# TRANSPORTATION INDUSTRY

## PROFILE

The transportation industry greatly depends on their transportation equipment and need it to operate as efficient as possible, for as long as possible, and at the lowest cost possible. Preventative measures and maintenance are key to prolonging the life of transportation vehicles in addition to understanding how costs affect your overall profitability.

The cost of operating a transportation vehicle is a combination of the following elements:

1. Fuel consumption
2. Oil consumption
3. Maintenance costs and vehicle downtime
4. Depreciation

The combination of these elements is what gives the equipment owner the expected benefits.

### 1. Fuel consumption

Fuel consumption can be determined one of two ways, by a) measuring fuel consumption per mile travelled or b) fuel consumption per hour/shift worked. This second option can be applied to equipment permanently working in inconsistent manner, such as local delivery trucks or support vehicles that don't have set schedules/routes.

The process to determine/measure efficiency/deficiency is as follows:

a) Fuel consumption per mile travelled – Divide the amount of fuel consumed by the number of miles run.
b) Fuel consumption per hour/shift worked – Divide the number of gallons consumed by the number of hours that the machine operated.

### 2. Oil consumption

The amount of oil used in a vehicle is determined by the amount of time in which the oil is maintained in optimal conditions.

To test this, a sample of used oil should be taken every X number of miles or X number of hours worked. These samples should then be analyzed by a lab to determine its condition and the content of metals in the oil. This analysis will not only determine the motor's wear, which will be discussed in the next section, but also the remaining lifespan of the oil.

Following the test above, will allow companies to determine the type of savings they can generate comparing treated/untreated fuel and how often they need to be changing the oil.

### 3. Maintenance costs and vehicle downtime

Maintaining a vehicle or having it out of commission is a costly affair. To determine these costs, the truck or fleet owner should add up all the costs of spare parts, labor, and any additional maintenance costs. Of course, there is the downtime if vehicles aren't maintained or preventative measures are taken. Downtime and having a vehicle out of commission, though a bit harder to calculate as the time a vehicle is out varies, but not only does it hurt the business with additional costs, the lost revenue or lost business/contracts could be more damaging to a business.

### 4. Depreciation – Annual Cost

Vehicles have an estimated lifespan and the longer it can be operational, the better. To determine the vehicles depreciation, you take the cost of the vehicle minus the possible resale value, divided by years the vehicle is used which gives you the depreciation cost of the unit per year.

For example: a vehicle costs $140,000.00 and we assume that after 5 years it can no longer run yet has a resale value of $20,000.00. The difference in buy/sell price in this case would be $120,000.00, which would equate to an annual depreciation cost of $24,000.00/year.

*$140,000.00 - $20,0000.00 = $120,000.00 / 5 years = $24,000.00*
*Purchase Price - Resale Price = TOTAL / Years used = Depreciation cost*

However, if we reduce the wear and tear and manage to get 6 years' worth of use on the vehicle, the depreciation (annual cost) would only be $20,000.00 ($120,000.00/6 years) instead of $24,000.00.

*$140,000.00 - $20,0000.00 = $120,000.00 / 6 years = $20,000.00*

## USERS

| cars | trucks | buses | motorcycles |
|---|---|---|---|
| | | | |

## PROBLEMS

Fuel contamination and deterioration:

A diesel engine basically needs just two things: clean fuel and air. If it's missing either, it's dead. Dirty fuel, fuel contaminated with dirt or sludge, is the cause of about 90 percent of all diesel-engine problems.

Algae and bacteria formation:

Most diesel engine failures originate in the fuel tank. Free water at the bottom of fuel tanks is the bases for the growth of microbial colonies of bacteria and fungus incorrectly referred to as algae.

Filter plugging:

There are different reasons as to why filters plug/clog. One of the reason is the bacteria and fungus we mentioned before, another reason is the wax produced by oxidization of the fuel. Today's fuels are quite instable, resulting in speedier deterioration of the fuel. Key fuel components such as paraffin and asphaltenes begin to oxidize and re-polymerize, resulting in dark coloration, clogged filters and tank sludge. Many people call this algae, but in reality this substance is actually wax and asphalt.

Water in the fuel - Loss of power, and/or low efficiency:

Water contamination of diesel fuel is the biggest threat to diesel engines. All fuels contain some water in suspension, but unlike gasoline, diesel fuel and now biodiesels hold a much larger amount. This water can cause severe problems in water separators (filters), fuel injector tips, and sudden cooling in the engine which may result in shortened engine life and reduced performance, amongst other problems.

Newly refined fuel is clean and has none or very little moister. The water is added to the fuel when transported, while in storage or used. There are various reasons that a diesel fuel may contain dissolved water. Among them are condensation of water in a fuel tank, components in the diesel fuel which help to retain the water in solution, and fuel temperature.

Diesel fuel can contain two types of water; Water in the Solution or Free Water. The first one is low levels of water that may be dissolved in the fuel. Free Water is water which is not in the diesel fuel as a dissolved component, it is the water that drops to the bottom of the tank and has no effect on the combustion.
When burning the fuel, if bigger molecules of water in solution exist, the amount of energy available will be reduced and will cause a lower horsepower output.

Damage to pumps and injectors:

Damage to pumps and injectors can be caused by the low lubricity of the fuel. Lubricity is a measure of the fuel's ability to lubricate and protect the various parts of the engine's fuel injection system from wear. When the fuel contains a lot of water, it wears off the lubricants from the fuel injectors.

## Xp3 PRODUCTS TO BE OFFERED TO THIS MARKET

**Xp3D**: Multi-functional fuel enhancer for diesel and fuel oils

- Reduces fuel consumption

**Xp Lab, Inc.**
946 Hawthorn St. San Diego, CA 92101
Tel. (619) 233-3111 Fax: (619)233-3112
Xp3@xplab.com http://www.xp3.com

- Increases the fuel's lubricity for fuels low (LSD) and ultra-low (ULSD) in sulfur
- Cleans and maintains clean the fuel injectors
- Stabilizes light and heavy oils
- Disperses the existing water in the fuel
- Greatly reduces fumes and emissions
- Has a detergent and antioxidant effect
- Is an effective biocide
- Improves pour point
- Reduces corrosion problems generated during and after combustion
- Reduces maintenance costs and prolongs the life of the machine
- Reduces the consumption of the liquid DEF, used in the new catalyzer (SCR)

**Xp3D-W** and **Xp3W-XT**: Flow Improver for Diesel Fuels (Regular and Extreme)
- Reduces the fuel Pour Point and Cloud Point (CFPP)
- Improves fuel flow in low temperatures
- Inhibit wax crystals from growing together and block filters at cold temperatures
- Holdup fuel oxidation
- Prevents corrosion
- Improves combustion
- Reduces fuel consumption
- Stabilizes the fuel
- Totally disperses water in fuel
- Keeps fuel injectors clean
- Reduces fumes and emissions
- Reduces maintenance costs and prolongs the life of the machine
- Reduces the consumption of the liquid DEF, used in the new catalyzer (SCR)

**Xp3D-BIO**: Multi-functional fuel enhancer with biocide
- Stops the growth and destroys bacteria and fungi in diesel
- Prevents the clogging of filters
- Reduces fuel consumption
- Stabilizes light and heavy oils
- Disperses the existing water in fuel
- Greatly reduces fumes and emissions
- Has a detergent and antioxidant effect
- Improves the pour point
- Reduces the corrosion problems generated during and after combustion
- Reduces maintenance costs and prolongs the life of the machine

**Xp3G**: Multi-functional fuel enhancer for gasoline
- Improves combustion and increases engine power
- Reduces fuel consumption
- Reduces levels of toxic emissions
- Cleans carburetors and fuel injectors
- Has a detergent and antioxidant effect
- Reduces corrosion and increases the life of your engine

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- Totally disperses water in fuel
- Improves the engine starting and avoids pre-ignition
- Works with all classes of gasoline
- Safe for the catalytic converters

**Xp3CD-LP**: Multi-purpose Cleaner Degreaser

- Ultra-Low interfacial tension reduction
- High performance over a broad temperature range
- Rapidly liberates oil from substrates
- Terpene micro-emulsifier
- Highly effective in removing lithium grease
- Works over a wide pH range
- Performs well at high dilution rates
- Easy to handle
- Well suited to high active concentrates
- 100% biodegradable

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