GAS DIESEL SYSTEM BY ECO-GAS

BACKGROUND

Recently I decided to purchase a new (second-hand) vehicle as my current one was on its last legs. After a serious amount of procrastination I decided to buy a Nissan Patrol RX 1997 2.8L Turbo Diesel. My goal once I had one in my hot little hands was to have an LPG system added. The basis for this decision is that I had heard about the possible improvements in performance and fuel economy. In the current climate of ridiculously high fuel prices, it was a justifiable reason to have the gas conversion.

As for my personal background, I am an ex-airforce avionics technician. In my final years with the airforce I was employed in an engineering/logistics position which gave me plenty of experience in determining the functionality and reliability of various systems and components. This 'experience' helped in determining which gas system I would eventually have installed in the 4wd. It also helped in weeding out the 'truth' in the claims made by some of the various gas installation companies. The following paragraphs are an observation based on my experience only. How this is perceived is up to the reader.

RESEARCH

I now had to determine which system to install. Essentially there are many different companies however they boil down to two types of systems available for my vehicle. There are either pre turbo injection, or post turbo injection. The two systems function effectively the same in that they take gas from the tank and through a system of control (computerised or mechanical) and, fill the intake manifold with LPG. Where the differences begin is in how this is achieved.

ENGINEERING

In my research, I brought an engineering perspective to the decision making process. I took this approach as the engineering aspect is generally the most important to ensure that the product on offer is going to be reliable and fit for purpose.

I took into consideration the design and implementation of the various systems. I spent a fair bit of time on the internet reading the proposed claims made by each of the manufacturers. The systems are essentially the same in the way they operate except when it comes to the way in which the gas is delivered to the engine. From an engineering perspective, this is where the Eco-Gas system is a 'cut above' the other systems.

The Eco-Gas system draws the LPG from the tank as a liquid and via a control unit, isn't 'vaporised' until the intake manifold. There is a sensor added to the manifold to determine the manifold pressure which ultimately determines how much gas to deliver. Part of this sensor/delivery setup is a switching mechanism which does not supply the gas whilst idling. There is no reason to supply gas when sitting at idle. No wasted gas here.

The way the gas is drawn from the tank; there aren't any bank/angle restrictions. That means that when in the bush, the gas system operates regardless of the angle of the vehicle. A definite plus for the Eco-Gas System. A friend of mine had a vapour draw system installed and found that even whilst driving in a multi-storey car park, which had high ramp angles, the gas system cut out because it injects way too much gas. He now has to consider the inclination of the vehicle whist out doing what a 4wd is meant to do. Again, this is not necessary with the Eco-Gas System.

The next positive is the fact that the gas is injected after the turbo. The other systems are a pre-turbo injection. There is a safety aspect, however small, of post-turbo injection, which is a positive if safety is important. Essentially, the flammable gas doesn't go through a 'hot' turbo and the gas vapour doesn't impact the turbo vanes. If an intercooler, depending on where fitted, is present there is no gas vapour under pressure in a place that could, if a frontal impact takes place, leak into the atmosphere for possible ignition and explosion. Being a diesel, the possibility of backfire is negated however gas now present in the intercooler has the potential for disaster

Result

The engineering met and in some cases exceeds expectations

PURCHASE/INSTALLATION COSTS

Installation Kit

The installation kit was sourced directly from ECO-Gas in Sydney. Robert Remedi at ECO-Gas was the contact person and was very helpful in answering any questions that I had. If they couldn't be answered immediately over the phone he

would send me an email and I had an answer within the day. The kit once ordered was shipped directly to my preferred installer. In Queensland there was no installers of the Eco-Gas system close by so I made some phone calls and met with some stiff resistance from companies that provided the competitor's equipment. There was a lot of negative attitude which didn't even have anything to do with the technology. Bad salesmanship in my opinion. In speaking with Robert at no stage did he speak negatively about a competitor's product, he simply stated facts and allowed me to make the decision.

Installation

The installation was performed by Tony at Competitive Auto Gas, 106 Keogh St West Ipswich, Queensland. This was their first diesel-gas installation and it is a testament to Tony's skill, the quality and simplicity of the system, that there were no problems with the installation. In discussions with Tony, he informs me that, in his opinion, the system is a 'neat installation.' I'm not sure how this compares to other systems but it seems to be a positive. The install took 2 days. In talking with Tony he believes that the installation could be reduced to one day.

Costs

When it came to cost, this is where I was left with seriously raised eyebrows. The 'other systems' varied in price by as much as $1000 dollars, depending on the installation company. It seriously pays (or saves as the case may be) to do your research and know your stuff. The best price I could get only matched what Eco-Gas offered. So based on the engineering as stated above, and factoring in the cost, the decision was simple and the cost-benefits ratio was far in favour of the Eco-Gas system. The overall fully installed system cost was $4200.

Result

The costs and installation met expectations.

POST INSTALLATION

Performance

This is the most noticeable aspect of a gas system. While the graph shows a 10% increase in power, the perceived increase is very noticeable. To say that 'the thing goes like a cut snake' would be an understatement. There is one stretch of road that I travel on a daily basis that has a 'significant' hill on it. Before the gas installation I needed to drop back to 4th gear to 'comfortably' climb the hill. Now I don't even get out of 5th and it even accelerates up the hill. The other day it was drizzling and I was accelerating from the lights, not doing anything out of the ordinary, I just added the amount of throttle that I thought was needed to move away at a normal pace, and the back wheels 'broke traction', something it wouldn't have done pre gas. It caught me by surprise. The only time I've ever done something like that was in my cousin's Hilux which has a small block Chevy V8 in it which weighs half that of the Patrol.

Economy

Before the gas installation, the economy was 604ks to 77 litres of diesel (12.75L/100k). Post gas installation the diesel economy is 770ks to 77 litres of diesel (10L/100k). Just on the diesel side there is a 27% saving. Now if the gas is included, the figures equate to 11L/100k which is a 10% overall saving in fuel. However, when the prices are factored in, the saving in dollar terms equates to 17% overall. For me that equals around $20 per tank fill (pre gas diesel only as opposed to the combined diesel and gas). Note: These figure are from data gathered during the 'run-in' phase after the installation, which at the moment has the gas to diesel ration at 16%, the recommended ratio is 25-30%. I'll be returning the vehicle to Tony to change the gas jet which takes about 5 minutes. This will ensure the correct gas-diesel ratio. The figures will be updated accordingly however I know adding more gas (to the correct ratio as stated above) will only increase both power and economy. I am looking forward to this.

Conclusion

In my opinion (for what its worth) the conversion is a winner on all accounts. The engineering aspect of the equipment is excellent. The cost of the installation was within expected parameters. The quality of the system components is high and the cost/benefit outcome is most definitely in favour of the conversion. As mentioned before, the thing 'goes like a cut snake.' I recommend anyone who owns a diesel vehicle to do a gas conversion, you won't regret it.

In closing I would like to thank Robert at EGO-Gas for his professionalism. I would like to thank Tony at Competitive Auto Gas for his work and professionalism. Job well done.

DarrenY in Queensland