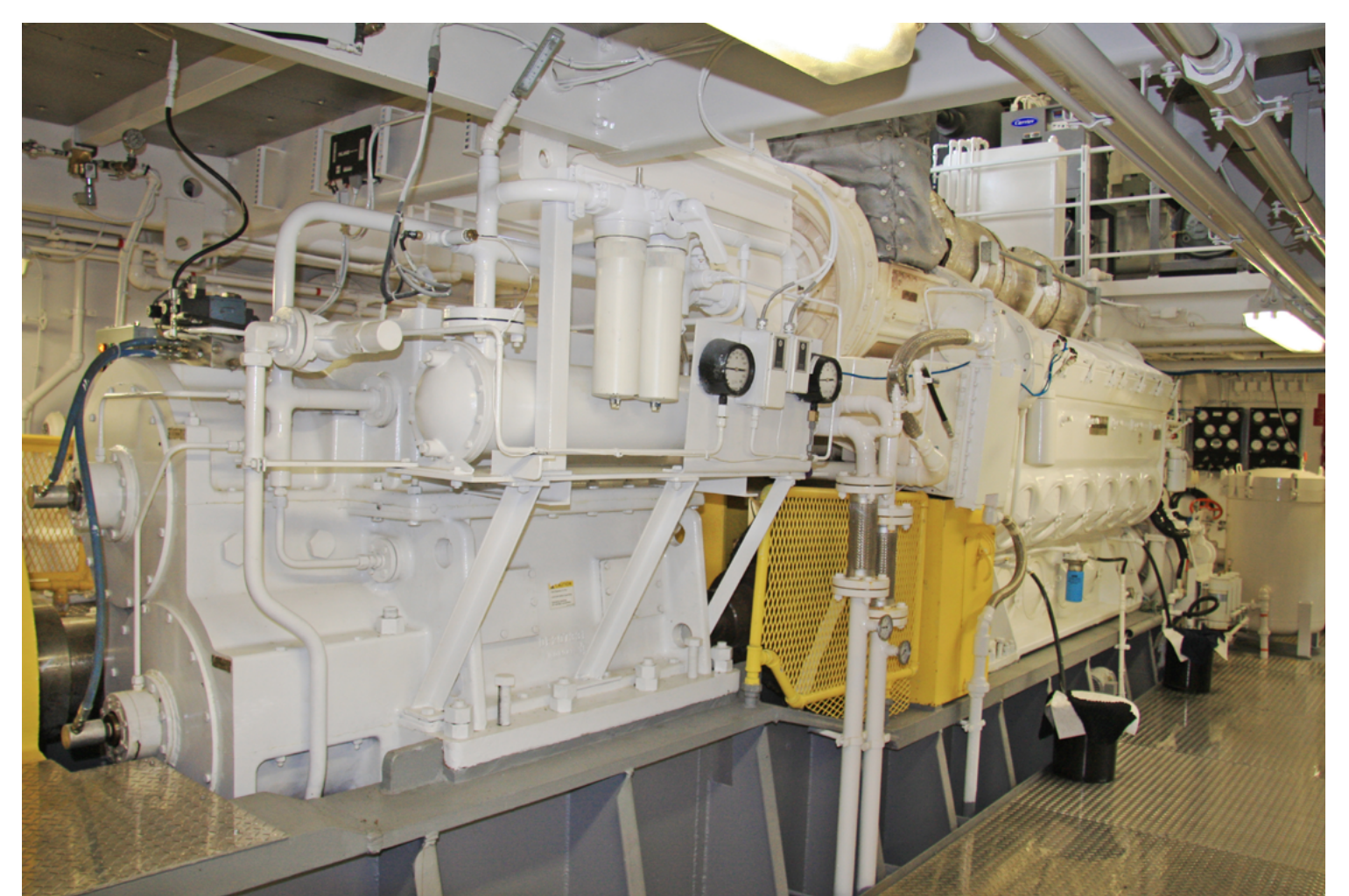
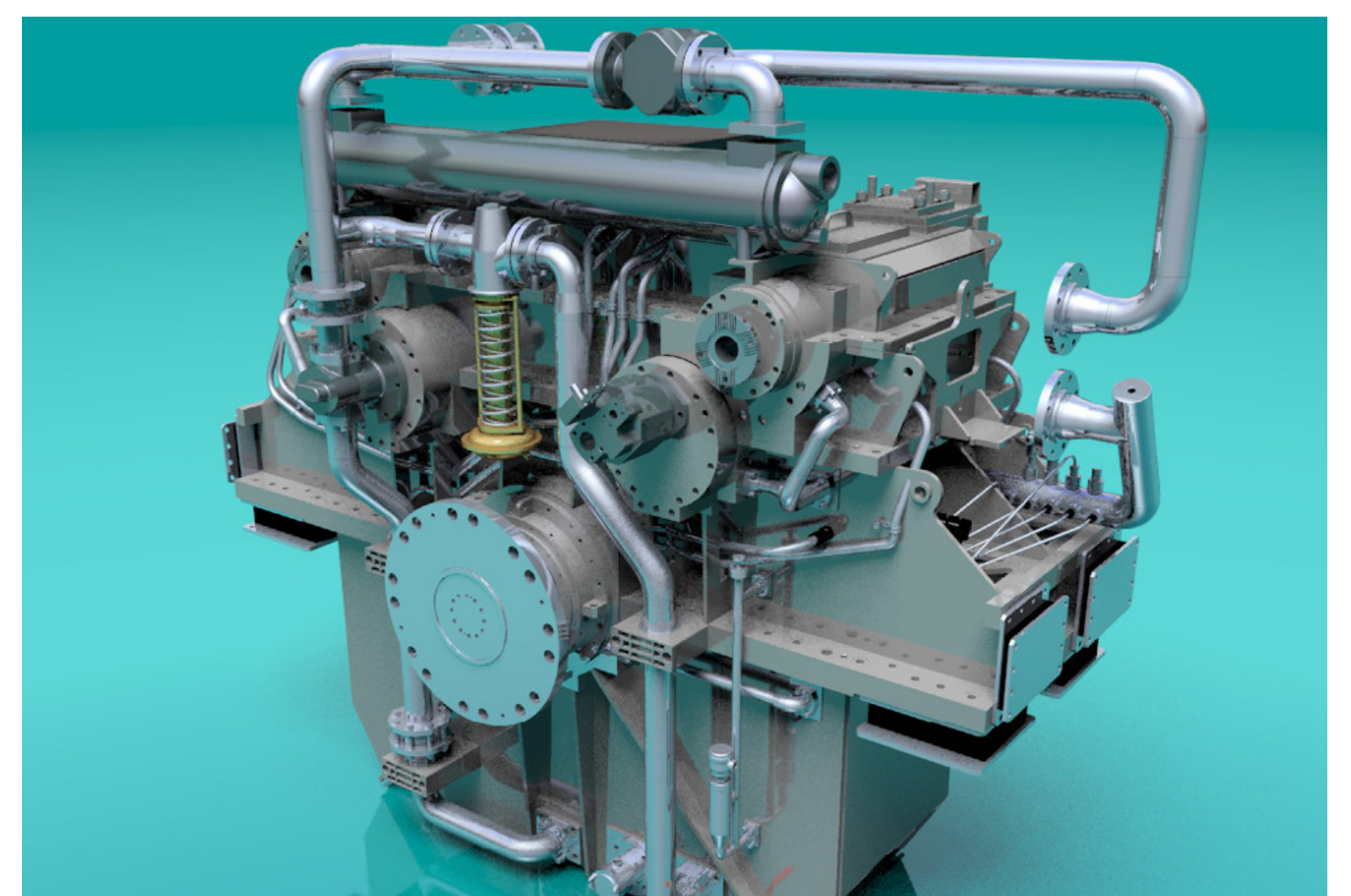


Marine gears

High-performance Allen Gears and Lufkin Gears technologies for unmatched reliability and efficiency

- Low-mass and power-dense solutions for reduced engine room size
- Ultra-low noise and vibration characteristics
- A combination of gear technologies with special consideration to integration of complex shaft-line and control
- Integrated propulsion thrust bearings, clutches, brakes, turning gear and shaft locks, oil systems, and control units
- Through-hardened, nitrided, or carburised, ground gears with high degrees of accuracy and ultra-light weight construction
- Heavy-duty or light-weight designs to provide a solution that will last the life of your vessel
- Power take-off/power take-in (PTO/PTI) to run in hybrid mode and drive auxiliary systems
- Interface for oil distribution box (OD box for controllable-pitch propeller)
- Providing transmission from a full range of prime movers (gas turbine, steam turbine, diesel engine, propulsion electric motor) to a variety of propulsion solutions (controllable-pitch propellers, fixed-pitch propellers, and water jets)
- Input speeds from 500 to 17,000 rpm, reductions from 2:1 to 15:1, transmitted power from 1 to 40 MW
- Military and commercial: fast patrol, corvette, hovercraft, destroyer, tug, dredging, fishing, cargo, cruise, and ferry



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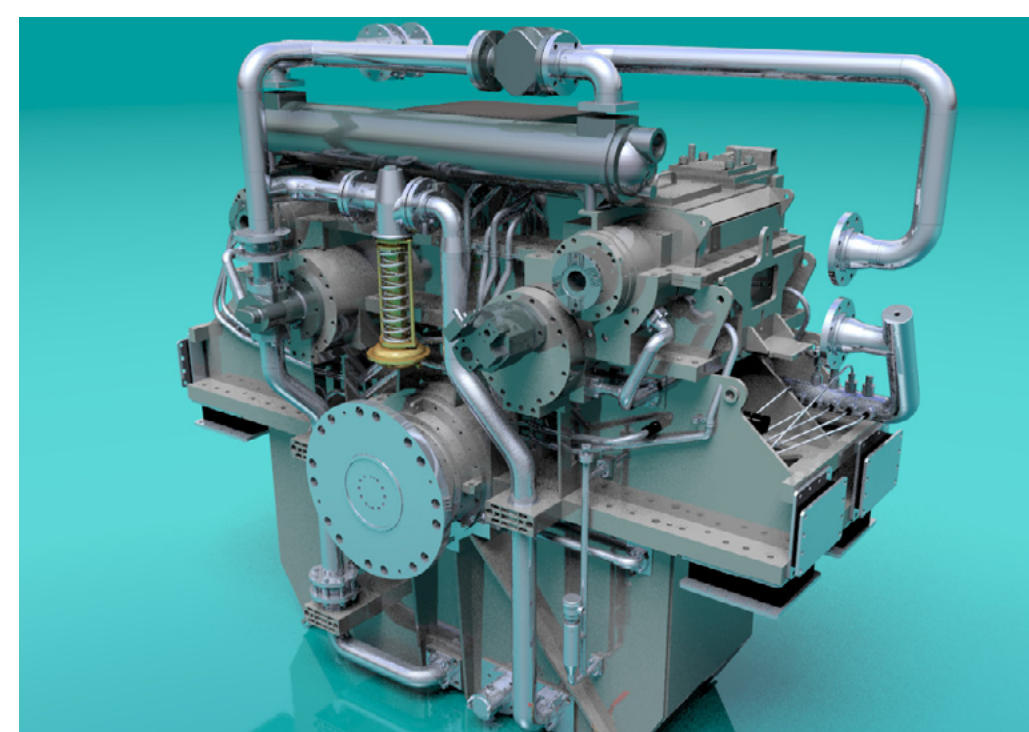
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Luxury yacht	Naval	Patrol	Combatants
Very light weight	Low structural borne noise	Very light weight	Light weight
Low resulting air-borne cabin noise	High level of functionality	Moderate shock (fatigue and ultimate strength)	High shock survivability (ultimate strength)
Mild cyclic shock loading (fatigue)	Space envelope restrictions	Flexibly mounted systems	

Design services

- 3D contact stress analysis
- Optimized tooth profile
- Integrated housing-mesh alignment assessment
- Variable operating-range/loading conditions evaluation
- Finite element analysis
- Linear and non-linear evaluation
- Structural, dynamic, and fatigue analysis
- Lateral and torsional rotor-dynamic analysis
- Damped natural-frequency and response analysis
- Verified rotor response test bed measurements

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