

## BEST OF SUBJECT CATEGORY AWARD PHYSICS – DELHI NATIONAL FAIR

### No Pollution At Jet Speed

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Pollution has now become a global problem. This project aims at giving a pollution free source of fossil fuel energy. On analyzing the exhaust of a vehicle it was found to contain unburnt petrol in large amounts along with  $\text{CO}_2$  and  $\text{H}_2\text{O}$  vapors. A new car gives an average of about 30 Km/litre and causes air pollution.

During combustion of petrol in motor engines, 60% of fuel is completely burnt while 40% remains unburnt which normally is a waste fuel in exhaust removed from the cylinder by opening of a valve for a period of "t" sec. If this valve is opened only for 60% duration of time "t" then the unburnt fuel in the lower portion of the cylinder will not be removed. This 40% unburnt fuel is now mixed with 60% of  $\text{CH}_4$  along with excess of  $\text{O}_2$  to give complete combustion in the cylinder.

This mixture after combustion gives 75% of energy and causes very less pollution. As methane contains very less "C" it gives less  $\text{CO}_2$  & CO. Also as it contains hydrogen it burns rapidly to provide engine with greater speed.

How engine's efficiency would become 75% ? To show this some calculation are done.

60% of  $\text{CH}_4 + \text{O}_2 + \text{Petrol vapors} = 75\%$   
60% of  $\text{CH}_4 \rightarrow$  Burns completely to give 59% of energy  
40% of PV  $\rightarrow$  Burns to give 16% of energy

So, Total Energy =  $59\% + 16\% = 75\%$

The contribution of this project is twofold. Firstly, engines will use other sources of energy such as  $\text{CH}_4$  with petrol vaporous to give very less pollution. Secondly  $\text{CH}_4$  could be easily prepared in Lab like CNG and would be cheaper source of energy.