Conservex

Energy Solutions Pvt. Ltd

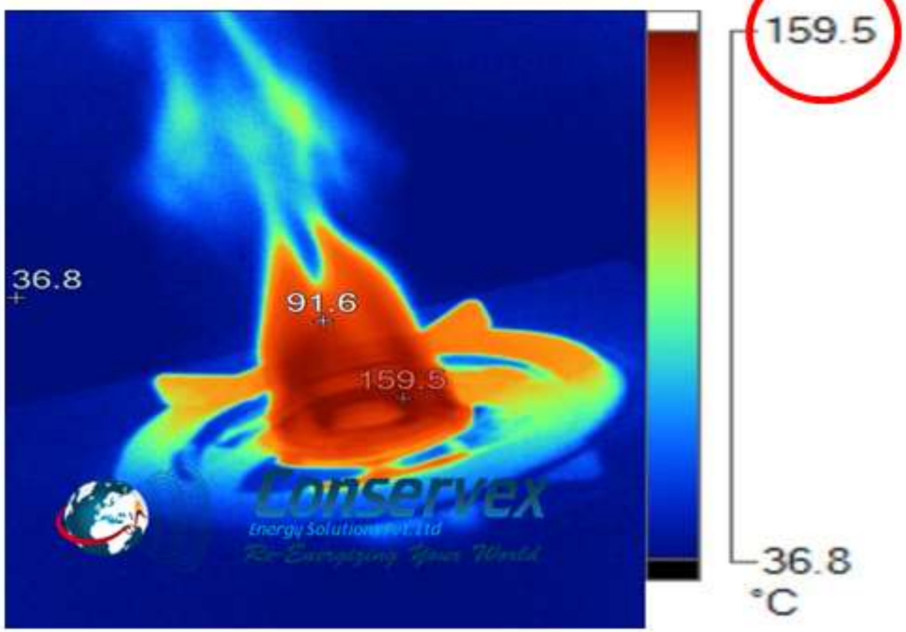
Re-Energizing Your World

# Conservator Working Principle

Conservex
Energy Solutions Pvt. Ltd
Re-Energizing Your World

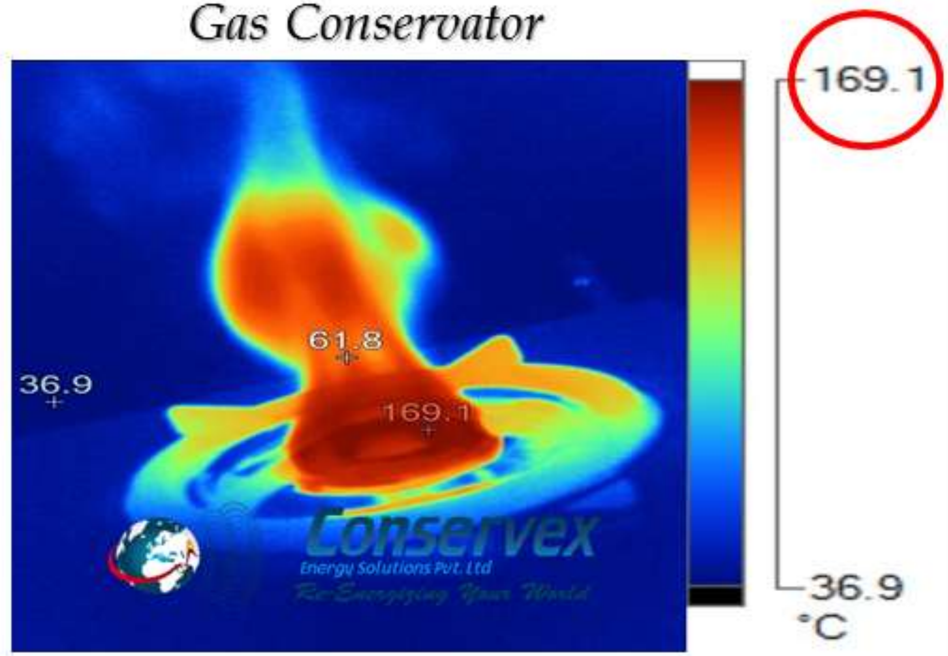
# Thermography Profile
# Domestic Burner Flame

## Without
## Gas Conservator




***IR000223.IS2***
*04/03/2012 1:21:10 PM*

## With
## Gas Conservator

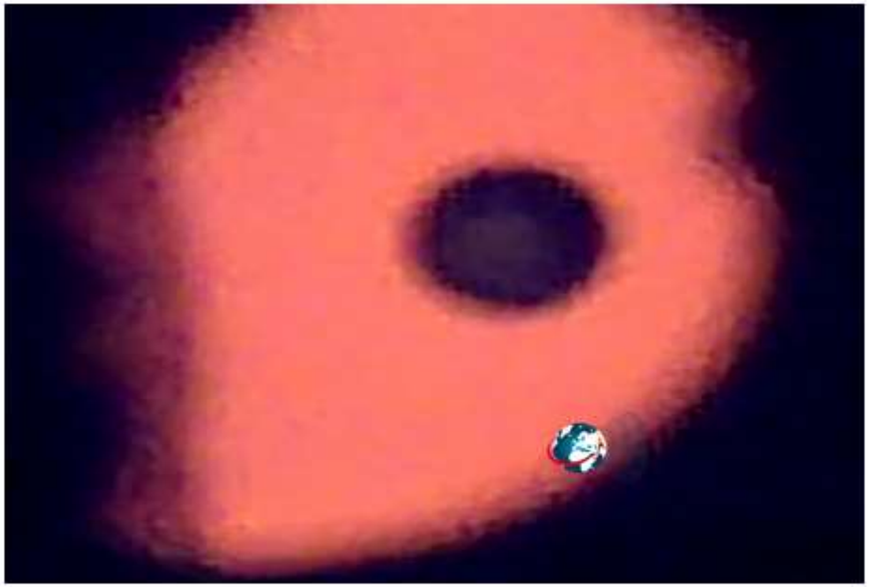



***IR000223.IS2***
*04/03/2012 1:40:03 PM*

Observations : - *Flame temperature increased at the same point of reference by almost* **10 Deg. C**
*Uniform flame with higher average temperature and Vertical length*

# Thermography Profile
# Industrial Burner Flame

Conservex Energy Solutions Pvt. Ltd
*Re-Energizing Your World*

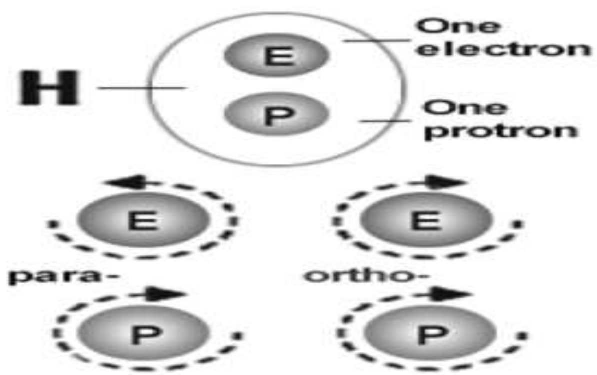
| Without Industrial Fuel Conservator | With Industrial Fuel Conservator |
|---|---|
|  |  |

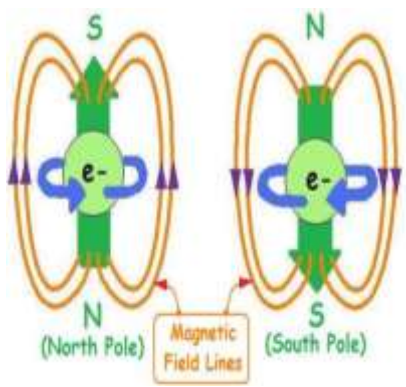
*Observations : - Flame temperature increased at the same point of reference by almost* **22 Deg. C**
*Uniform flame with higher average temperature no black hole of un-burnt fuel*

# Conservator Base Principle

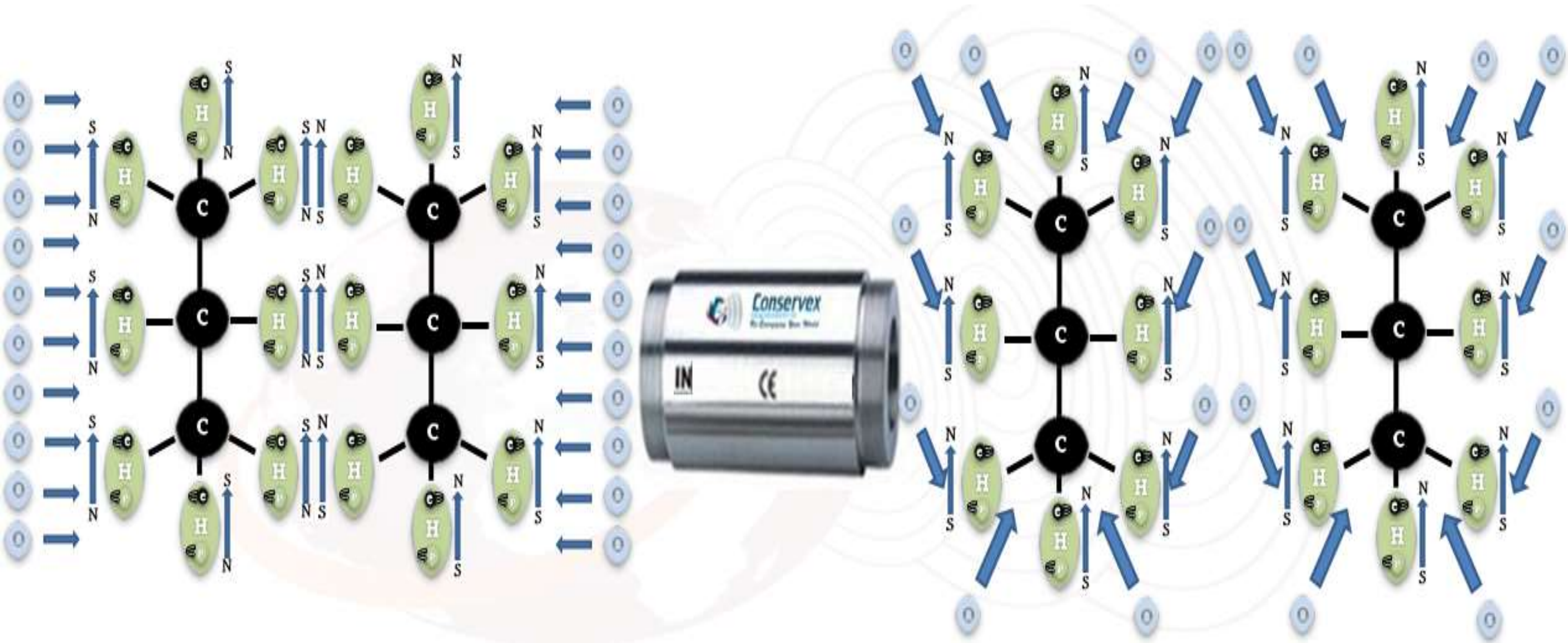
***Ortho-para orientation***

The hydrogen atom has one positive charge (proton) and one negative charge (electron), i.e. it possesses a dipole moment. It can be either diamagnetic or paramagnetic (weaker or stronger response to the magnetic flux) depending on the relative orientation of its nucleus spins. Hence, it occurs in two distinct isomeric varieties (forms) - para and ortho, characterized by the different opposite nucleus spins [8]. In para H2 molecule, which occupies the even rotation levels (quantum number), the spin state of one atom relative to another is in the opposite direction rendering it diamagnetic. In the ortho molecule, which occupies the odd rotational levels, the spins are parallel with the same orientation for the two atoms, and therefore is paramagnetic and a catalyst for many reactions (Fig. 2).




***Base Principle :- Under very high intensity magnetic flux (of specific pattern & strength) , the Hydrogen electron reverts it's direction and results into reversal of the magnetic poles of the hydrogen atoms temporarily (Para to Ortho) . Hence the intermolecular forces changes to repulsive forces , thus breaking the cage structure of Hydrocarbon . This allows oxygen molecule to penetrate and oxidize carbon completely ,resulting into maximum Energy liberation.***




***Under very high intensity magnetic flux (of specific pattern & strength) , the Hydrogen electron reverts it's direction and results into reversal of the magnetic poles of the hydrogen atoms temporarily (Para to Ortho) . Hence the intermolecular forces changes to repulsive forces , thus breaking the cage structure of Hydrocarbon . This allows oxygen molecule to penetrate and oxidize carbon completely ,resulting into maximum Energy liberation.***

# Conservator Base Principle

This spin orientation has a pronounced effect on physical properties (specific heat, vapour pressure), as well as behavior of the gas molecule. The coincident spins render ortho-hydrogen exceedingly unstable and more reactive than its para-hydrogen counterpart. To secure conversion of para to ortho state, it is necessary to change the energy of interaction between the spin states of the H2 molecule.

***De-cluster of fuel***

Hydrocarbons have basically a "cage like" structure. That is why during the combustion process oxidizing of their inner carbon atoms is hindered. Furthermore they bind into larger groups of pseudo-compounds. Such groups form clusters (associations). The access of oxygen in the right quantity to the interior of the groups of molecules is hindered and it is this shortage of oxygen to the cluster that hinders the full combustion [9]. In order to combust fuel, proper quantity of oxygen from air is necessary for it to oxidize the combustible agents.

The exhaust should theoretically contain carbon dioxide, water vapor and nitrogen from air, which does not participate in the combustion. Practically the exhaust gases contain CO, H2, HC, NOx and O2. In reality, complete combustion of fuel is never achieved and the incompletely oxidized carbon is evident in the form of HC, CO or is deposited on the internal combustion chamber walls as black carbon residue. The incomplete combustion process causes all this.

Hydrocarbon fuel molecules treated with the magnetic energy of the mono pole technology tend to de-cluster, creating smaller particles more readily penetrated by oxygen, thus leading to better combustion[10]. They become normalized & independent, distanced from each other, having bigger surface available for binding (attraction) with more oxygen (better oxidation). In accordance with van der Waals' discovery of a weak-clustering force, there is a very strong binding of hydrocarbons with oxygen in such magnetized fuel, which ensures optimal burning of the mixture in the engine chamber

Conservex
Energy Solutions Pvt. Ltd
Re-Energizing Your World

# Conservator Working Principle

*The present invention embodies an art of processing fuel molecules through the use of an ultra-strong variable magnetic flux field imposed at a particular portion of a flow path traveled by fuel molecules towards the place of combustion. The angle, orientation and strength of flux field are finely adjusted according to the molecular structure of the hydrocarbon fuel .Various apparatus/ techniques are known to exist in the art which attempt to render fuel combustion more efficient and therefore realize the potential benefits of same. This technology in particular utilizes various apparatus which impose a magnetic field on fuel molecules before combustion in an attempt to render the fuel molecules more readily combustible.*

*That is, because hydrocarbon fuel molecules are affected by a static magnetic field, particularly re cohesive intermolecular non-covalent forces, groupings of large hydrocarbons flowing through a magnetic field will have their magnetic orientation aligned with the direction of the magnetic field vector. In addition, Van Der Vals forces existing between the fuel molecules is considerably reduced or suppressed, depending on the intensity of the field and the time the fuel mass is subjected at the flow rate .*

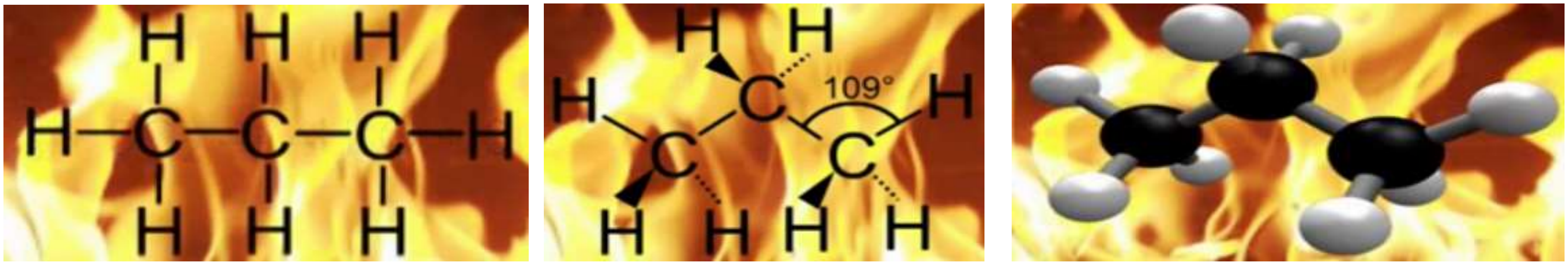
# Conservator Working Principle (Cont..)

*This invention shows quantitative improvement in the combustion of hydrocarbons (various length hydrocarbon molecules), whether gas or oil. As there are two major covalent bonds comprising hydrocarbon fuels, C--C and C--H. Both release energy when broken. One of the problems with combusting varying quantities of such hydrocarbon-based molecules is with their inherent tendency to aggregate as well as the length and intermolecular magnetic orientation of the fuel en masse, as explained in some detail above. When subjected to the specific field strength imposed by the fuel-saver (Conservator ) device of this invention, the molecules resonate within and by the magnetic field energy. In addition, the magnetic orientation of the fuel molecules may "flip", that is, change its spin from one spin direction to the opposite spin state when subjected to the magnetic field. Magnetized fuel molecules moving en masse towards a point of combustion are more readily atomized at a fuel injection nozzle . In addition, it is found that groupings of hydrocarbons are made repulsive under a strong variable magnetic field for more effective dispersion in the combusting chamber. The processed hydrocarbons, when pyrolized, generate atomic carbon and hydrogen which is reacted reducing soots in emissions. The fineness of the atomization of the magnetized fuel molecules accelerates oxidation which more efficiently uses oxygen, decreasing CO and increasing CO2.The improved condition of the fuel after passing through the field(s) generated by the product is a result of its changed molecular interrelationship of the aggregate fuel molecules (e.g., its viscosity) which evidently improves the ability complete fuel combustion . Thus releasing maximum amount of energy in fuel oxidation process.*

Conservex
Energy Solutions Pvt. Ltd
*Re-Energizing Your World*

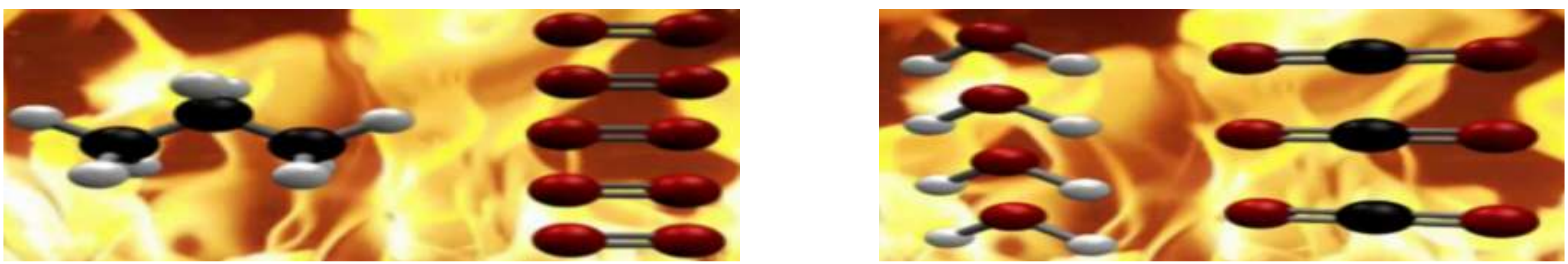
Conservex
Energy Solutions Pvt. Ltd
Re-Energizing Your World

***Structure of Propene Molecule***




***Structure of Oxygen Molecule***

***Chemical Equation for Complete Combustion of Propane***
***(Complete Oxidation of Hydrocarbon )***



$$C_3H_8 \quad + \quad 5O_2 \rightarrow 4H_2O \quad + \quad 3CO_2$$

**Conservex**
Energy Solutions Pvt. Ltd
*Re-Energizing Your World*

***EQ1 - Incomplete Combustion :- Energy released from One mole of propane & 2 molecules of Oxygen***

$$C_3H_8 + 2O_2 \rightarrow 4H_2O + 3C$$

$$986\ kJ - 104.7\ kJ = 881\ kJ$$

***EQ2 - Incomplete Combustion :-*** *Energy released from* ***One mole*** *of propane &* ***7 moles of Oxygen***

$$2C_3H_8 + 7O_2 \rightarrow 8H_2O + 6CO$$

$$2745.5\ kJ - 209.4\ kJ = 2536.1\ kJ$$

$$\text{Energy/Mole} = 2536.1/2 = 1268\ kJ$$

***EQ3 - Complete Combustion : -Energy released from one mole of propane & 5 moles of Oxygen .***

$$C_3H_8 + 5O_2 \rightarrow 4H_2O + 3CO_2$$

$$2166\ kJ - 104.7\ kJ = 2061.3\ kJ$$

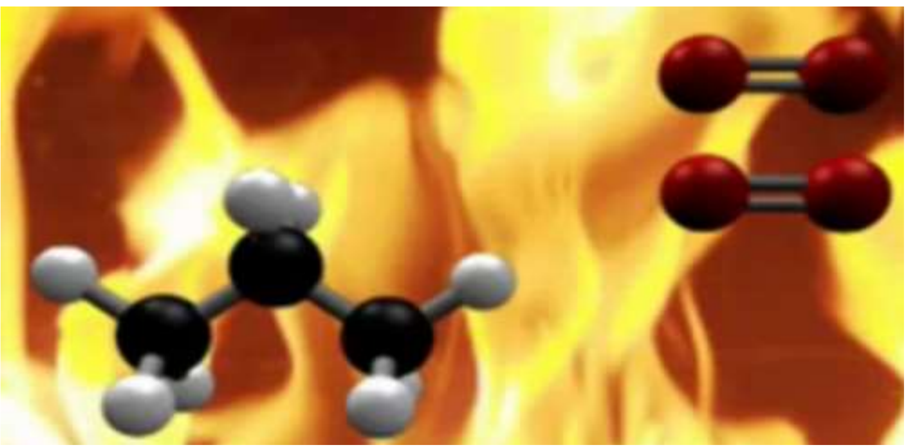
***Conclusion : Only supplying excess air (oxygen) will not result into complete oxidation. The oxygen available should be able to penetrate the hydrocarbon molecule to oxidize carbon completely .Thus liberation maximum energy. Our fuel conservators will facilitate this penetration process by weakening the intermolecular bonds between hydrogen and carbon atoms in a hydrocarbon . Thus liberating maximum energy and increased thermal efficiency of the fuel.***

EQ1-

Conservex
Energy Solutions Pvt. Ltd
*Re-Energizing Your World*

**Chemical Equation for Incomplete Combustion of Propane**
**(Partial Oxidation of Hydrocarbon )**

$$C_3H_8 + 2O_2 \rightarrow 4H_2O + 3C$$



1 X 104.7 kJ = 104.7 kJ    2 X 0 kJ = 0 kJ    4 X 246.5 kJ = 986 kJ

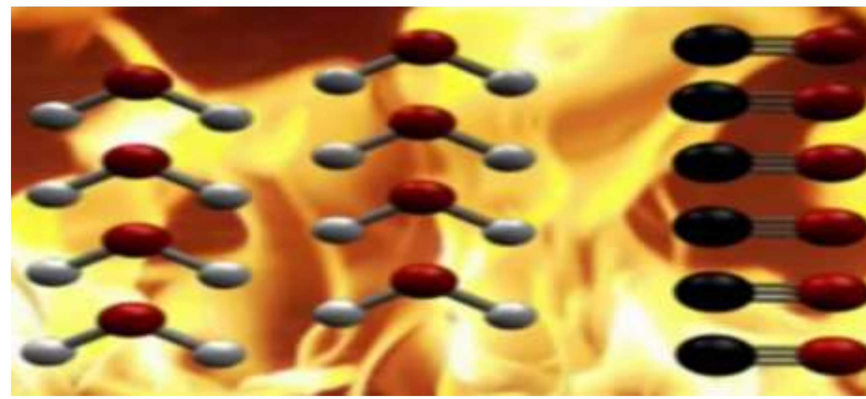
986 kJ − 104.7 kJ = **881 kJ**

**EQ 2-**

Conservex
Energy Solutions Pvt. Ltd
*Re-Energizing Your World*

## *Chemical Equation for Incomplete Combustion of Propane (Partial Oxidation of Hydrocarbon )*

$$2C_3H_8 + 7O_2 \rightarrow 8H_2O + 6CO$$



2 x104.7kJ =209.4 kJ  7 x0 kJ =0 kJ  8 x 246.5 kJ= 1972 kJ  7 x110.5kJ =773.5kJ

209.4 kJ + 0 kJ = 209.4 kJ  1972 kJ + 773.5 kJ = 2745.5 kJ

2745.5 kJ − 209.4 kJ = 2536.1 kJ

Energy/Mole = 2536.1/2 = 1268 kJ

***Note : In this scenario due to partial oxidation of hydrocarbons 2 molecules of propane results in 40% lesser energy release . This is due to incomplete oxidation of Carbon which is surrounded by cage like structure of hydrogen atoms in a hydrocarbon molecule . Thus adjusting the air fuel mixture ratio only , to supply more oxygen will also not result into complete combustion .***

**EQ 3-**

Conservex
Energy Solutions Pvt. Ltd
Re-Energizing Your World

$$C_3H_8 + 5O_2 \rightarrow 4H_2O + 3CO_2$$

| Energy consumed for breaking hydrogen and carbon bonds | Energy consumed for breaking oxygen bonds | Energy released while formation of H2O bonds | Energy released while formation of CO2 bonds |
|---|---|---|---|
| 1 X104.7 kJ =104.7 kJ | 5 X 0 kJ =0 kJ | 4 X 246.5 kJ =986 kJ | 3 X 393.33 kJ=1180 kJ |

104.7 kJ + 0 kJ = 104.7 kJ

986 kJ + 1180 kJ = 2166 kJ

2166 kJ – 104.7 kJ = **2061.3 kJ**

***Note : This is idealistic scenario which is practically not possible .It is very difficult to break the cage like structure of hydrocarbon for complete oxidation without the presence of external catalytic/Flux forces where our conservators comes in action.***