IPRO - 307

ILLINOIS INSTITUTE OF TECHNOLOGY

Transforming Lives.Inventing the Future.

Intermodal Container Transport Solutions for the Chicago Region

Natural Gas:

Natural gas engines as a replacement for diesel

•Cost: It generally cost more for a gallon diesel than a GGE (gallon if gas equivalent, the same amount of energy as in a gallon of gas or diesel) of natural gas.

•Cleaner emissions: Natural gas engines burn cleaner than most types of diesels without the need for expensive emissions control systems.

•Made in the USA: 90% of the natural gas used in the USA is produced in the USA.

•On site refueling: Because natural gas lines already run to most commercial locations it is simply a mater of installing a compressor and a tank. No need to have a refueling truck come every day.

•Simplicity: Unlike other systems natural gas vehicles are not any more complicated than the diesel or gasoline vehicles that they replace. No batteries to replace like hybrids or electric vehicles. They also meet current emissions standards with out the complicated emissions control systems needed for clean diesels.

•Planing for tomorrow: Natural gas engines can meet even more restrictive emissions standards in the future with oxidizing catalysts and particulate filters. Natural gas can be replaced by biogas with little modification to become carbon neutral.

CNG Engine:

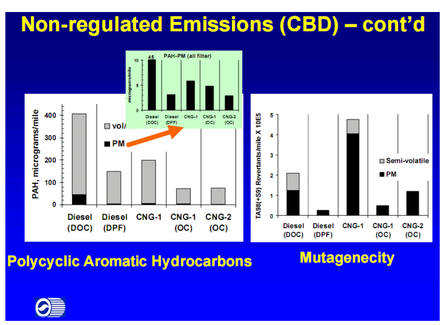
•CNG (Compressed Natural Gas) is natural gas stored under high pressure.

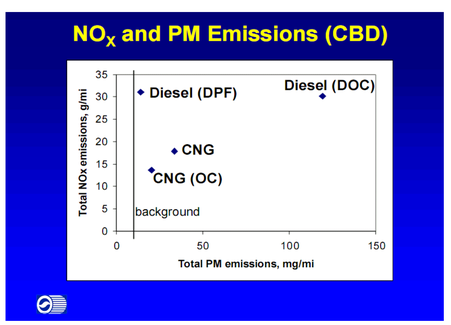
•Different engine: An engine designed specifically for natural gas is needed,several manufactures make natural gas engines that are approximately the same size and power of current diesels because of this they are bolt-in replacements for their equivalent diesel in many cases using the same transmission.

•Fuel system: The diesel fuel tank and fuel lines in the vehicle are replaced with a high pressure tank and lines.

•Refueling system: The natural gas line from the gas company is connected to a compressor and pressurized tank for storage as well as a dryer to remove moisture and a small filter to remove particulate.

•Emissions: CARB (California Air Resource Board) Study CNG vs. Diesel.





CNG Station:

•Looks like a regular gas station: Many CNG stations look just like regular gas stations, if needed they could be setup to also fill diesel and gasoline vehicles as well.

•Low maintenance: Only five main parts: a compressor to pressurize the gas a pressurized tank for storage a dryer to remove moisture, a small filter to remove particulate and a control board to manage the system.

•Two filling options: You call select between fast fill using natural gas that has already been pressurized in the storage tanks or timed fill that compresses the natural gas as it is added to the tank on the vehicle. The fast fill saves time when refueling it only takes a few minutes and the timed fill save money and space by reducing the number of storage tanks needed.

•Open to the public: A CNG station could be open to the public and used to generate additional revenue.

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