

# Xcelplus: Cost Benefit Analysis

Xcelplus saves you in at least seven different ways:

- 1) Reduces fuel use
- 2) Reduces wear
- 3) Reduces repairs
- 4) Improves oil quality/lifespan
- 5) Protects your engine against seizing
- 6) Reduces emissions
- 7) Saves you time

## **1) Fuel saving** (refer tests) ranges from 7 % to 36 % [1]

- 13,000 km/year [2] cars and 20,800 km/y for trucks.
- 9.3 km/L fuel efficiency for cars and 1.8 km/L for trucks (based on Australian averages) [3]
- Equates to 1,398 L/yr of fuel for cars and 11,556 L/yr for trucks
- ~\$1.50/L for petrol or diesel (\$2,097/yr car \$17,334/yr truck)
- Assuming a 10 % saving \$210/yr (7 % = \$147 36 % = \$755) for cars
- Assuming a 10 % saving \$1,733/yr (7 % = \$1,213 36 % = \$6,240) for trucks

## **2) Wear reduction** (refer tests) ranges from 60 - 80 %.

- An engine lasts twice as long if it is wearing half as much
- A 60 % reduction in wear equates to 2.5x longer lifespan
- An 80 % reduction in wear equates to 5x longer lifespan
- An engine rebuild typically costs \$2,000 - \$8,000
- Lifetime (assume 10 years [4]) savings >\$1,000

**3) Reduced repairs** are a consequence of reduced wear. If wear is reduced by 50 % then engine related repairs would be halved (tested increase in lifespan 2.5x - 5x):

- Cam chains are a common replacement part in vehicles
- Replacement cost is \$400 - \$1,000 and averages about \$700 [5]
- Lifetime savings >\$1,000

Browse through your current vehicle repair receipts and subtract 60 % to 80 % from relevant expenses to estimate how much you could be saving N.B. Parts such as starter motors also last longer.

**4) Improved oil quality** (refer tests) due to fewer wear particles (additives not used up), lower temperatures (less break down of oils) and cleaner running (fewer acids formed). Improved oil quality results in a reduction in wear which saves you

- Lifetime  $\sim 1/3$  of oil cost (130,000 km  $\sim 13$  oil changes  $\sim \$30$ /oil change) =  $\sim \$130$

**5) Protection against catastrophic loss of lubrication** (refer tests, videos and testimonials) This is typically the most catastrophic type of damage and may require the replacement of the

entire engine. The most common source of breakdowns is 1) Turbo chargers/fuel system 2) Electrics 3) Engines. Engines make up ~10.9 % of warranty claims. Furthermore, engine breakdowns are the most expensive breakdowns and were 22.9% of total costs in 2016. [6]

- The average cost of replacing a new engine is at least \$6,000
- An old engine from the wrecker will typically cost >\$1,000 - \$2000 installed
- Lifetime savings ~10 % (chance of having a major problem) \* \$1,000 = \$100

**6) Reduced emissions** (refer testing): CO<sub>2</sub> and other emissions are reduced when a vehicle runs more efficiently e.g. CO and Hydrocarbons. Australia produced 59 MT of vehicle CO<sub>2</sub> emissions in 2016 which is 11 % of total greenhouse gas emissions [7]. Australia wants to spend \$2 billion more to reduce emissions [8]. A 10 % reduction in CO<sub>2</sub> emissions is 5.9 MT. Estimated emissions from production are ~6 Ton CO<sub>2</sub>/vehicle [9]. Other emissions do not have a market price, so it is hard to put a value on them even though they are significantly reduced.

- At ~\$18/Ton CO<sub>2</sub> [10] this is roughly \$106 M in CO<sub>2</sub> savings/18.4 M vehicles in 2016 [11] ~\$6 \* 10 years ~ \$60
- Reduction in production emissions of CO<sub>2</sub> due to increase in lifespan (>17 % \* 6 T) ~ 1 T = \$18
- Lifetime savings >\$78

**7) Timesaving** (refer testing): 60 - 80 % reduction in scheduled and unscheduled repairs, breakdowns, replacement of the vehicle, less fuel stops, etc...

- Assume 10 hours/year = 100 hours (average wage \$82,436 [12]/52 weeks/40 hours ~\$40/hour average wage)
- Lifetime saving ~\$4,000

### **Total outlay**

Xcelplus Engine Treatment \$99

Total savings over the lifespan of the car (~10 years):

- Fuel \$2,760
- Reduced wear >\$1,000
- Reduced repairs >\$1,000
- Improved oil quality ~\$130
- Protects against catastrophic loss of lubrication \$100
- Reduced emissions >\$78
- Timesaving: \$4,000

Total \$8,968\*

**\*Cost Benefit Ratio is 90:1.** This estimate used conservative figures and considers only the Xcelplus Engine Treatment. Reducing friction in parts such as gearbox, differential and top end will see further improvements. It is possible to see that the true value of Xcelplus is in the time saved. Even if time is excluded Xcelplus has paid for itself virtually as soon as you add it to the vehicle N.B. The savings are proportionately greater if you drive more than average or almost 10x greater when applied to a truck.

## References

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