

Lifecycle Upgrade for 48/60 engines

Main benefits

 Operational efficiency

 Safety improvement

Modernize your engine for improved performance, reduced emissions and future fuel readiness.

Operational efficiency

- Reduced fuel oil consumption (SFOC) of up to 10%
- Reduced lube oil consumption (SLOC) of up to 90%
- Strong decarbonization effect
- Improved asset value through extended engine lifetime – OPEX comparable to a newbuild engine
- Full flexibility for further conversion to Dual Fuel (Gas/MeOH), pure gas or alternative fuels

Safety improvement

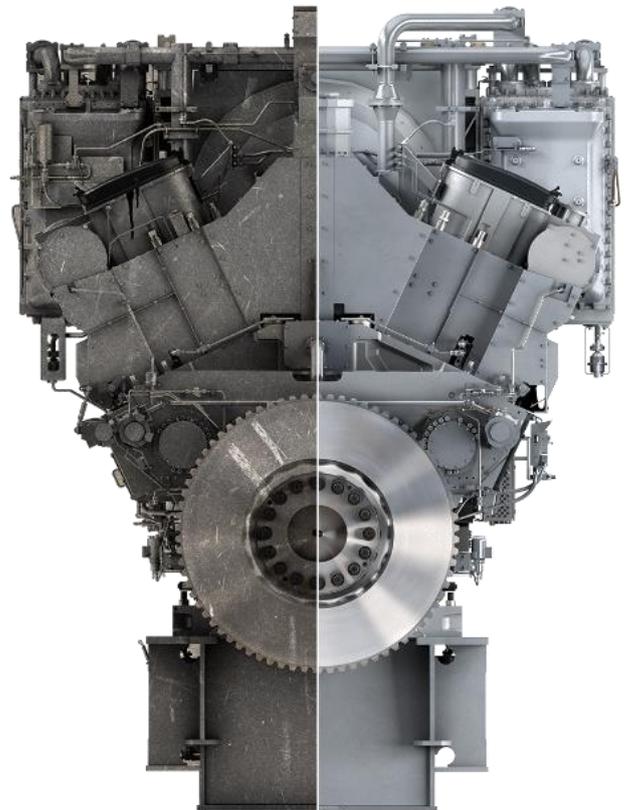
- Improved spare parts availability
- Enhanced engine reliability/lower incident risk
- Latest SOLAS conform technology
- Completely renewed engine control system
- Reduction of engine operation budgets
- Warranty phase after conversion

What is a Lifecycle Upgrade (LCU)?

- The LCU is a retrofit solution that renews 48/60 engine designs into the latest 51/60 engine design.
- Durable components like the crankshaft and crankcase remain unchanged; all other components will be replaced.
- Therefore, it replaces the major overhaul while only taking approx. 30% longer than the overhaul.
- The fuel system remains configured for HFO/MDO, minimizing the impact on existing infrastructure.
- Everllence provides the engine parts and services for the engine including full project documentation.

Who can use it?

- Owners and operators (customers) of Everllence 48/60 engines in the power and marine sector.
- Customers planning the transition to Dual Fuel (Gas/MeOH), pure gas or alternative fuels.
- Customers aiming to optimize maintenance budgets for stronger ROI.



For further information:

Should you have any queries, our Retrofit & Upgrades team will be pleased to be of assistance.

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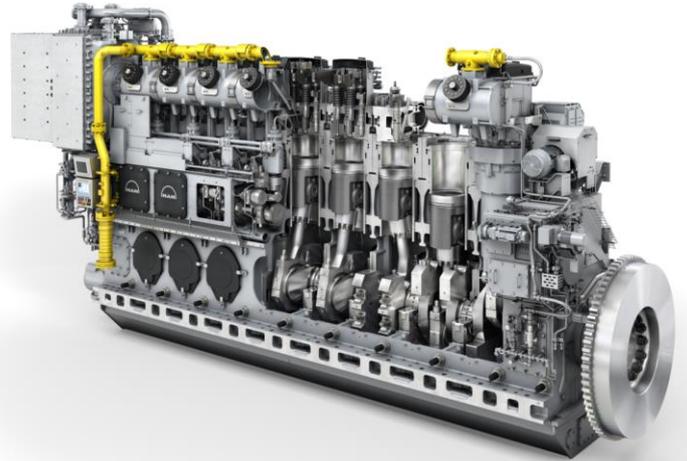
retrofit4s@everllence.com

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Commercial aspects

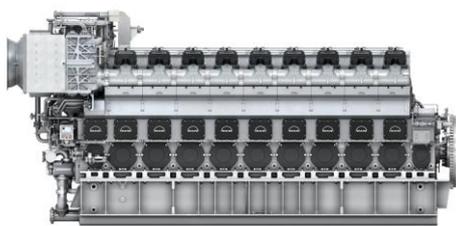
- **ROI:** Short payback time, typically ranges from 1 to 3.5 years depending on:
 - Operating hours and profile
 - Fuel and lube oil prices
 - Engine type and condition
 - Upcoming maintenance plans
- **OPEX reduction:** e.g. upgrading from 9L48/60 to 9L51/60 design results in a substantial reduction:
 - Up to 10% of fuel savings
 - Up to 90% of lube oil savings
- **Operational flexibility:** The LCU conversion can be performed during vessel or plant operation, provided that the safety operation and working conditions are met minimizing downtime and disruption.



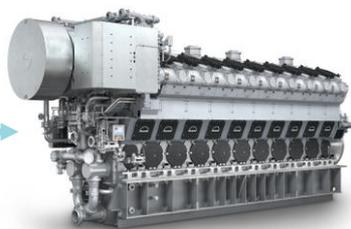
How can the LCU support your long-term sustainability strategy?

- **Efficiency gains:** Upgrading engine performance, reducing fuel consumption and emissions.
- **Emission reduction:** Facilitating the adoption of alternative fuels, resulting in substantial cuts in CO₂ emissions and pollutants.
- **Cost savings:** Financial and environmental benefits due to lower fuel as well as lube oil consumption and lower maintenance budgets.
- **Fuel flexibility:** Preparing the engine for a seamless transition to Dual Fuel (Gas/MeOH), pure gas or alternative fuels, ensuring adaptability to future standards and regulations.
- **Sustainable solution:** Extending the lifetime of the vessel/power plant.
- **Regulatory compliance:** Adapting to evolving environmental regulations with confidence.

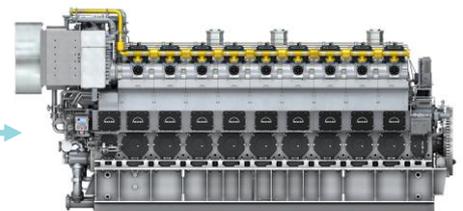
Your roadmap to the future!



48/60



51/60 LCU



51/60DF (Gas/MeOH)
51/60G

MAN Energy Solutions is now:

Everllence

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