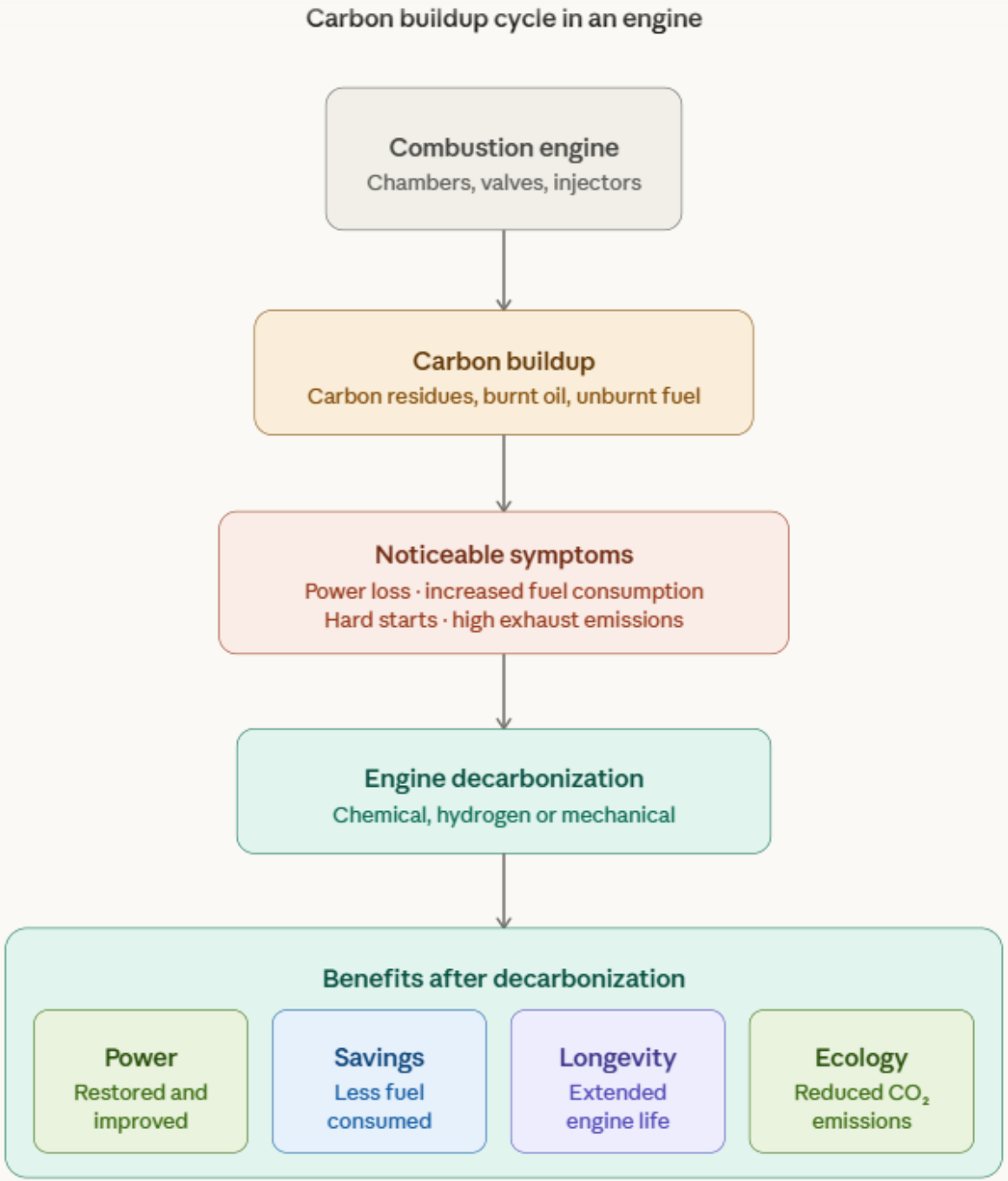
AMERICAN ENVIRONMENTAL USA

THE EXPLANATION OF WHY ENGINE DECARBONIZATION, ALONG WITH THE INSTALLATION OF THE MAGN-US DEVICE, IS VERY IMPORTANT.

+

WHY IT IS ESSENTIAL TO DECARBONIZE YOUR ENGINE BEFORE INSTALLING THE MAGN-US DEVICE.



Why decarbonize your vehicle?

What is carbon buildup (decarbonization)?

Carbon buildup — sometimes called "coking" — refers to the gradual accumulation of carbonaceous deposits inside the engine, primarily on the valves, injectors, pistons, and inside the combustion chambers. It results from the incomplete combustion of fuel mixed with oil vapors. It forms especially fast in vehicles that make many short city trips, where the engine never reaches its optimal operating temperature.

When should you decarbonize?

As a general rule, an engine decarbonization is recommended every **80,000 to 100,000 km (50,000–60,000 miles)**, or as soon as the first symptoms appear: power loss, increased fuel consumption, hard starts, excessive exhaust smoke, or a check engine light.

Decarbonization method

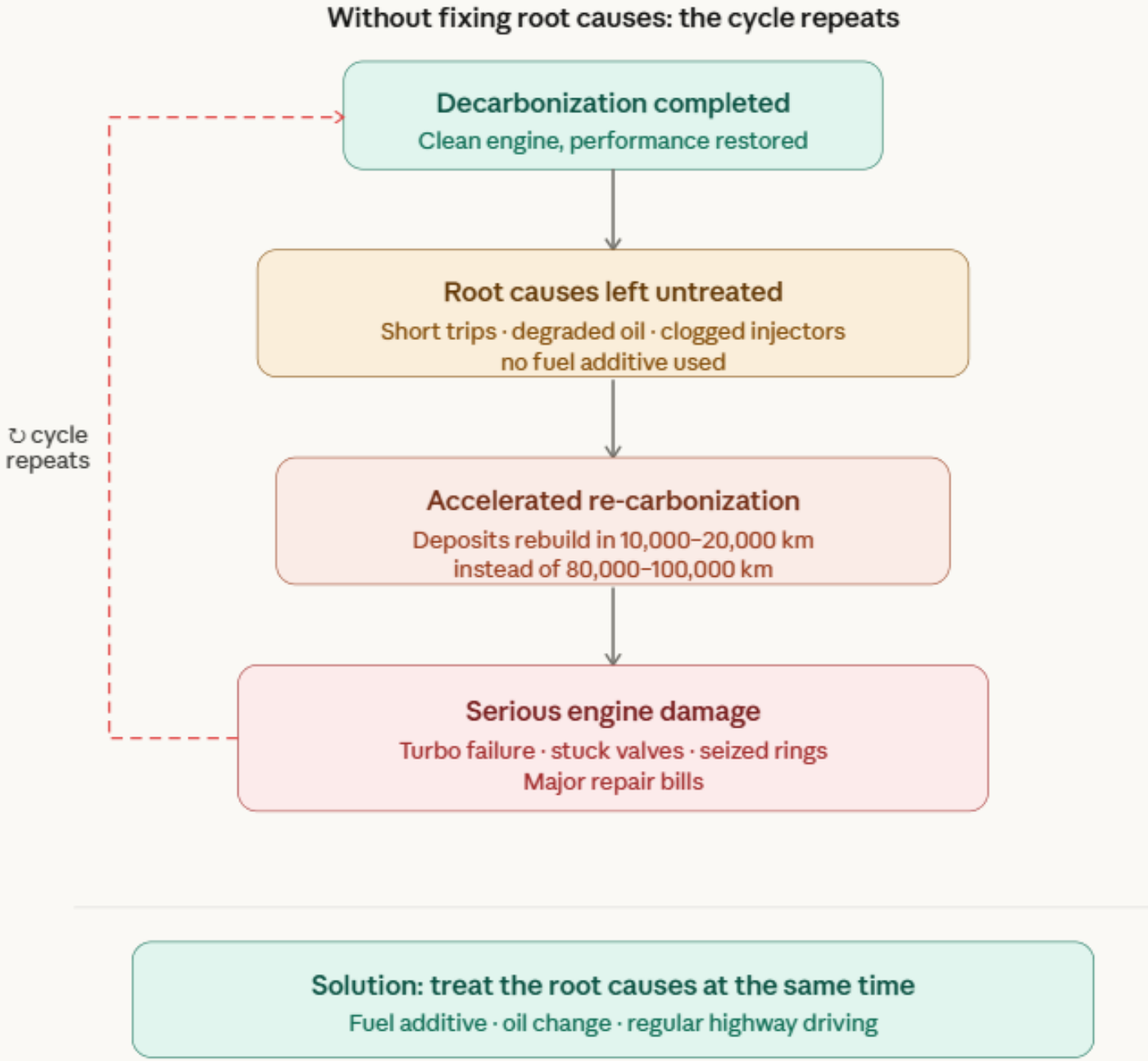
- **Hydrogen decarbonization** (the most common): An oxyhydrogen gas is injected into the running engine. It breaks down the deposits, which are then expelled through the exhaust. Non-invasive, typically takes about 1 hour.

Concrete benefits after a full decarbonization

- **Power recovery:** The engine regains its original performance. Valves open and close correctly, combustion becomes more efficient, and acceleration response improves noticeably.
- **Reduced fuel consumption:** A clean engine burns less fuel. Savings of around 5 to 15% on fuel consumption are commonly observed.
- **Extended engine lifespan:** By reducing friction and restoring mechanical tolerances, internal components (pistons, rings, turbo) are preserved and premature wear is delayed.
- **Lower pollutant emissions:** Fewer carbon residues mean cleaner combustion, resulting in a significant reduction in CO_2, CO, and fine particle emissions, a key factor for passing vehicle inspections.
- **Better turbocharger performance:** In turbocharged vehicles (very common today), the turbo is particularly vulnerable to carbon fouling. Decarbonization protects its bearings and turbine blades. In short, engine decarbonization is a preventive maintenance step that is often overlooked but can give a tired engine a new lease on life — and help avoid far more costly repairs down the road.

Why is the role of MAGN-US important?

Thanks to its patented technology, it prevents carbon deposits from building up again.



The vicious cycle of re-carbonization

What actually happens

A decarbonization cleans existing deposits, but it doesn't change the conditions that created them. If you don't address driving habits and maintenance, the engine will re-clog much faster than before — sometimes in as little as 10,000 to 20,000 km, compared to 80,000–100,000 km under normal conditions.

The root causes that need to be fixed

Short city trips are the main culprit. When a trip lasts less than 15–20 minutes, the engine never reaches its optimal operating temperature (~90°C / 195°F). Unburnt fuel accumulates rapidly on the valves and inside the combustion chambers.

Degraded engine oil is another major contributor. If oil changes are overdue, old oil vapors burn poorly and leave behind carbon residues that coat internal surfaces.

Partially clogged injectors spray fuel unevenly, causing incomplete combustion. Without cleaning the injectors, carbon buildup is almost guaranteed to return quickly.

The absence of fuel additives leaves the fuel system unprotected. A detergent additive used every 5,000–10,000 km keeps injectors and valves clean between full decarbonizations.

Consequences of ignoring re-carbonization

This is where things become expensive. An engine that keeps re-carboning without treatment can suffer:

- **Valve carbonization or seizure**, requiring a cylinder head overhaul
- **Turbocharger failure**, as oil channels become blocked and bearings run dry
- **Piston ring seizure**, potentially leading to full engine destruction
- **Chronic overconsumption** and emissions failures at vehicle inspection

What to do right after a decarbonization

To make the operation last, pair it with a few corrective steps: do a full oil change, use a quality injector/fuel additive, and if possible take a 30–45 minute highway run at moderate RPM (2,000–3,000 rpm). This burns off any remaining residues and brings the engine up to full operating temperature — the "natural" decarbonization that long drives normally provide. In short, a decarbonization without fixing the root causes is like washing your car in the rain: the effort is real, but the result won't last.

THE BEST COMPROMISE FOR OPTIMAL RESULTS

+

Here is the complete table summarizing the entire process in 5 steps, from the generation of electrostatic charges in the hose to the significant reduction of carbon deposits thanks to the MAGN-US device.

MAGN-US: Treating Carbon Buildup at the Source

Complete comparison — Without vs. With MAGN-US

WITHOUT MAGN-US	WITH MAGN-US
Fuel friction in the hose Electrostatic charges generated Molecules cluster into droplets	**MAGN-US on the fuel line** Electrostatic charges neutralized Molecules disperse evenly
Incomplete combustion Droplets burn poorly Unburnt residues build up	**Optimized combustion** Fine mist burns completely Residues minimized
Increased fuel consumption Energy wasted as heat More fuel for the same output	**Reduced fuel consumption** Energy better converted to power Real savings every day
Higher engine temperature Excess heat - accelerated wear Turbo and valves under strain	**Lower engine temperature** Cleaner burn = less heat waste Engine parts last longer
Injectors clogged and worn Carbon deposits obstruct nozzles Premature replacement needed	**Injector lifespan extended** Cleaner fuel = less fouling Nozzles stay precise longer
Carbon buildup returns Decarbonization needed repeatedly Cycle every ~15,000 km	**Carbon formation slowed** Deposits significantly reduced Engine protected at the source
Rising costs Fuel + repairs + new injectors	**Long-term savings** Less fuel + durable engine + injectors

MAGN-US + Decarbonization = Complete Solution Treats the source I Reduces consumption I Cuts deposits I Lowers temperature I Extends injector life I Protects engine

MAGN-US — Product Sheet

A problem you know all too well

Every vehicle that comes into your workshop carries carbon buildup. This carbonaceous deposit is the direct result of incomplete combustion itself caused by **electrostatic charges generated by fuel friction in the hose**. The consequences are familiar: clogged injectors, rising fuel consumption, excessive engine temperature, and customers coming back with the same issues.

What MAGN-US does

Fitted directly onto the fuel line, the **MAGN-US** device **neutralizes electrostatic charges** before the fuel reaches the injectors. Fuel molecules, freed from these charges, disperse evenly into a fine mist — combustion becomes more complete, cleaner and more efficient.

Concrete benefits for your customers

- **Reduced fuel consumption:** Optimized combustion converts more energy into mechanical power. Less fuel burned for the same output.
- **Lower engine temperature:** Less energy wasted as heat. The engine runs cooler, and internal parts wear more slowly.
- **Protected injectors:** Clean, evenly dispersed fuel causes far less fouling on the nozzles. Injector lifespan is significantly extended.
- **Significantly reduced carbon deposits:** By treating the problem at the source, **MAGN-US** substantially reduces carbon buildup formation inside the engine.

Why it's different from a standard decarbonization

Decarbonization **corrects**. **MAGN-US prevents**. Used together, they form a complete solution: the engine is cleaned, and the root cause of re-carbonization is eliminated at the source. Your customers return less often for the same faults — and leave with a vehicle built to last.