

11<sup>th</sup> August Good morning , good wishes for the day

I acknowledge to be privileged to be with such a knowledgeable audience

**Subject: Future of mobility**

A What has triggered a big change seeing transition of the industry

B Our background because of the work done on all types of vehicles

C Policy framework, time line vis a vis other countries

D Demand pattern, socio economic factors decide customer acceptance.

E E- Vehicles entry in India to larger use with customers' acceptance.

F Perception of the industry, fears and opportunities.

G Disruptive technology: to understand and to do

India is among 179 countries signing the treaty in 21<sup>st</sup> Conference of the UNFCCC in Le Bourget near Paris, France to control the carbon emissions

# 17 lakh respiratory infections, 981 deaths in 5 years in capital

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**New Delhi:** The capital witnessed 981 deaths due to Acute Respiratory Infection (ARI) from 2013 to 2017. Over 17 lakh others were diagnosed with ARI, stated a standing committee report tabled in the parliament on Tuesday.

The report said the polluted air in Delhi-NCR is a significant risk factor for a number of pollution-related diseases and health conditions, including respiratory infections, and recommended immediate corrective and preventive strategic steps in consultation to mitigate the air pollution.

The committee, which held three meetings with the authorities concerned and analysed the whole gamut of air pollution in Delhi-NCR in the past nine months, said that it was surprised to note that



the health ministry was not taken on board in the high-level task force on air pollution which is, in a way, indicative of ignorance as well as denial about negative impact of air pollution on human health. "The committee recommends that considering the severe

health hazards of air pollution, ministry of environment, forest and climate change should take immediate corrective and preventive strategic steps in consultation with the health ministry," the committee advised. It has asked the health min-

istry to aggressively start an awareness campaign to educate people about the adverse health effects of air pollution, and the ways and means to minimise its adverse impacts.

In 2016, the World Health Organisation (WHO) put Delhi amongst the 20 most polluted cities in the world in terms of PM2.5 levels.

An epidemiological study conducted in 2008 on effects of air pollution on human health (adults) in Delhi, referred to by the parliamentary committee in its report, shows citizens of the city were more susceptible to respiratory symptoms compared with those living in rural areas.

The United Nations Children's Fund (UNICEF) had said last year there is growing body of scientific research that shows that air pollution can permanently damage child's brain.

## Economics of fossil fuel must be matched

- Exploration in deep sea or in deserts
- Transport by ships
- Bring to refineries
- Carry to consumers far and wide

Why not

Produce electricity locally by solar, wind or coal

Consume locally which is our own product

It has been done where we have provided main drive system for the following



# Heavy vehicle with 2x22 KW model



# Santro Xing with BLDC Kit



# Loader with Compage BLDC motor



# Rugged e- Vehicle using 6 KW BLDC motor



# Pallet loader



# Auto Rickshaw assembled with Indian Battery solution



# Electric Vehicles with motor & Controller



# Bike Kairo with motor & Controller



# Chase Bike using motor, Controller

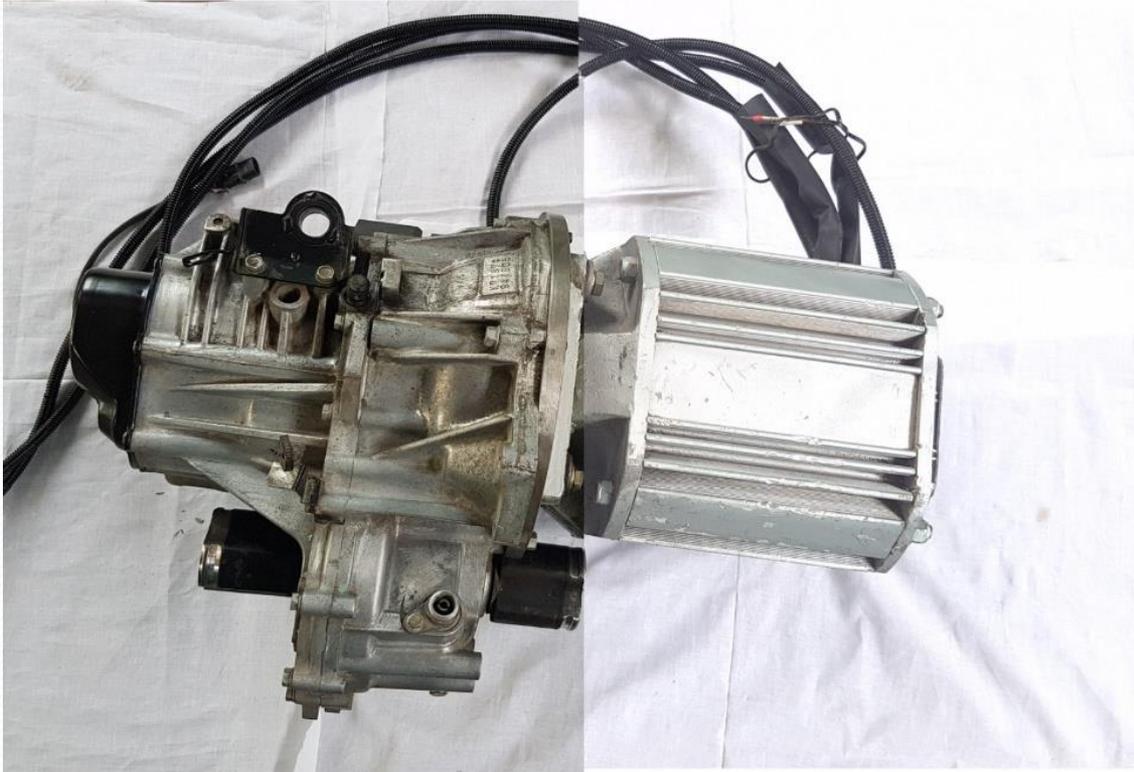


## Retrofits

- Fix trans-axel with Motor      Gear trans-axel with motor



- Gear box of Small car like Santro with BLDC motor



- All components in the above vital parts of the E vehicles are Made in India.

Our policy framework provides for promotion of public use vehicles and most vehicles which are on the road for maximum time

- Norway has changed their 80% vehicles to electric
- China has already achieved a figure of 1 million in electric vehicle production.
- For us the challenge is to see the study of following Gap analysis
- Socio economic factors.

- Our country has slow adaptation keeping in mind socio economic factors and past experience of Technology adaptation
- 2W is more as anywhere 100 Km away from metro city the life moves on 2W.
- 3W vehicle is in maximum sales in our country as compared to other countries.
- Cars 4W vehicles are having big gap in affordability when comparing fossil fuel to E vehicle.
- Public vehicles will have to be improved to provide infra to common man.

## Entry in India and Customer Acceptance

- Many trial of electric buses, R&D projects for e vehicles, trial of electric 2W below 25 Kmph are in History between 1990 to 2010.
- But economic version 3W i.e e rickshaw (suited to the pocket of common man) entered India in 2010-2011. This is the real running industry of about 0.5 million e-vehicles as of now.
- Frugal mantra for Indian industry can bring up all the products in time. F=functional, R= Robust, U= User Friendly, G=Growing Market, A= Affordable Price, L= Locally Made

## The perception, fears, basis and prospects

- All the vehicles have common ingredients
- The automobile industry already has optimised design
- The engine is replaced by electric motor along with a controller
- And fuel by the storage batteries.
- Disruptive changes is only by advanced motors like BLDC motors, its controllers and battery.
- The present automobile will be making same/similar parts, so no fear of extinction or closure.

## Disruptive technologies to be understood adapted to survive

- The major change is that Motor replaces engine
- And battery replaces the fuel
- Body-Chassis nearly same. As understood that it is to be fibre or reinforced fibre. That's not so. The insulation to be little better in electric circuits and rest is same.
- Tyre, wheel, brakes same. Only that brake may have a less hard duties.
- Gearbox can be same – little advanced or automatic.
- Doors, accessories, windshield, windows to be same.

In nut shell the designs of all parts is to be improved in the same line as before but a little better and a little sooner

# I AM BECAUSE WE ARE: UBUNTU

## UBUNTU

UBUNTU is a very nice story from Africa...  
The motivation behind the Ubuntu culture in Africa...  
An Anthropologist proposed a game to the African tribal children...

He placed a basket of sweets near a tree  
And made the children stand 100 meters away.  
Then announced that whoever reaches first  
would get all the sweets in the basket.  
When he said 'ready steady go!'...

Do you know what these children did?  
They all held each other's hands, ran together  
towards the tree, divided the sweets equally  
among themselves, ate the sweets and enjoyed  
it.  
When the Anthropologist asked them why  
they did so,  
They answered.... "Ubuntu."

Which meant -  
'How can one be happy when the others  
are sad?'

Ubuntu in their language means -

"I am because we are"  
A strong message for all generations.

Let all of us always have this attitude and  
spread happiness wherever we go.

Let's have a "Ubuntu" Life...

**I AM BECAUSE WE ARE**

*Khushi*