Hydrogen Injection into Diesel Turbocharged Engine at idle RPM Test Summary Report

Technology Alliance Partner: Dumore Enterprises

Vehicles Tested: 2013 Toyota Hilux 3.0L Diesel, 2017 Kia Sportage 2.0L Diesel

Software Utilized for Test: Autel

System Utilized: HNOI's Hydrogen Carbon Cleaner

Test Duration: 2 Weeks

Objective

To quantify the impact of hydrogen injection into diesel engines to identify engine performance and fuel efficiency over a 2-week period by evaluating key engine component parameters before and after treatment.

---

1. 2013 Toyota Hilux 3.0L 4-Cylinder Diesel Turbocharged

Parameter	Unit	Before Test	2 Weeks Later	% Change	Insight
Calculated Engine Load	%	16.4	13.7	↓ 16.5%	Reduced engine strain and improved mechanical efficiency
Intake Air Temp (IAT)	°C	41	41	→ 0%	Consistent thermal conditions
Injection Volume	mm³	7.3	7.38	↑ 1.1%	Improvement in combustion efficiency
MAP (Manifold Pressure)	kPa	72	75	↑ 4.2%	Better turbo/intake system performance
MAF (Mass Air Flow)	g/s	15.78	14.54	↓ 7.9%	Cleaner burn requiring less air volume
Injection Volume Feedback @ Idle	mm³/st	3.4	1.5	↓ 55.9%	Substantial gain in idle efficiency, cleaner internals

Estimated Fuel Savings: 5–10% (Higher savings in fleet applications with more idle time)

2. 2017 Kia Sportage 2.0L 4-Cylinder Diesel Turbocharged

Parameter	Unit	Before Test	2 Weeks Later	% Change	Insight
Calculated Engine Load	%	26	21	↓ 19.2%	Marked reduction in engine workload
Intake Air Temp (IAT)	°C	57	49	↓ 14.0%	Cooler intake air supports better combustion
Injection Volume	mm^3	2.75	3.14	↑ 14.2%	Cleaner injection and optimized fuel delivery
MAP (Manifold Pressure)	kPa	23	24	↑ 4.3%	Improved air induction
Air Mass per Cylinder	mg/hub	318	400	↑ 25.8%	Enhanced oxygen delivery = better fuel burn
Injection Volume Feedback @ Idle	mm^3/st	5.1	6.0	↑ 17.6%	ECU may be enriching mixture for cleaner operation, this will stabilize

Estimated Fuel Savings: 5–8% (Higher savings in fleet applications with more idle time)

Conclusion & Market Implication

These tests demonstrate that hydrogen injection into diesel turbocharged engines at idle RPM significantly improves engine components, reduces workload, and enhances idle efficiency—translating into measurable fuel savings and performance gains. The 2013 Hilux showed particularly strong idle and load reductions, while the 2017 Sportage benefited from a major increase in air mass and combustion improvement.

These results validate the commercial value to clean engines with hydrogen. Presenting a pioneer opportunity for fleet operators, dealerships, and engine care professionals seeking to reduce operational costs and improve engine performance.