

The Saga continues

By Dave Hoets, Honda Marine Knysna Dealer.

2-Stroke vs 4-Stroke

Follow on from March 2010

Reader's of last month's edition, will know that we ran an article on 2-Stroke versus 4-Stroke, with information taken straight from the guys behind the products.

Without it turning into a mud-slinging contest, the article contained facts from the guys in-the-know, and we here at the magazine, were happy with the outcome.

However, at the time of going to print, Honda Marine Head Office wasn't available for comment. Since reading the article, Dave Hoets of Honda Marine Knysna said that things aren't quite as they were made out to be by some of the manufacturers. Dave has always been extremely environmentally conscious. He puts his name brand aside in an effort to add his penny's worth.



I read with interest your article on the thin green line and find it in many ways misleading. The line in most cases is really quite thick. I will endeavour to elaborate.

Firstly, please remember that across the board in all forms of marine activity, 4-Stroke engines have always been favoured, i.e. inboards, Z-drives, and even Jet drives and shipping etc. Two-Stroke outboards, invented by Mr Evinrude, have always been an affordable and easily maintainable, as well as powerful alternative. As time goes by, outboards have found their place in the market because of many other advantages in certain applications, i.e. small craft, space, ease of maintenance, beach launching, and much, much more.


Fuel efficient 4-Stroke

Four-Stroke engines are more economical under all normal operating conditions – i.e. acceleration, constant throttle movement, under load (carrying weight or when pulling water-skiers, etc). However, most comparative tests between modern 2-Stroke engines by their manufacturers, are undertaken at constant speeds and at a certain RPM.

Furthermore, tests are performed on engines that are not under load.

The simple fact is that in traditional 2-Stroke technology, which is still sold in SA, oil and fuel is fed into the whole engine for lubrication and combustion while the exhaust port and inlet port are open at the same time, which means you are going to get un-burnt fuels, hydrocarbons and oils, thus making them highly pollutant. The sale of these engines is thus banned in most first world countries.

Are they more durable and cheaper to service when compared to 4-Stroke?

I think not! Old 2-Stroke engines have a poor combustion ratio. So not only are they highly fuel inefficient, but there is a carbon build up in the cylinder, which also means these engines have to be serviced every 50 hours, including being decoked every now and then (this should never happen in a well serviced 4-Stroke), and the spark plugs have to be replaced more often. Wear and tear is much higher in the cylinder because of residue and carbon from un-burnt fuel. Yes, they are cheaper to overhaul, however, I would rather have an engine that never had to 





Honda also states that unlike most modern 2-Stroke engines, 4-Stroke engines are all three star, low-emission rated.

be overhauled. 4-Stroke engines often do well over 10,000 hours before being opened. Even commercial operators are now going the route of 4-Stroke engines!

Modern 2-Stroke engines are not simple and in some cases are actually more expensive. The technology used here is highly sophisticated and very similar across the range, ie. Optimax, HPDI and E-TEC.

The fuel is injected into the top of the piston, inside the cylinder. This injection system has to be precisely timed for maximum combustion and efficiency.

It's also injected at very high pressure to atomise the fuel and oil so it is all burnt cleanly. Take note: your combustion ratio is not as efficient as a 4-Stroke! However, we now have a cleaner burning engine with fewer residues, longer service intervals, and although the engines are heavier than the traditional 2-Stroke engines, they are still lighter in weight than the 4-Stroke engine. Fuel consumption is also greatly reduced. This technology is clever, although expensive. Unfortunately, we will have to see ten years down the line if it will survive.




According to Dave Hoets, 4-Stroke motors have always been favoured and asks the question: why are there no 2-Stroke inboards?

Count the stars

4-Stroke engines are all three-star, low emission rated across the range. Not all the Modern 2-Stroke engines are three stars. However E-TEC does fall under this category. Here, we have a thin green line, but the price between 4-Stroke and 2-Stroke is similar. However, emission controls are only going to get stricter. This technology is not used in the small 2-Stroke engines i.e. 2 HP, 5 HP, 10 HP and 20 HP, as it is too expensive.

The test of time

4-Stroke engines have proved their reliability and efficiency in every application, including marine, even though they have more moving parts. The main difference is that they have precision valves and the whole engine is timed. One inlet stroke, one compression stroke, one combustion/power stroke and one exhaust stroke. This means more burnt oxygen and fuel to be exhausted, thus more air is sucked into the cylinder chamber. This means that the combustion stroke has a higher flash point and has a cleaner burn. It stands to reason that an engine firing every fourth stroke with a cleaner burn, will be more efficient. Oil is used for lubrication purposes only. The oil that is burnt, is so minute that there should be no top ups in modern engines between servicing. If a 4-Stroke engine is worn it will smoke because it is burning oil and should be repaired or replaced. However, how many of you out there have kept your vehicles long enough to recon your engines? Exactly the same thing happens to 2-Stroke engines, new or old technology – they just smoke more when worn. Servicing is every 100 hours, and spark plugs every three hundred hours! Yes, they're a bit more expensive but at less intervals.

The debate is partly right about questions over the disposal of used 4-Stroke oils. This depends on the dealers - but responsible dealers (by law) have it collected by oil companies, and it is then recycled. Yes, oil is highly recyclable, and profitable too! 



Dave Hoets said that as a result of high fuel prices and emissions, the marine industry are opting for 4-Stroke motors.

The three-star rating when talking about the pollution factor brings air, water and oil pollution into account, and let's not forget about the noise pollution as well!

Comments from the article stating that 4-Strokes are no more economical than a 2-Stroke, are unfounded, uninformed and irresponsible. There are many tests available that categorically find 4-Strokes are overall more economical, and I challenge anyone on that remark. I also ask the question, why are there no 2-Stroke inboards? 2-Stroke cars are already long gone and major motorcycle companies are all going 4-Stroke. Small engine

manufacturers such as Robin – who made fantastic little 2-Stroke engines – are now only producing 4-Strokes. Even motor racing is going 4-Stroke! Why is this? Fuel price has definitely got something to do with this, as well as emissions! However, I know of one really great and famous 2-Stroke engine but I think its days are also coming to an end.

That engine is a Detroit diesel 2-Stroke, but the similarities with a 4-Stroke and so-called modern 2-Strokes are plentiful. It has a sump and oil pump with oil lines (oil used for lubrication only) which make it burn cleaner. The engine is fuel injected at the top and is timed by a mechanical

fuel pump. These engines, which are big, are mainly used where they are needed to run at a constant speed, i.e. diesel-electric trains, generators and ships. These engines were invented in 1938 and are still active today.

Conclusion

Is Africa the dumping ground for the rest of the world? Probably! Are these simple, yet effective cheap 2-Strokes (which are highly pollutant engines) being dumped in SA? No! They are being actively imported, marketed, justified and are still the top-selling outboard. But, do we need them? Our fuels are good for all engines and whichever way we look at the scenario, our inland waters need to be cleaned up in a collective effort. Our environment is our biggest asset. All manufacturers are becoming more environmentally conscious so that they can survive in this industry, yet these simple 2-Stroke engines are still sold in South Africa when the sale of them in other first world countries is banned!

We claim to be educated, so why are we not following those who appear more educated than us? I believe the average South African, if informed properly, is educated enough and not averse to paying a slight premium initially for a superior product, with more benefits and longer-term economies. Maybe our children should have the last say? ■

