

# Today's Propane Engine Technology Uses Liquid Injection Systems

**ROUSH**  
CLEANTECH



*ROUSH CleanTech's advanced propane engine technology uses a modern liquid injection system that's ideal for medium-duty commercial applications.*

## Yesterday's Technology Got an Upgrade

Previous propane engine technology used a vapor pressure system that was similar to an old carburetor system. This outdated system led to lower engine output, rough start issues, driveability concerns and a high likelihood of fuel delivery challenges in cold temperatures.

TODAY'S ADVANCED propane engine technology allows LPG to stay in its liquid state when delivered to the engine. The liquid fuel vaporizes in the cylinder, cooling the air and resulting in no loss of horsepower, torque or engine performance. With propane's octane rating of 104, the engine is "detuned" to match gasoline horsepower and torque numbers.



## VAPOR COMPARED WITH LIQUID PROPANE ENGINES

	VAPOR	LIQUID
Reliable Engine Performance	✗	✓
Easy Start-up	✗	✓
Simple Driveability	✗	✓
Operates in All Climates	✗	✓

“We've seen a significant reduction in engine-related problems. Overall performance of the vehicles is greater, and we have experienced far fewer engine-related breakdowns.”

— Richard Walters, fleet and contract operations director, Delaware Transit Corporation (Delaware)

## ROUSH CleanTech Advanced Propane Technology

A liquid injection system comes standard on all ROUSH CleanTech propane engines. With a liquid injection system, the air-to-fuel ratio is regulated and vapor issues are no longer a concern.

### Propane Vehicle Benefits:

- Offer the lowest total ownership costs.
- Reduce maintenance expenses.
- Excel in cold weather.
- Drastically reduce tailpipe emissions.
- Meet and exceed the most stringent federal emissions standards.
- Give comparable or improved performance without compromising range.
- Operate on an abundant, domestically produced fuel.
- Help you obtain tax credits and discretionary grant funding.



“Our school district saves over \$2,000 per bus per year with our new propane school buses. This savings comes from lower fuel costs, using less filters and oil, not having to expend electricity for engine heaters in cold months, and less mechanic hours to maintain the propane buses.”

— Beth Hobbs, transportation supervisor,  
School District of Holmen (Wisconsin)

“Drivers were our biggest concern. Now, they say they are pleased with the power of the propane vehicles, especially while navigating the hilly terrain of northern Pennsylvania, and there is no diesel exhaust smell either.”

— Alexander Nicholas, chief operations officer,  
Nicholas Trucking Co. (Pennsylvania)



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