7 Ways to save with Xcelplus

Xcelplus saves in seven different ways:

1) Fuel
2) Wear
3) Repairs
4) Oil
5) Protection
6) Emissions
7) Time

1) Fuel - savings range from 7 % to 36 % [1, 2, 3, 4, 5, 6]

- Average distance travelled for cars (13,000 km/yr) and trucks (20,800 km/yr) [7]
- Average Australian fuel efficiency for cars (9.3 km/L) and trucks (1.8 km/L) [8]
- 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)
- For cars assuming 10 % savings $210/yr (7 % = $147 36 % = $755)
- For trucks assuming 10 % savings $1,733/yr (7 % = $1,213 36 % = $6,240)

Lifetime (assume 10 years [9]) savings (10 %) car $2,100 ($17,330 truck)

2) Wear - reduction ranges from 48 % to 82 % (2-5x longer lifespan) [10, 11, 12]

- An engine rebuild typically costs $2,000 - $8,000

Lifetime savings >$1,000

3) Repairs - reduction is a consequence of reduced wear. If wear is reduced by 48 - 82 %, then engine-related repairs would be 2 - 5x less common [10]:

- Cam chains are a common replacement part in vehicles
- Replacement cost is $400 - $1,000 and averages about $700 [13]

Lifetime savings >$1,000

Subtract 48 % to 80 % from engine-related expenses to estimate how much you could be saving N.B. Parts such as starter motors also last longer.

4) Oil - quality improvement [12] due to fewer wear particles (additives not used up), lower temperatures (reduced oil breakdown) and cleaner running (fewer acids formed). Improved oil quality results in a reduction in wear which saves you

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

5) Protection - Anti-Seizing (catastrophic loss of lubrication) [14, 10, 15] This is typically the most catastrophic type of damage and may require the replacement of the entire engine. The most common breakdown reasons are 1) Turbochargers/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. [16]

- 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) Emissions - reductions occur when a vehicle runs more efficiently, e.g. CO (reduced 38 - 76 %), hydrocarbons (reduced 23 - 33 %) [3], soot (reduced by up to 100 %) [11] and NO_x by 20 % [17]. Australian CO_2 emissions from road transport were 18 % (102 MT CO_2) of total emissions in 2018 [18]. CO_2 emissions are directly proportional to fuel use. Therefore a 10 % reduction in fuel use equates to the same reduction in CO_2 emissions (~10.2 MT/yr) for road transport. At ~$18/Ton CO_2 [19] this is ~$184 M/yr in CO_2 savings from 19 M vehicles in 2018 [8]. Estimated emissions from vehicle production are ~6 Ton CO_2/vehicle [20]. CO and HC savings are difficult to price, but NOx's estimated health costs (reduced when combustion is more efficient) were $112 ~ 1,400/vehicle/yr [21, 22].

- Savings ~1,398 L/car * 2.392 Kg/L CO_2 [23] ~3.3 Ton CO_2/car * $18 ~ $60
- Reduction in production emissions of CO_2 due to increase in vehicle lifespan (>17 % * 6 T) ~ 1 T = $18

Lifetime savings >$78 (~4.3 Tons CO_2)

7) Time - saving: 48 - 80 % [10] reduction in scheduled and unscheduled repairs, breakdowns, replacement of the vehicle, fewer fuel stops, etc...

- Assume 10 hours/year = 100 hours (average wage $82,436 [24]/52 weeks/40 hours ~$40/hour average wage)

Lifetime saving ~$4,000

Total savings over the 10-year lifespan of the vehicle:

~$8,408

Conclusion: Xcelplus Engine Treatment ($99) has an **84:1 Cost-Benefit Ratio (CBR)**. The largest benefit of using Xcelplus comes from the time saved. Xcelplus pays for itself in ~43 days ($8,408/$99 = 84 3650 days/84). The savings are proportionately greater if you drive more than average or almost ten times greater when applied to trucks. Reducing friction in parts such as the gearbox, differential and combustion chamber will result in further improvements.

While saving money, *Xcelplus is cleaning up the planet one car at a time*.

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