

# A LIFETIME APPROACH TO ENGINE COSTS IN THE MARINE SECTOR

The impact of genuine parts, regular maintenance, fuel performance and new technology on whole life costs.

**A guide from Finning.**



# A whole life approach to operating expenditure

## Totalling up the costs

A vessel's propulsion and auxiliary power engines represent a major investment for any owner or operator. As well as the upfront capital expenditure, the engines will consume fuel, require regular maintenance and need routine parts' replacement and overhaul, all of which can add up over decades of service.

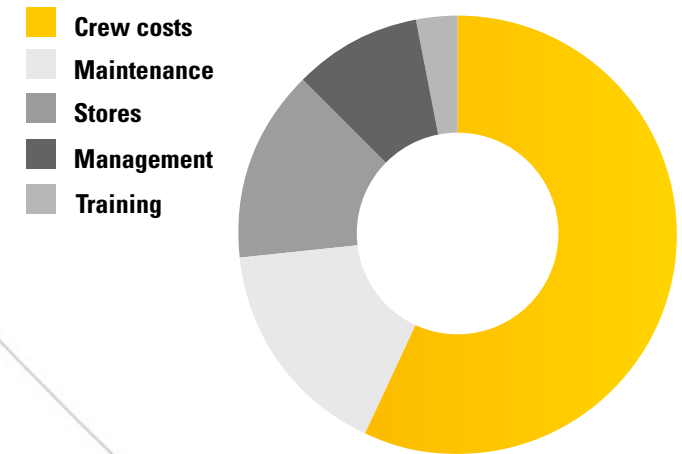
Reducing these on-going costs without sacrificing reliability is becoming more and more important as the years pass, and operating a working vessel is an increasingly expensive business. According to research, the annual cost of running a ship is growing by around 3% per year, factoring in everything from crew wages to spare parts for the engines.

With all this in mind, it has never been more important to consider all the factors that contribute to total cost of ownership of a marine vessel's engines, what you can do to reduce them, and how to ensure that you're getting the maximum return on your investment.

## Cutting costs, not corners

Reducing long-term spending doesn't necessarily mean cutting back on quality too. In fact, research from Caterpillar® indicates that one of the best ways to save money over the lifetime of a marine engine is to invest in highly reliable, efficient equipment, with payback often achievable in a short timeframe.

## Running costs for an average 25,000 tonne ship



Parts



Maintenance



Fuel efficiency  
and performance



Total cost  
of ownership



## Genuine savings

**There are many challenges unique to different sectors of the marine industry, but there is one common issue faced by all operators: how to reduce expenditure on spare parts while maintaining engine efficiency and performance.**

When budgets are getting tight, the up-front savings offered by third-party replacement parts can seem to make good commercial sense. After all, they are manufactured and sold cheaply, and will deliver immediate savings on a company's bottom line. However, fitting non-genuine products in systems vital to a vessel's performance can have a significant impact on long-term reliability. Even slight differences in tolerances and fit can contribute to inefficiencies in areas like fuel consumption, oil consumption and premature wear.

A recent study from Caterpillar examined the case for using manufacturers' spares and the cost of using non-genuine alternatives. Fitting the correctly specified, genuine fuel filter could increase injector life by over 45%. Taking a typical 16-cylinder engine this investment could protect critical engine components worth in excess of £30,000.

This can reach beyond the parts themselves. For example, modern anti-freeze composition is purpose-designed for the engine but it's common to see incorrect coolants being used, which can cause cylinder liner cavitation or pitting.

## Four common questions about remanufactured parts

Anybody looking to cut the cost of parts without sacrificing reliability may well want to take a closer look at remanufactured parts. Here are four things you will want to consider before making the switch:

1

### What kind of savings could I make?

Remanufactured parts can offer cost savings of up to 60% when compared to buying new equipment.

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### Is there a reduction in quality?

While remanufactured parts aren't new, they are reworked to be 'good-as-new' and often have warranties and guarantees to provide added assurance.

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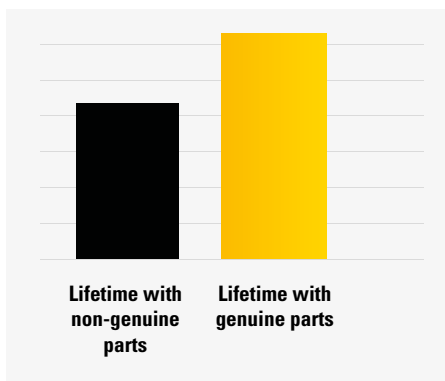
### What components can be remanufactured?

Virtually every part of a marine propulsion engine, auxiliary engine or emergency generator can be remanufactured, as can engine ancillaries such as compressors, alternators and starters, camshafts, filters, pumps, oil coolers and actuators.

4

### Are remanufactured parts hard to get hold of?

While availability will always depend on a few factors, many remanufactured parts are available over-the-counter from dealers.



## Planning for success

One of the keys to saving money on parts is establishing a good purchasing plan; helping you to plan your maintenance too. You can take a look at setting up long-term plans easily online using [parts.cat.com](http://parts.cat.com)

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"Short term cost savings may impact positively on the bottom line, but protecting the long term performance of an engine investment will typically save thousands of pounds. Spending wisely on the right components will ultimately pay dividends."

**Peter Anscombe,**  
Marine Parts Manager,  
Finnish UK & Ireland



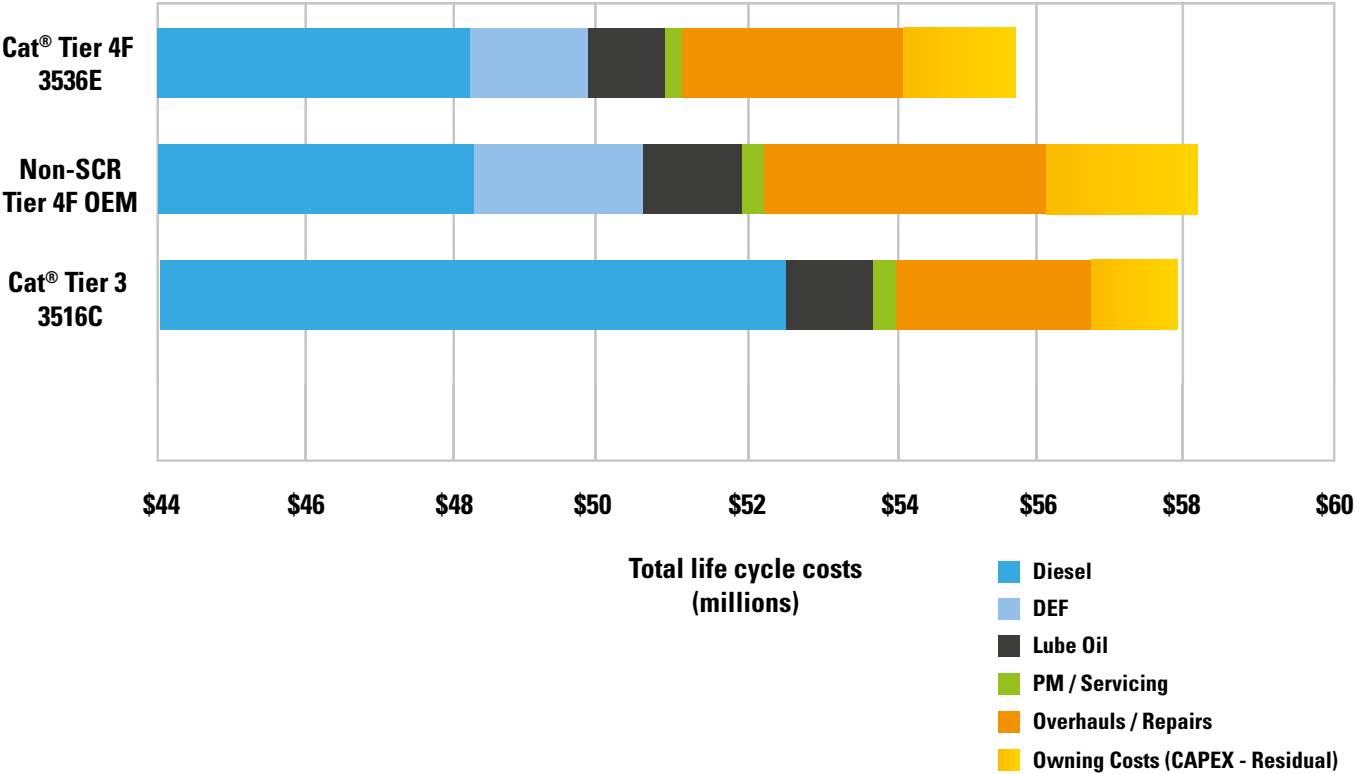
## Boosting efficiency

One of the biggest costs of running a marine vessel will be paying to keep it fuelled; especially as global oil and diesel costs continue to fluctuate with changes in the energy industry.

Indeed, fuel and lubricating oil costs continually top the list of operating budget expenses, although these concerns often depend upon the style of vessel management.

With this in mind, it's clear that investing in highly efficient equipment and new technology can generate big savings in the long run.

Total cost of ownership over selected life cycle



## Tier 4 technologies

From the start of 2017, the Environmental Protection Agency's (EPA) Tier 4 standards came into full effect, requiring marine engines to significantly reduce particle emissions.

Nitrogen oxide (NOx) emissions and fuel consumption are inversely proportional. This means investing in technology to reduce the amount of emissions, can also mean that a lower volume of fuel is consumed.

The ideal combination of electronic, fuel, air and after-treatment components can vary considerably based on engine size, the type of application and the geographic location in which the vessel – and its engines - will operate.

Working with your supplier to make sure a vessel is fitted with the appropriate technology, fine-tuned for the right application can increase fuel efficiency by up to 5 per cent – with some Tier 4 final marine ratings consuming 9% less fuel than equivalent Tier 2 / 3 ratings.

Though this may seem small at first glance, it can generate significant savings over the engine's lifetime.



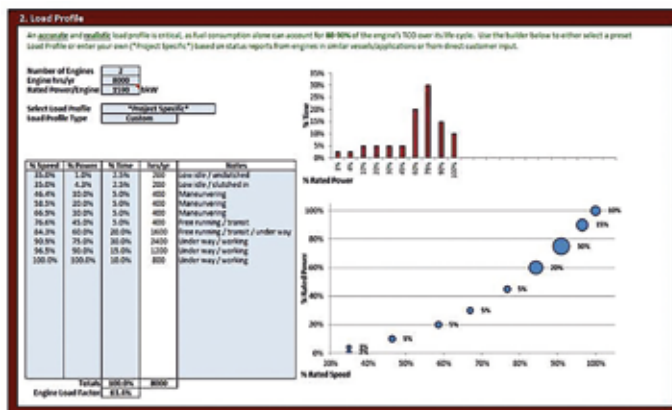


## Engine value analysis tool

Recognising the value of accurately estimating total cost of ownership, Caterpillar has gone beyond traditional models to develop an engine value analysis tool that can accurately capture and compare the total lifecycle costs for engine platforms across multiple engine manufacturers.

The software supports parameters that aren't often included in similar analysis tools, including LNG & DEF consumption, load profiles across varied power inputs and emissions regulations, including EPA Tier 4 and IMO III.

You can find out more about the tool by visiting [http://www.cat.com/en\\_US/articles/customer-stories/marine/calculate-total-lifecycle-costs-with-the-new-caterpillar-marine-engine-value-analysis.html](http://www.cat.com/en_US/articles/customer-stories/marine/calculate-total-lifecycle-costs-with-the-new-caterpillar-marine-engine-value-analysis.html)



## Support and maintenance

**Effective maintenance can mean more than simply making sure an engine is working reliably.**

Investing in a marine engine maintenance contract from experts can help you to make important decisions that could improve uptime and minimise the lifetime cost of the entire system.

### Customer service agreement (CSA)

A CSA is one of the most convenient and affordable ways to reduce long term support costs.

These agreements cover many aspects of inspection, maintenance and repair, with the advantage of being highly flexible. There are no pre-determined requirements or specific products or services that you must agree to buy.

Instead, every CSA is an individualised plan that fits your needs and your budget. Costs can be based on a flat rate monthly fee, the type of service or repairs performed, or actual engine operating hours.

### Extended service coverage (ESC)

Even the most dependable equipment can fail, and repair costs often add an unexpected line on the balance sheet. Investing in an escape plan can not only reduce the overall cost of repairs, but also limit the impact caused when issues strike without warning.

ESC eliminates a lot of the unpredictability of repair costs by offering a guaranteed plan of protection. An overhaul really is the best way to extend an investment in a Cat® marine engine, and ESC is built to protect that investment.

### HOW DOES YOUR SUPPLIER MEASURE UP?

### Remote Monitoring

Wireless technology means that the world is increasingly connected, and this can be put to great use when it comes to improving engine performance.

Data on how a marine engine is performing can be transmitted directly to the vessel or fleet operator, or to experts at the engine supplier, to flag up potential issues before they cause real damage.

This not only saves costs directly, but can also prevent problems that would otherwise leave a vessel out for repairs and unable to work.

### Finance

Marine engines and components are major investments, and most operators rely on finance solutions to purchase their vessels and keep them running. This 'hidden' cost can add up significantly over the years, representing a major part of the total cost of ownership.

There is no single solution that will fit everybody but our partners, Cat® Financial, understand the needs of operators and offer packages structured to support the specific needs of customers financing marine engines and maintenance programmes.

### Fluid Analysis

One of the simplest and most inexpensive ways to avoid costly repairs and downtime is to regularly sample and test the fluids that are the life-blood of your equipment.

Fluid analysis services can analyse and interpret oil, fuel and coolant samples from all types of marine engines and gearboxes – regardless of make or model.

**Get in touch with us by calling 01202 330700 to explore the ways in which Finning can help to reduce the total cost of ownership of your vessel.**